

OECD thematic review of tertiary education

Country Background report for Finland

Publications of the Ministry of Education, Finland 2005:38



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Foreword

This report was prepared for the Ministry of Education as an input to the OECD Thematic Review of Tertiary Education. The document was prepared in response to guidelines the OECD provided to all participating countries. The guidelines encouraged the author(s) to canvass a breadth of views and priorities on tertiary education issues. The opinions expressed are not necessarily those of the national authority, the OECD or its Member countries.

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Executive summary

Finland's national objective is sustainable and balanced societal and economic development. High employment, productivity and competitiveness are key factors. A high quality tertiary education system and measures to increase research and technological development (and to utilize the results arising from this) play a significant part.

The system structure

The main characteristics of Finland's tertiary education system are as follows:

- A comprehensive, dual-sector higher education system, comprising 20 universities and 29 polytechnics. This network of institutions is spread geographically over the whole country
- A high participation rate in higher education in general, including high proportions of female and mature age students.
- The stability of the higher education system. The structure is transparent and the functions of the two sectors are clearly defined
- The public nature of the system, with the student population attending tuition fee-free public institutions

- A relatively high proportion of funding for higher education institutions (HEIs) is drawn from the public purse
- A high proportion of research is conducted in public research institutes
- Private investment in research has increased more rapidly than public investment
- The relative share of funding of university research from external sources has increased
- A marked quantitative expansion in research training, combined with the introduction of a graduate school system
- A well integrated higher education system with few barriers related to the recognition of credit transfer between institutions
- Graduates from both first degrees and PhD programs are relatively 'old' at time of graduation. Those with higher education qualifications have relatively low rates of unemployment
- Relatively few foreign students
- A decentralized admission system for universities
- The introduction of bachelor's degrees in universities, making the degree structure compatible with the Bologna process.
- The enactment of new polytechnic legislation emphasizing the autonomy of these fairly new institutions and confirming their functions as the second pillar of the Finnish tertiary education system alongside universities
- The introduction of post-experience polytechnic graduate degrees for those having work and life experience
- A government resolution on the structural development of the public research system with the aim of intensifying research and development, increasing co-operation between different interests in the research system, as well as creating and reinforcing internationally competitive science and technology clusters and centres of excellence.

Key objectives and policy priorities

Education and research are pivotal to Finland's strategy for the future, which is directed at the well-being of its citizens, cultural diversity, sustainable development and prosperity. As a civilisation, Finland is built on knowledge and creativity and values such as equity, tolerance, internationalisation, gender equality and responsibility for the environment. Education is used to promote cultural rights as well as to develop knowledge and skills for active citizenship.

The aim is a civilisation in which every individual can grow personally according to their own abilities and aptitudes, contribute to the development of their community and living conditions, and upgrade their vocational and professional competence in response to changes all through their careers.

The catchwords in education policy for the coming years will be high quality, equal opportunity

Recent policy decisions

Main policy decisions made in recent years may be summarized as follows:

- The enactment of new university legislation emphasizing universities' autonomy as well as inducing them to diversify their funding base
- The introduction of a third mission in university legislation, relating to their regional role and responsibility

and lifelong learning. Finland is to continue to develop into a humane knowledge-based society by means of education and research. The Government is committed to maintaining a high level of public education and research funding. Special attention will be paid to developing teaching and learning at all levels of education through teacher education and guidance services.

In order to meet regional needs, tertiary education institutions must meet their regional responsibilities by increased cooperation with local business and industry, and by facilitating the transfer of expertise to working life. The tertiary education system will be developed as a whole, comprising the two mutually complementary sectors.

The system of tertiary education degrees will be developed to correspond to the needs of working life and also in response to international developments in degree structures.

The public research system will be developed as an operational entity in its own right, with a view to continuous improvement in the quality and relevance of research and development (R&D). Development measures will be targeted towards prioritising activities, enhancing the international and national profile of research organisations and selective decision-making. A crucial challenge is to develop world-class R&D in those fields most relevant to the national economy, to societal development and to citizens' well-being.

Development of tertiary education

The key targets for future education policy were set in *the Development Plan for Education and Research 2003–2008*, adopted by the government on December 4, 2003. In summary, the development of tertiary education will focus on following areas.

The tertiary education system forms the basis for a regionally comprehensive innovation system. The tertiary education system is being developed as an entity which is both internationally competitive and responsive to regional needs. Besides education

and research, tertiary education has a statutory duty to serve society, e.g. by contributing to regional development and developing education for mature age students in response to social changes. The tertiary education system needs to be viewed holistically, in particular as regards the appropriateness of its structures, the quality of its performance, its financing, and its international competitiveness.

The performance of the tertiary education system will be improved by means of transparent procedures for cooperation and a clearer division of the roles of polytechnics and universities. The aim is to provide a system which is understandable to both students and employers and in which the two sectors are allowed to develop equally, commensurate with their strengths.

One major aim is to strengthen the international activities of tertiary education institutions. It is important for Finnish tertiary education institutions to improve their international capacities so they can consolidate their position in the international education market. Internationalisation is also a response to new knowledge requirements in research and in the labour market. It is important that sufficient resources are allocated to international activities and that the statutes governing tertiary education institutions are up-to-date. Finland must be an active player in European higher education and research, and the opportunities available in the European Union for developing the quality of higher education must be used to the full.

Universities

An important aim is to develop internationalisation and the prerequisites of innovation. The universities will have a growing role to play as part of the national and regional innovation systems. In the case of the universities, this requires that the quality and efficiency of undergraduate education is improved, national and international networking is promoted, research training is expanded and the general supporting infrastructure for research are improved.

With a view to improving flexibility and international comparability, the new two-cycle Bachelor-Master degree structure will be adopted in all fields

of study from the 2005–06 academic year. In the same context, the coverage of studies/subjects will be re-determined to correspond to European practices via the European Credit Transfer System (ECTS). In this connection, degree requirements will be reviewed and quantified to correspond to the actual student workload.

Personal study plans on which both the student and the university focus, will be adopted in all fields of study. The universities will make their teaching arrangements more flexible so that students are able to study throughout the academic year. The universities' prerequisites for assuring a high quality of operations will be strengthened, and the universities will develop methods of systematic quality assurance. The management of educational development will be enhanced.

Finnish universities work closely with business and employers, especially in research. A key challenge for all universities will be to provide students with skills in scientific methods and the ability to produce and use knowledge independently. Some fields need to improve links between study and work life.

Knowledge is becoming more and more important in regional development and this should also be reflected in university operations. The Universities Act will have been amended to include regional cooperation in the universities' mission. The universities will boost their regional impact within existing operations through increased cooperation and improved division of labour with polytechnics and other local players.

Development measures will be targeted to promote the impact, quality, content and efficiency of the units by means of larger, focused resource entities, stronger networking, more efficient management and performance evaluation. Universities will improve their international competitiveness by raising their profiles and investing in quality research, interdisciplinarity and research personnel of an international high standard.

Polytechnics

The new Polytechnics Act (2003) provides a basis for developing polytechnics as tertiary education institutions with specific profiles. Their mission is to provide and develop professional tertiary education closely connected with the world of work and its development, and to conduct R&D which serves working life and regional development, as well as teaching.

Polytechnics have successfully established their place in the tertiary education system. Their further development as an innovative network requires that attention is paid to their level of knowledge and their capacity to develop further.

In the near future, particular attention needs to be paid to the development of study processes, to polytechnic graduates' opportunities for further education, to regional development and, related to this, the enhancement of contacts with working life, and to the development of polytechnic funding and the polytechnic network.

According to an OECD review (2003)¹, the Finnish polytechnic degree programmes are innovative and relevant to working life. Polytechnic degrees cater for knowledge and development needs of the labour market. Special attention will be paid to curricula, credit transfer practices, guidance and advisory services, and measures for reducing student drop-out rates, with a view to improving education standards.

The Act on the [Pilot Programme for the Introduction] of Postgraduate Polytechnic Degrees came into force on 31 July 2005. The pilot programme is being carried out in three fields of education and within seven degree programmes. All in all, over 500 students (forming 44 study groups) have been admitted to study within the pilot programme. There were 1,094 applications to enter the Master's-level pilot programmes. The programmes are closely linked to the world of work and it is possible to study alongside work. One admission requirement was that the applicant had had work experience of at least three years after

¹ OECD 2003: Polytechnic Education in Finland. Reviews of National Policies for Education.

graduation.

With a view to further improving polytechnics' regional impact, measures will be taken to develop the most appropriate structure of education provision, to combine polytechnics' regional development projects into larger entities which cross sectoral boundaries and to boost networking between different tertiary education institutions, schools and other stakeholders. Networked regional tertiary education institutions composed of polytechnics and universities will be developed in response to regional needs.

One aim in the development of the polytechnic network is to achieve a balanced provision of education to meet both regional ends and the needs of Finland's two official linguistic groups (Finnish and Swedish). Provision must also meet the needs of working life, in the most efficient manner possible. The aim is for the establishment of a network in which each degree-teaching unit is large enough to be able to provide education of a sufficiently high standard and to conduct R&D which serves the region.

Ongoing policy directions

The main ongoing policy directions may be summarized as follows:

- Strengthening co-operation between tertiary education institutions and forming new consortia between universities and polytechnics
- Intensifying research and development in polytechnics as well as their co-operation with regional organisations
- Rationalizing tertiary education provision by reducing the number of providers or by merging of institutions
- The unifying of the system of external decision making for polytechnics
- The standardisation of the system for external oversight and funding of the polytechnic sector. Polytechnics receive much of their funding from the Ministry of Education, but major oversight is the responsibility of bodies such as regional or city councils.
- Changing existing polytechnic funding mechanisms by introducing a more stable, measurable and incentive-based system
- Strengthening the development of internationally competitive universities
- Intensifying quality assurance systems
- Continuing to develop a university funding formula based more on the attainment of results and on institutional outputs
- We do not yet know how the university Master's programmes will be accredited. The best Master's programmes may turn out to be an asset for Finland in the international education market. They may attract many more foreign students to Finland than is now the case. In recent discussions it has been suggested that the universities should be able to charge tuition fees for Master's programmes, which would influence not only university financing but also social access to tertiary education.
- Shortening the time elapsed between the completion of secondary education and the commencement of tertiary education.
- Introduction of new forms of student guidance, evaluation and assessment intending to improve the follow up of students, reduce numbers of drop-outs and study interruptions, and to induce students to complete their studies at a younger age
- Intensifying internationalisation in HEIs by increasing the number of outgoing and incoming exchange students and number of foreign students. Measures will also be taken to improve

the possibilities, capabilities and mechanisms to enable foreign researchers to work in Finland.

- The university sector will be developed into a world-class system in Finland's areas of strength and which will continuously generate new research openings and initiatives. The polytechnics will be developed as regional forces. The higher education system will not be further expanded.
- The higher education institutions will have to combine their resources into larger entities and to boost networking, management and impact analysis. Universities will improve their international competitiveness by raising their profiles and by investing in high quality research across disciplinary borders and research personnel of an internationally-recognised high standard. The organisations with oversight over polytechnics, together with the Ministry of Education, will have to ensure that polytechnics are of a sufficient size, are multi-disciplinary in range, and invest in high-standard education which is responsive to regional work and life needs.

CHAPTER 1.

The national context of tertiary education

1.1 Economic structure

The Finnish economy has historically relied on the utilisation of the large forests. After the Second World War, Finland created a metal and engineering industry sector alongside the traditional forest industry. In recent decades, Finland's success in building a globally oriented electronics industry has diversified the production structure.

For the moment, there are three almost equally important export sectors in the Finnish economy: electronics and electrotechnical goods account for 27.5% of the exports; metal and engineering products 27.1%; and forest industry products 27.1%. The chemical industry is the fourth largest export sector.

Finnish industry is exceptionally dependent on the importation of raw materials, machinery and components needed to manufacture products for both the domestic and export markets. Consumer goods, such as textiles, clothing and cars, make up almost 25% of total imports. From 1997 to 2001, the electronics industry enjoyed rapid growth, which meant a significant increase in production.

The forest industry has always relied on processing domestic timber resources for the export market. The emphasis has been shifting from

mechanical wood processing to paper and pulp. Growing competition and globalisation have had an impact on the forest industry: Finnish companies have expanded their operations abroad and merged to form larger units. The metal and engineering industry has been growing in terms of both production and its employment effect. The food industry used to be predominantly domestic until recently, and Finnish agricultural products were primarily used by Finnish consumers. However, with Finland's accession to the EU the situation has changed, and now the entire food sector has to tackle international competition. The food industry's answer to the ever keener competition has been to invest in product development.

Industrial production has grown rapidly and productivity has increased since the mid nineties. There is a positive relation between information technology investments and corporate productivity. The new information and communications technologies have required organisational rearrangements within companies. The deregulation of markets has proceeded rapidly. The basic aim of industrial policy is to support entrepreneurship and promote the transparency and functionality of the market. In practice, Finland abolished all restrictions on foreign ownership in the 1990s, and Finnish competition policy has been in line with EU statutes ever since. As a member of the European Union, Finland is part of the single market. The EU membership has meant closer industrial contacts with Europe and with Member States in particular.

Business expanded rapidly in the information sector in the 1990s, but the number of companies in this sector is still small. In 2001 the information-related sector comprised fewer than 15,000 companies, which is 6.4% of the total number of companies. On the other hand, one in ten employees works in an information sector company, and, counted in net sales and payroll, the relative share of the sector is even larger. Large companies are common in the information-related sector. The most important goods produced are radio and television sets and other equipment (such as mobile phones), their net sales having increased fivefold

since 1993.

Operations in the information sector are concentrated geographically. The Uusimaa region in the south accounts for more than half of the workforce and net sales in the sector. Other regional concentration centres are Southwestern Finland, the Tampere region, and the Oulu region in Northern Ostrobothnia.

The process by which information and know-how became Finland's key resource is also reflected in the rapid increase in research and development spending. In 2004 R&D represented 3.5% of GNP. The communications sector has made substantial input into innovation. The relative input into R&D in the ICT sector is by far the highest in the OECD countries. ICT also influences innovation in other sectors and has facilitated inter-company R&D collaboration, as well as cooperation between companies and the scientific community. Information and innovations also spread more rapidly than before.

Exports from Finland have grown at an extremely rapid rate since the early 1990s and export growth has been a key element in the economic restructuring. Whereas in 1990 exports accounted for 23% of GDP, by 2001 the figure had soared to 42%. Growth has been made possible by competitive prices and expertise in high-tech production and product development. The export volume rose by 17.7% in 2000. Exports of electronics and electrotechnical industry grew by as much as 50%, as markets expanded rapidly and Finnish exporters won new market shares. Exports of the traditional metal and engineering industry products also grew substantially.

Table 1. Value of exports and imports in 2002

| Countries | Exports | Imports |
|------------------------------|-------------|-------------|
| | % by region | % by region |
| EU-countries | 54.0 | 55.7 |
| Central and eastern European | 7.2 | 6.0 |
| EFTA | 3.8 | 4.6 |
| Rest of Europe | 8.0 | 10.8 |
| NAFTA countries | 10.0 | 7.1 |
| Asia | 9.4 | 12.5 |
| Middle East | 3.1 | 0.3 |
| Central and South America | 2.0 | 1.6 |
| Africa | 1.6 | 0.6 |
| Oceania | 0.9 | 0.8 |

1.2 Population growth and demographic patterns

Ethnically speaking, Finland is a very homogeneous nation. The country has two official languages: Finnish and Swedish. In 2001, 91.3% of the population were Finnish speakers and 5.4% (281,000) Swedish speakers. There are about 1,700 indigenous people whose first language is Saami, and 21,000 residents whose mother tongue is Russian.

The number of foreigners residing in Finland has traditionally been very low, but constantly growing. In 1980, there were 12,800 foreigners, with the largest numbers coming from Sweden, Germany, the United States and the Soviet Union. In 1990, the figure had grown to 26,000, with Swedes still the largest group and Russians on the increase. According to 2001 statistics, the number of foreigners in Finland is 99,000, with Russians as the largest group (about 20% of the total), followed by Estonians, Swedes and Somalis.

In Finland families most commonly have one child, which makes 44% of all families with children; 38% of families have two and 4% four or more children. In 1970, almost 10% of all families had four or more children.

The net immigration was 0.5 per 1,000 in 1970 and has been steadily growing. In 2000, 14,000 Finns emigrated and 17,000 people immigrated to Finland, the principal countries of origin being Russia, Estonia and Sweden (most of the latter are originally Finnish citizens returning from Sweden).

Compared with other countries in Western Europe, Finland has few refugees and asylum-seekers (c. 3,000 annually). In 2000, under 2,000 refugees and asylum-seekers entered the country as new residents. The total number of refugees in Finland was about 19,000. People of Finnish extraction in Russia (e.g. Ingrians) resettling in Finland are regarded as ethnically Finnish remigrants.

Demographic data indicates that the Finnish population is aging. The proportion of children under 15 of the population has dropped to 18% from 30% in the 1950s and the proportion of elderly people (over 64) has grown from 7% in the 1950s to 15%. The average life-expectancy is 81 years for Finnish women and 74.1 years for men.

By its economic structure, Finland is a typical urbanised country. The percentage of people active in the workforce has decreased and is now about 66% of the population. The unemployment rate has remained high in Finland during the past ten years (14.8% in 2000). Primary production currently provides employment for only 6% of the population, while 27% work in industry and construction, and 66% in trade and services.

In the 1980s and 1990s, relocation within Finland did not reach the proportions it had in the 1960s and 1970s. People mainly move within their municipality of residence. Some 530,000 Finns (10.2% of the population) move within their municipalities each year and 260,000 (5%) move to a different municipality. This migration is no longer as strongly directed from rural municipalities to the towns and cities, particularly in the Helsinki Metropolitan Area, as it was three decades ago, but the trend is still the same.

In 2000, the Finnish labour force was 2,589,000 people. The proportion of working-age population belonging to the labour force has always been high in Finland. Although the work partici-

pation rate has declined as a result of the recession in the 1990s, it is still above the OECD average. As in other Nordic countries, the relative share of women in the workforce is extremely high, partly owing to extensive public welfare (e.g. day-care) services.

The rapid rise in the educational level of the labour force is reflected in the great differences in the level of education between different age groups. Among the employed, the age group with the highest educational level is the 25-to-34-year-olds, about 40% of whom had a tertiary degree in 1997. The corresponding figure for the 55–64 age group was a good 18%. The educational level of those leaving the labour force is low, while those entering the labour force are highly educated.

CHAPTER 2.

Overall description of the tertiary education system

2.1 The Finnish tertiary education system

The Finnish tertiary education system comprises two parallel sectors: universities and polytechnics (see Figure 1). There are 20 universities in Finland: ten multi-faculty institutions, three universities of technology, three schools of economics and business administration, and four art academies. University-level education is also provided in a military academy under the Ministry of Defence. Universities focus on scientific research and education and have the right to award doctorates.

The first university degree, Bachelor's, can generally be attained in three years of full-time study (180–210 ECTS credits) and the higher, Master's degree (120–150 ECTS credits), in 2 years. There is an optional intermediate post-graduate degree of licentiate, which can be completed in two years of full-time study after the Master's degree. Full-time studies for a doctorate take approximately four years following the Master's degree.

The Universities Act (1997) assigns four missions to the universities: to promote free research; to

promote scientific and artistic education; to provide higher education based on research; and to educate students to serve their country and humanity. The amendment of law in 2004 added to the duties of universities the third task, obligation to serve their surrounding,

The Finnish polytechnic system was set up over a period of ten years, which comprised a pilot phase and a subsequent stage in which the operations were given their final form. In the reform, the vocational colleges joined forces and formed larger entities, upgrading their education to the tertiary level. The first polytechnics gained a permanent status in August 1996 and the last five as recently as August 2000.

Polytechnics are professionally oriented higher education institutions (HEIs). In addition to their educational role, polytechnics conduct applied R&D which serves teaching and the work life. Today there are 29 polytechnics operating under the Ministry of Education. Moreover, there is Åland Polytechnic (*Högskolan på Åland*) under the jurisdiction of the self-governing Åland Islands and the Police College of Finland, which operates under the Ministry of the Interior. The polytechnic network covers the entire country from the north to the south and from the east to the west, catering for the speakers of both national languages.

Polytechnic degrees are Bachelor-level tertiary degrees with a professional emphasis and take 3.5 to 4.5 years to complete. The main aim of the polytechnic degree programmes is to provide professional competence. The largest fields are engineering, business and health care. The degrees vary from 180 to 240 ECTS credits, which correspond to three or four years of study, depending on the field. All the training programmes include obligatory work practice. The newest part of the system are post-experience graduate degrees with the duration of 3–5 years.

The polytechnics gained a permanent status in legislation passed in 2003. According to the Polytechnics Act, these institutes provide professional education, support professional development, conduct applied R&D which supports regional development, and offer adult education.

2.2 Emergence of the tertiary education network

Finland's first university, the Academy of Turku, was founded in 1640. Its main task was to educate clergymen and civil servants to administer the territorially and politically expanding kingdom of Sweden. The educational ideals of the period were a mixture of Classical heritage and Lutheran doctrine. Approximately half of the students entered the service of the Church after completing their studies.

After two hundred years later, by which time Finland was an autonomous Grand Duchy of Russia, the Academy was transferred to Helsinki, where it reopened in 1828 as the Imperial Alexander University of Finland.

The University of Helsinki remained Finland's only institution of higher education until 1908, when the Helsinki Institute of Technology, founded half a century before, was given university status. Soon after, the Helsinki monopoly crumbled, as two universities were founded in Turku (the other a Swedish-language university), in 1917 and the Finnish-language University of Turku in 1920.

The University of Technology was later joined by other professionally oriented institutions: Two Schools of Economics and Business Administration were established in Helsinki in 1920s, one giving instruction in Finnish and the other in Swedish, and a Swedish-language School of Economics and Business Administration was founded in Turku, although this later merged with the Åbo Akademi University. The College of Veterinary Medicine was established in Helsinki in the 1940's; the Finnish-language Turku School of Economics and Business Administration in the 1950s. The emphasis on commercial and technological training reflected the new needs of the business world. The network of specialized institutions of higher education was completed with the founding of the Tampere University of Technology and the Vaasa School of Economics and Business Administration (renamed the university of Vaasa in 1991) in the late 1960s.

A need for small specialist institutions was also felt in the social sciences and pedagogics. The

teacher training college established in Jyväskylä back in the 19th century was renamed The institute of pedagogics in 1934 and enlarged to form the university of Jyväskylä in the 1960s. At about the same time, the College of Social Sciences, founded in the 1930s, became the university of Tampere. The universities specialized in education and social sciences met part of the need to expand the higher education system.

The second phase of expansion with a strong emphasis on regional policy, began in the 1950s. Expansion was fuelled by change in the country's economic structure, high demand for an academically trained labour force, an increase in the number of matriculated students, and general rise in the standard of living. Demands were voiced for greater regional and equality in university admissions.

Several major decisions on expansion and placement were made in the 1960s and 1970s. Not one but three institutions of higher education were set up in eastern Finland: The university of Joensuu and Kuopio and the Lappeenranta University of technology. The university of Lapland in Rovaniemi was founded in 1979, being the last decision in this series. In the 1970's all private universities were subordinated to the Ministry on their own initiative.

A momentous political decision was to raise the schools for higher education in the fields of music, industrial art and theatre and dance to university status in the 1960s and 70s. In 1993, the Academy of Fine Arts joined the Sibelius Academy, the University of industrial Arts and the Theatre Academy as a part of higher education system.

All teacher training came under the higher education system when the teacher training institutes acquired university status in the 1970's. They were followed by kindergarten teachers in the early 1990's after a strong competition with the newly founded Polytechnics. The language institutes, which previously trained translators, merged with universities in 1981.

The founding of new polytechnics in the early 1990's practically ended the expansion of tertiary institutes. Since then discussion about the optimal number of tertiary units has strongly intensified.

2.3 A dual model of tertiary education

The dual model of the Finnish tertiary education goes back to 1989. It was seen at the time that the polytechnics would be the best solution to the functional shortcomings in the post-secondary education system of the time. The vocational colleges were too "low" in the education system, and their potential was not used to the full. It was also believed that the polytechnics would help clear a "backlog" of matriculated students.

During the first years of planning, the status of the new polytechnics remained unclear. University society and conservative parties were strongly opposing the founding of any competing tertiary institutions. Some planners saw the polytechnics as lower-level universities or institutes preparing for university studies. As the solution matured, the tertiary system was approaching a dual model, in which the polytechnics are equal to universities, yet having their own specific character. However, a great deal of development was needed to upgrade the old post-secondary vocational colleges to the tertiary level and make them fit to operate side by side with the traditional universities. The aim of higher education policy was to strike a new balance in the tertiary structure. Another goal was to offer a wide range of choices to students through a wide range of institutions with different profiles.

At the time the polytechnics were being developed, there was another route Finland could have taken. It would have been possible to give the existing universities larger latitude in expanding their supply towards more professional training in the fields now offered by the polytechnics. In this case, there would not have been two clearly separate categories of tertiary institutions, and the vocational colleges would have had to find their place in post-secondary education. It is difficult to say whether this solution would have resulted in a great degree of differentiation. It is doubtful whether the universities would have been able to cope with the growing responsibilities and whether the vocational colleges would have had a very promising future.

We know from experience that, set against each

other in competition, institutions tend to imitate each other. The best solutions travel from one institution to another, and little by little the institutes start to resemble each other. This could have been the fate of higher professional education, had it been incorporated into universities.

The dual policy can be seen as one form of regulation by the authorities. Through this policy, the authorities try to induce diversification within the tertiary education system, while at the same time promoting stability. However, the tenet in Finland was that, rather than letting the sectors of tertiary education drift too far apart, they should be encouraged to engage in close collaboration. Individuals, ideas and projects should be able to cross the boundaries between these two sectors.

Had there not been a clear aspiration to have two different sectors, tertiary education could easily have become uniform. It is not very likely that the institutional hierarchies would have disappeared, in fact, they could have grown more acute. The fact that tertiary education is divided into two sectors – practical and theoretical – may also encourage the institutions to develop their own individual profiles.

The dual policy has several special characteristics:

- a. The present dual system is specific to Finland in that the two tertiary sectors are fundamentally different. The polytechnics are seen as institutions which prepare their students for practical work, while the mission of universities is more academic and has a theoretical and research orientation.
- b. The degrees and degree programmes are different in polytechnics and universities. The universities have a two-cycle degree structure (Bachelor-Master) while the polytechnics have so far had only one level of degrees (Bachelor). A three-year pilot of postgraduate polytechnic degrees was launched in 2002.
- c. The model of administration is different in the universities and the polytechnics. The universities are maintained by the state,

while the polytechnics are run by municipalities, joint municipal bodies or foundations.

These maintaining organisations – and external partners – have a stronger role in their administration, sometimes also a more direct impact on their operations.

- d. The administrative structure and staff categories of universities are largely geared to support research, while polytechnics are mainly institutes of teaching, with fewer research-related tenures. The polytechnic organisation follows a conventional organisational model, while the operative focus in the universities is often on the level of departments or individual professorships. The universities in Finland follow Humboldtian model.
- e. The funding systems are geared to support the special mission of each sector. In universities, external funding is largely targeted to research. At first, polytechnics obtained funds for the development of their basic operations and later for teaching and the regional service functions.

Several follow-up studies have shown that the dual ideology has been well received both by the labour market and by students seeking admission to tertiary education. The more professionally oriented candidates apply to a polytechnic and the more theoretically disposed choose the university. This clear division is also reflected in the opinions expressed by employers. With their distinct profile, polytechnic graduates compete for the same jobs with university graduates. There is consensus in Finland concerning the respective missions of the polytechnics and universities.

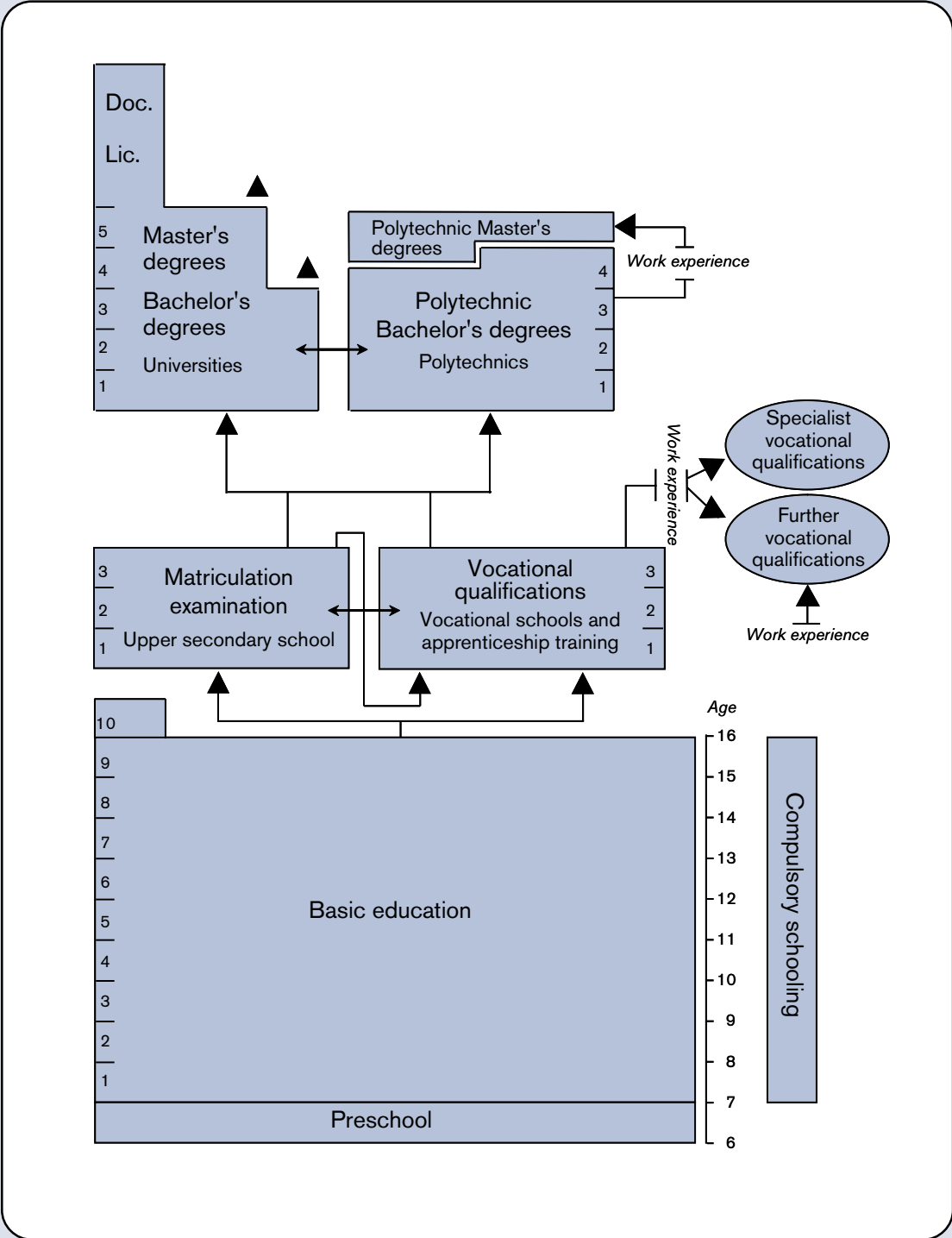


Figure 1. The education system in Finland

2.4 The overall size of the tertiary education²

The provision of tertiary education in Finland is extensive. The annual student intake in tertiary education as a whole is equivalent to about 65% of an average 19–21 age group. In 2003 there were around 174,000 degree students in universities, 83,000 in open university and over 129,000 in polytechnics (see detailed tables in the appendix³).

Polytechnic education has been provided since 1991. The polytechnic system grew to its planned extent between 1997 and 2003. The annual intake increased by over 4,700 students from 1997 to 2003. The overall student number grew from 28,500 to 129,000 in the same time. At the end of 2003 the total number of graduates was 102,000.

2.4.1 Studies

The average duration of university studies in 2003 was 7 years. Architecture (Master's 10 years) and music (7.5 years) had the longest study times (see table).

In 2001–2002 the discontinuation rate in universities was 6.7% (c. 5,600 persons), 5.3% dropping out permanently (exited from the education system), while 1.4% transferred to another field of study. Altogether 5.9% of the university dropouts (330 persons) transferred to polytechnics. The dropout rate was the lowest in Medicine (1.6%) and clearly the highest in Sport Sciences (16.8%).

In 2003 the average duration of polytechnic degree studies in youth education was 4.1 years and 3.2 years in adult education. The average study time was the longest in Technology, Communication and Transport, in Culture, and in Natural Resources and Environment (4.4 years).

In 2001 and 2002, nearly 11,000 polytechnic students (7.6%) discontinued their studies. In

youth education the percentage ranged from 4.7% to 12.7% depending on the institution, and from 4.2% to 10.6% depending on the field. Of the dropouts, 1.4% started in another polytechnic and 0.7% (1,700 students) in a university.

In 2002, the average age of polytechnic graduates was 25, university Master's graduates 27 and new PhDs 36.

2.4.2 Graduate placement

The employment situation among university graduates has not changed much. According to Statistics Finland, the unemployment rate for university graduates aged between 20 and 64 was 3.7% and for those with postgraduate or corresponding researcher training 2.4%.

In 2001 the unemployment rate for those with a Master's degree was 3.7% and 2.2% for licentiates and doctors. 83.5% of Master's degree holders were salary earners, 1.1% were self-employed and 5.2% were studying.

The placement of polytechnic graduates of 1998–2002 was the following at the end of 2002: 82% were employed, of whom 80% were salary earners and 2% self-employed; nearly 8% were unemployed; 5% were studying; and 2% had moved abroad.

Universities and polytechnics have taken measures to promote graduate placement, for instance by stepping up advisory and guidance services and developing internships.

2.4.3 Personnel

In total, universities employed in 2004 some 36,800 persons, of whom 25% were teachers. The number of professors was 2259. Other teacher categories are assistants, senior assistants and lecturers. In addition to those enjoying tenure, an other half of the staff has been funded by external

² The data is from the KOTA (university) and AMKOTA (polytechnic) databases, which contain key data describing higher education activities and serve HEIs, the Ministry of Education and other stakeholders. The data are also used in the development, monitoring, evaluation and steering of HEIs. Some data come from Statistics Finland.

³ Statistical changes are shown in the Appendices (the text mostly uses 2003 statistics).

contracts. Nearly 60% of lecturers, 22% of professors and 50% of assistants are women.

The major dynamic element in university personnel in recent years has been the increase of part-time and externally funded personnel. Structure of posts and salaries within permanent personnel have stayed quite stable since the Second World War. For the moment there are pressures to reform university staff salaries into a more flexible and encouraging form.

The student-teacher ration in universities is 22:1, and 2.7 new students are admitted per teacher. There are 1.6 Master's degrees awarded per teacher and 0.6 doctorates per professor.

In 2003 the overall polytechnic workforce was 10,500, of whom 56% were teaching personnel. The largest teacher groups were senior lecturers and lecturers, the rest were principal lecturers, of whom 26.4% were PhDs and 38% licentiates. Most lecturers had Master's degrees; 2% were PhDs and 6% licentiates.

The non-teaching staff in polytechnics amounted to 44% (4,620 persons). They mostly work in general, personnel and educational administration and in library and information services.

2.4.4 International mobility

In recent years, universities and polytechnics have been stepping up their international activities in both education and research. In 2003 the total number of Finnish students going abroad was 7554. Compared with the 2002 figure (7434) the increase was 122 or nearly 2%. Like in previous years, about one in five university students (19%) and one in seven polytechnic students (14%) studied part of their degree course abroad. The national aim is that by 2010 the number of students going abroad will reach 14,000.

The number of foreign exchange students has been growing steadily for several years. In 2003 Finland received overall 6,616 foreign students and trainees, which means an increase of 590 students, or 10%, from 2002.

International exchanges have grown in universities mainly through multilateral exchange

programmes. In 2003 the number of Finnish university exchange students was 3,863. The number of foreign students who came to Finland grew by 5.4% from 2002. In 2003 a total of 3,987 university students came to Finland to study.

In 2003, 15% of Finnish university researchers worked for two weeks or longer in foreign universities and 1,088 foreign researchers came to work in Finnish universities for one month or longer. The average duration of research visits was 4.9 months.

In 2003, 3,691 polytechnic students studied or did work practice abroad for three months or longer. The average duration of students' stay abroad was 4.8 months. In teacher exchanges, 44% of polytechnic teachers studied or worked abroad for one month or longer. Polytechnics received 73 exchange teachers or experts from abroad for one month or longer and 1,462 teachers for less than a month.

Both higher education sectors have continued carrying out development measures according to the internationalisation strategy adopted in 2001. The aim is to strengthen Finland's competitiveness in the international education market. The year 2003 did not see any major changes in the foreign cooperation partners. As regards both incoming and outgoing exchanges, Finland's mobility is very Europe-centred: 79% of mobility to Finland and 89% of mobility from Finland was with European countries. Most of other exchanges are with North America and Australia.

2.4.5 Research and development

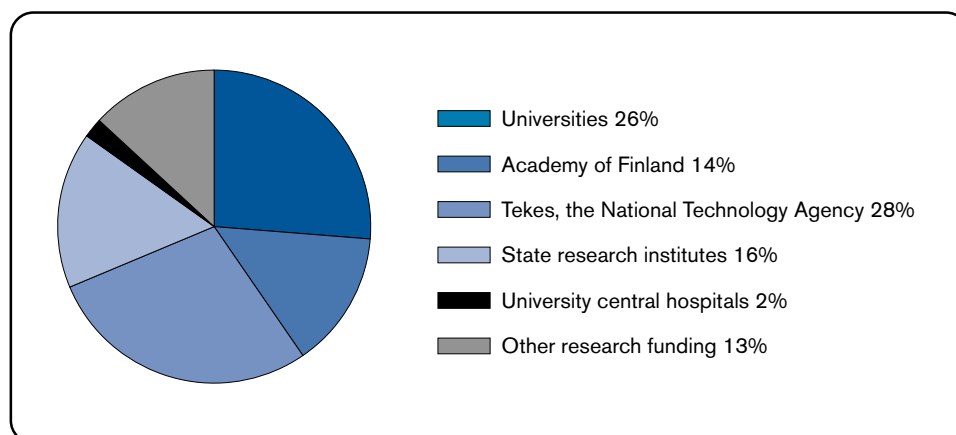
In 2003 the R&D expenditure in Finland was EUR 5.0 billion in all, which makes 3.5% of the gross domestic product (GDP). The higher education sector expenditure (universities, polytechnics and university central hospitals) was EUR 976 billion, or about 19 % of the overall expenditure. The business sector accounted for 70% and the public sector (mainly state research institutes) 10%. At 1% of the GDP, public R&D funding in Finland is among the highest in the world; the EU average is 0.77% (OECD).

Table 1. R&D expenditure by performer sector and source of funding in 2003

| Performer | Source of funding | | | | | | | | | |
|----------------------|----------------------|-------------|----------------|-------------|---------------------|------------|----------------------|------------|----------------|--------------|
| | Business enterprises | | Public sector* | | University sector** | | Foreign countries*** | | Total | |
| | € million | % | € million | % | € million | % | € million | % | € million | % |
| Business enterprises | 3,306.1 | 93.7 | 192.4 | 5.5 | - | - | 29.4 | 0.8 | 3,527.9 | 100.0 |
| Public sector* | 67.2 | 13.0 | 399.7 | 77.6 | - | - | 48.5 | 9.4 | 515.4 | 100.0 |
| University sector** | 56.0 | 5.7 | 386.2 | 39.6 | 454.6 | 46.6 | 79.6 | 8.1 | 976.3 | 100.0 |
| <i>Total</i> | <i>3,429.3</i> | <i>68.3</i> | <i>978.3</i> | <i>19.5</i> | <i>454.6</i> | <i>9.1</i> | <i>157.5</i> | <i>3.1</i> | <i>5,019.7</i> | <i>100.0</i> |

* Incl. private non-profit institutions

** Incl. university central hospitals and polytechnics*** In major corporations, funding received from the corporation's foreign enterprises is understood to be own funding, which diminishes the proportion of foreign funding



Source: Statistics Finland

Figure 2. R&D funding in the state budget in 2005 (%)

In 2005 the Ministry of Education allocated EUR 640 million to research, which represents 40% of all state R&D funding. Most of this sum was allocated to universities and the Academy of Finland, Research expenditure accounted for almost 11% of the total expenditure in the Ministry of Education administrative sector.

In 2003 external funding represented 77% of

research funding in polytechnics and 49% in universities. The foremost sources of research income for polytechnics were EU funds, domestic businesses and Ministry of Education project funding. The primary external sources of financing for universities were the Academy of Finland (research funding) and the National Technology Agency TEKES (technology funding).

2.5 Administration of tertiary education

All Finnish universities are state-run institutions and primarily financed from the state budget but the universities have extensive autonomy. The polytechnics are either municipally or privately run and co-financed by the government and local authorities.

Parliament passes educational legislation and decides on the overall lines of education and research policy. The universities are governed by the Universities Act and polytechnics by the Polytechnics Act. Legislation concerning the university degree structure is being revised to enable the new two-cycle degree structure to be adopted on 1 August 2005. The main policy guidelines and development targets are determined at a general level in the Development Plan for Education and Research, which is adopted by the Government for a six-year period and revised every four years. Performance management and target outcomes constitute the most important tool for the Ministry of Education in steering the operations of the universities and the polytechnics. This is strategic steering which implements the national tertiary education policy (Figure 3).

The polytechnics and universities are responsible for evaluating and developing their own operations and outcomes. The Higher Education Evaluation Council, established in 1995, is an advisory body which assists the universities and polytechnics and the Ministry of Education in evaluation and promotes evaluation as an integral part of institutional operations.

The national science, technology and innovation policies are formulated by the Science and Technology Policy Council, which is chaired by Prime Minister. The Council is responsible for the strategic development and coordination of Finnish science and technology policy. The Council advises the government and its ministries in questions relating to science and technology, the general development of scientific research and researcher training, and Finnish participation in international scientific and technological cooperation.

The national authorities primarily responsible for science and technology policy are the Ministry of Education and the Ministry of Trade and Industry. The Ministry of Education is in charge of matters relating to researcher training and science policy and the Academy of Finland. The Ministry of Trade and Industry deals with matters relating to industrial and technology policies, the National Technology Agency TEKES and the Technical Research Centre of Finland VTT. Nearly 80% of government R&D funding is channelled through these two ministries.

The Academy of Finland, the Finnish Research Council organization, takes care of the central research administration and finances a major part of the university research. The Academy has four research councils, appointed for three-year terms, each financing research in its disciplines. Another important task for the Academy is to evaluate research. Public funding for technology and development is channelled through TEKES, which also plays a major part in the external funding of the universities.

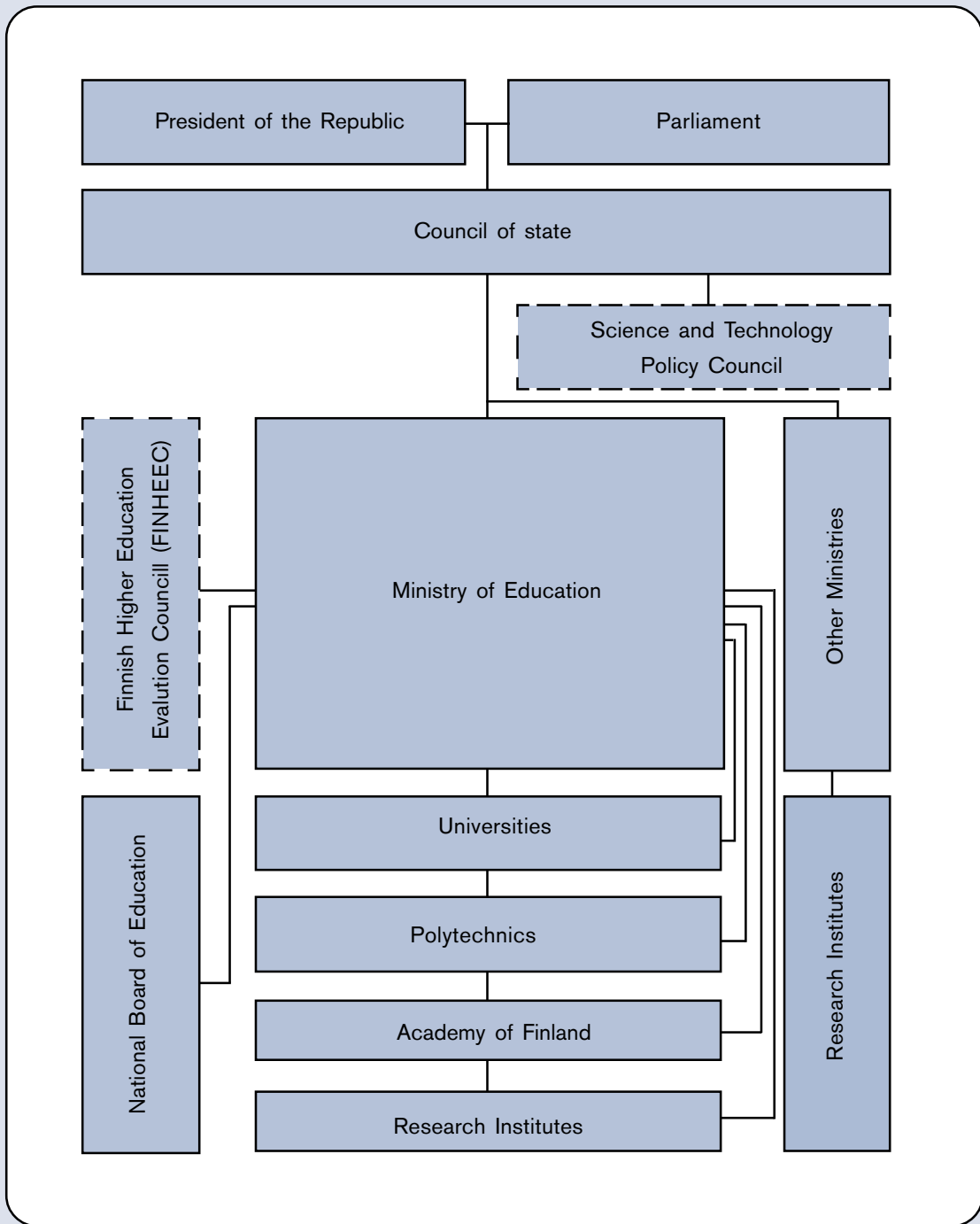


Figure 3. Central administration of tertiary education and research

CHAPTER 3.

Tertiary education system and the labour market

3.1 Historical background

Finland has a fairly long tradition in the anticipation of labour and educational needs. In the 1970s, educational foresight was organised into a Planning Secretariat of the Ministry of Education and a Consultative Council for Educational Planning attached to the Ministry. These bodies included representatives of the Ministry's different units and other educational agencies, provincial administration, other ministries concerned with education and training, and the social partners. From the outset, this organisation was charged with drawing up proposals for the supply of education and training by levels and fields of education in the longer term. One of the reasons for this activity was that up to the late 1980s the extent of both the national and regional supply of secondary and university education was determined by the central government.

The set-up changed in the early 1990s when neo-liberal political ideologies led to a wide-scale delegation of education policy decisions to the local level. In that connection, quantitative planning was devolved to the extreme. The rationale was that since the education providers and HEIs have

sufficient information to decide their own supply, state control was no longer needed to the former extent. The Planning Secretariat and the Consultative Council were abolished.

The experiences from the decentralisation were not altogether positive as regards the quantity of supply. However, this is not the main reason why educational foresight and more planned supply of education are gaining more ground again. The reason is primarily the foreseeable demographic development. The population is ageing: the large post-war age groups will start retiring en masse towards the end of this decade. The young age groups entering the labour market are considerably smaller than the baby-boom generation, and constantly getting smaller. From 2004 onwards the entrant labour force will be smaller than the exit. From 2010 onwards the annual labour need is estimated to be 10,000 larger than the entrant labour force. The labour force, and later the whole population, will gradually start to diminish.

As the foreseeable labour shortage seems to rock the very foundation of both society and the national economy, it is imperative that the education supply is quantified rightly: firstly in secondary vocational training, polytechnics and universities, and secondly by fields of education within these levels. This was the rationale for a large-scale foresight undertaken in connection with the preparation of the Development Plan for Education and Research 2003–2008. The aim was to set targets for education and training for 2008.

3.2 Foresight and quantitative planning of educational supply up to 2008

The number of tertiary graduates entering the labour market in Finland is regulated by means of a medium-term Development Plan for Education and Research, which sets quantitative targets based on long-term forecasts on the need for educated workforce.

The forecasts are two-fold. The future need for new entrants is estimated on the basis of the

outflow from the labour market mainly due to the age structure of the population and the resulting retirement rate. The second part concerns changes in the workforce as a whole and in selected occupational groups. This part is based on successive phases of estimations of economic growth and workforce, changes in the industrial branches and occupational groups. The needs arising from the outflow and changes in occupational structure together constitute the need for labour market entrants. The occupational figures are transformed into educational concepts with the help of occupation-education matrices.

The relationship between labour market demand and the supply of education at all levels of education is followed on a fairly regular basis. Monthly data on employment and unemployment is available by different levels and fields of education, and detailed and comprehensive data on education and jobs can be obtained from the census conducted every five years. Feedback from the labour market also comes through information provided by the polytechnics, the universities, employer and employee organisations and different cooperative and advisory bodies set up by the government.

The supply of graduates cannot match labour market demand exactly, firstly because the forecasts can give only a rough picture of future developments and secondly because short-term fluctuations are not predictable and therefore education and training, which may take 5–10 years, cannot be adapted to rapid labour market changes.

3.3 Foresight and quantitative planning of education up to 2008

The education foresight up to 2008 was conducted as follows:

- a. A Ministry of Labour project called Labour Force 2020, which involved many other ministries, including the Ministry of Education, devised a foresight ("basic scenario" and "target

scenario") concerning labour demand, or job creation, by industrial branches up to 2020.

- b. The foresight service of the National Board of Education forecast the development of the occupational structure of the labour force up to 2015, which is compatible with the labour demand foresight mentioned above. The forecast period was 2006–2015. Students who enrol in 2008 will mainly enter the labour market between 2011 and 2015. An important starting point for the forecast was the data on the occupations of the employed workforce collected by Statistics Finland in 1995 and 2000. Occupation-specific exit from the labour market (primarily retirement) was calculated on the basis of the age structure of 50 occupational groups, and the projected number of employed persons in these occupational groups was calculated in 22 branches of industry. The sum total of the change in the number of employed persons (plus or minus) and the outflow yielded the estimated number of new jobs becoming vacant during the period under review and subsequently the annual labour demand.
- c. Each occupational group was given an "optimal education/training profile", that is, it was estimated which education/training would be the most appropriate track for each occupational group in terms of the skill and knowledge demands. This was the basis for calculating labour demand by levels of education and by fields of education.
- d. To determine the target supply for 2008, it was necessary to take into account some education policy objectives, other parameters and the objectives set in the 2003 Government Programme for improving the efficacy and performance of the education system. The aim of the Government is mainly to step up transition to further education; to reduce dropout and to raise the graduation rate; to reduce unnecessary

multiple education/training; to shorten study times in higher education; to lower the age of labour market entrants; and ultimately to raise the employment rate. Similarly, the Government considers it important that the whole school-leaving age group continue in vocational training or in higher education and that vocational training provides eligibility for higher education, primarily to polytechnics but also universities. This aspect of the 2008 targets was deliberated within the scope of a Ministry of Education project Education Supply 2008, in which the Ministry of the Interior, which is responsible for overall regional development, and the Ministry of Labour were also represented.

It was on this basis that the entrant targets for vocational training, polytechnics and universities were calculated in youth education by fields of education for the year 2008. These figures were sent on a wide comment round together with the draft Development Plan for Education and Research. The final figures were adjusted according to the statements received, within political realities. The Development Plan was adopted on 4 December 2003.

In connection with the preparation of the Development Plan, the educational administration, the regional councils, the Ministry of Labour, the Ministry of the Interior and educational establishments drew up regional targets for each *maakunta*⁴. The Ministry of Education approved the indicative regional targets for 2008 in May 2004.

The Development Plan constitutes the national framework for education supply. The targets for each HEI are agreed by the Ministry of Education and the polytechnic/university in a performance agreement, on the basis of which the HEI determines its intake for each field of education. The performance agreement is concluded for a three-year period and certain parts of it are reviewed each year. The next agreement period will be 2007–2009.

⁴ *Maakunta* refers to the 20 historical counties in Finland, which are ethnologically unified areas. Although not a unit of official, elective administration, the concept of *maakunta* is increasingly used in regional development contexts after a reorganisation of regional administration, in which Finland was divided into five very large provinces (plus the self-governing Åland Province).

The Ministry of Education has already launched a project relating to the next Development Plan, which will set targets for 2012. The process will be similar to the one described above, but more attention will be paid to regional targets. The Ministry of Labour will also initiate a Labour 2025 project.

The present focus on anticipation is also manifested by the Government Foresight Network, which was instituted in early 2003 and in which nearly all the ministries participate.

3.4 Targets for tertiary education

The total number of post-compulsory certificates and diplomas awarded annually in Finland is 110,000–120,000, two thirds of which are upper secondary qualifications and one third tertiary degrees. The number of polytechnic degrees is 18,000 and university degrees 11,500.

The number of graduates is 900,000, which is one fourth of the total working-age (15–64 years) population.

The labour market situation for the graduate workforce has been in the 2000s quite reasonable. The unemployment rate in 2001 was 6%, as compared with the overall employment rate of 12% and with 19% among those with no post-compulsory qualifications. The annual income of the tertiary graduates is EUR 36,000, whereas the general level is EUR 27,000. University graduates earn EUR 45,000 a year. The income of polytechnic graduates is lower than that of those with higher vocational qualifications. One explanation is that since the polytechnic system is fairly recent, the graduates are still quite young and have not yet fully established themselves in the labour market.

The deep economic recession of the early 1990s is clearly reflected in the graduate employment situation. The overall unemployment rate hit the rock-bottom in 1993 when it was 23%. University graduates and postgraduate degree holders did fairly well during the economic crisis. Polytechnic graduates and those with equivalent qualifications were not as fortunate – at its worst their unemployment rate was 15%.

Table 2. Number of degrees and qualifications and population aged 15–64 by sector, 1990, 1995, 2001

| Level | Degrees | | | Population aged 15–64 1,000 persons | | |
|---------------------------|---------|-----------------|---------|--|-------|-------|
| | 1990 | 1995 | 2001 | 1990 | 1995 | 2001 |
| <i>All</i> | 112,400 | 118,600 | 115,200 | 3,361 | 3,413 | 3,476 |
| | Degrees | 15–64-year-olds | | 1000 pers. | | |
| | 1990 | 1995 | 2001 | 1990 | 1995 | 2001 |
| <i>All</i> | 112,400 | 118,600 | 115,200 | 3,361 | 3,413 | 3,476 |
| Upper secondary school | 27,200 | 33,800 | 33,700 | 234 | 260 | 304 |
| Vocational education | 48,900 | 43,200 | 44,500 | 993 | 1,051 | 1,119 |
| Tertiary education | 35,500 | 41,100 | 36,500 | 675 | 800 | 921 |
| a. Polytechnics | 23,800 | 26,700 | 21,000 | 439 | 530 | 604 |
| Vocational college | 21,200 | 22,100 | 3,000 | 386 | 463 | 480 |
| Higher vocational college | 2,600 | 2,900 | 100 | 53 | 66 | 65 |
| Polytechnic | 0 | 1,700 | 17,900 | 0 | 1 | 59 |

Table 3. Unemployment rate, annual income, salaries and wages by level in 1990, 1995 and 2001

| Level | Unemployment rate,% | | | Annual income, EUR 1000 | | | Annual salaries and wages, EUR 1000 | | |
|---------------------------|---------------------|------|------|-------------------------|------|------|-------------------------------------|------|------|
| | 1990 | 1995 | 2001 | 1990 | 1995 | 2001 | 1990 | 1995 | 2001 |
| All | 6 | 20 | 12 | 18 | 21 | 27 | 15 | 18 | 22 |
| Upper secondary school | 4 | 20 | 8 | 15 | 18 | 21 | 13 | 15 | 17 |
| Vocational education | 7 | 22 | 15 | 16 | 18 | 23 | 13 | 15 | 19 |
| Tertiary education | 2 | 10 | 6 | 25 | 27 | 36 | 22 | 24 | 30 |
| a. Polytechnics | 3 | 12 | 7 | 22 | 23 | 30 | 19 | 20 | 26 |
| Vocational college | 3 | 13 | 7 | 20 | 22 | 29 | 18 | 19 | 24 |
| Higher vocational college | 3 | 10 | 5 | 30 | 32 | 47 | 27 | 28 | 39 |
| Polytechnic | | | 9 | | | 24 | | | 23 |
| b. University | 1 | 6 | 4 | 32 | 34 | 45 | 28 | 30 | 38 |
| Bachelor | 1 | 7 | 5 | 26 | 28 | 35 | 23 | 25 | 30 |
| Master | 1 | 6 | 4 | 34 | 35 | 47 | 29 | 31 | 39 |
| Licentiate | 1 | 4 | 3 | 38 | 39 | 53 | 34 | 35 | 45 |
| Doctorate | 0 | 2 | 2 | 51 | 51 | 68 | 44 | 44 | 55 |

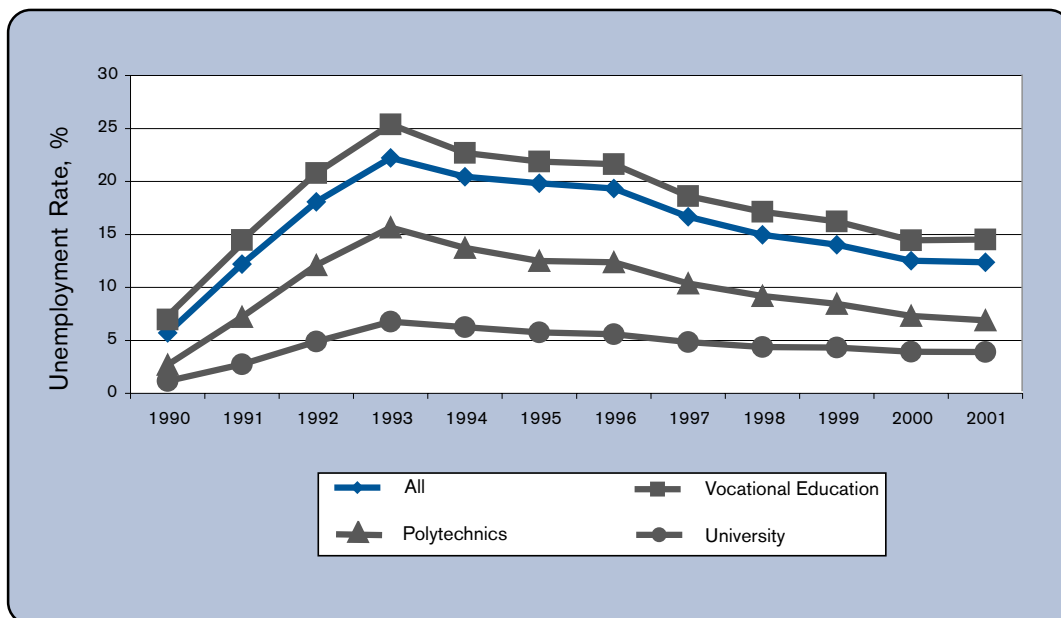


Figure 4. Unemployment rate of tertiary graduates 1990–2001

Income development has been slightly more positive among the highly educated population than among the population on average after 1993 (see Figure 5). This is true especially in respect of university graduates.

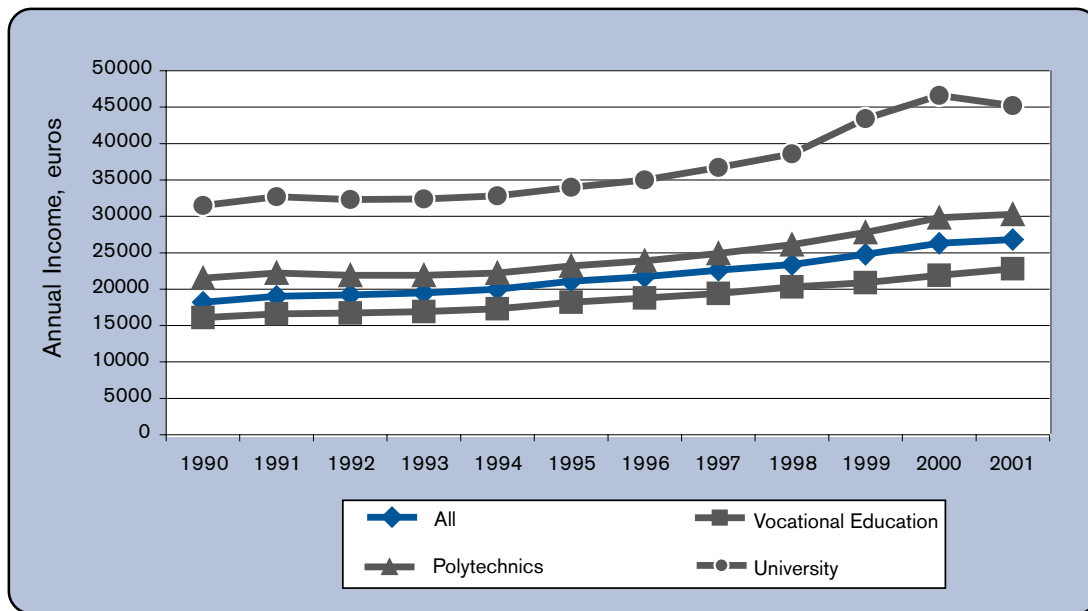


Figure 5. Annual Income of the tertiary graduates and the employed population 1990–2001, euros

3.5 The relationship between education supply and employment and income

There are some cases through which it is possible to investigate the impact of an increase or a decrease in education supply on the labour market situation. For example, the number of dental degrees has fallen approximately by 40–50% since 1997. Following the decrease, the unemployment rate fell by half and the annual income grew by one fourth. This could be taken as a sign of a link between a change in education supply and the labour market situation. In reality, the relationship between these factors is more complicated. As far as dental studies are concerned, there was also a decrease in dentists' jobs, so that it made sense to decrease the education supply. In the field of medicine, we can find a similar fall in the education supply and a resulting reduction of the unemployment rate. But in contrast to the dental field, the income level grew less than in comparable educational groups overall.

The correlation between changes in education supply and the unemployment rate and income

holds if the change in education supply corresponds to a change in relevant job-openings, i.e. a change in the outflow rate and in the number of jobs. Labour market entrants substitute retiring employees, as well as being hired for totally new jobs. Problems mainly arise in situations of economic recession or significant slackening of economic growth, when new jobs are not created and labour market entrants graduating from polytechnics and universities are mainly recruited to substitute retired employees. But if the supply exceeds the estimated number of job openings, unemployment will grow. Unemployment is a problem for the younger graduate labour force in particular because older employees generally have permanent jobs and only exceptionally lose them (e.g. through redundancy). On the other hand, young graduates are in high demand and readily hired in an economic boom thanks to their fresh knowledge and open-minded approach to new kinds of assignment.

Another factor is economic restructuring. In the late 1990s there were two shifts in the Finnish economy. The first one was a policy for restricting public sector growth and cutting public-sector jobs

and for encouraging the growth of the private sector. This meant that there was an over-supply in fields traditionally employed in the public sector. This concerned university graduates and polytechnic graduates in certain fields, such as nursing. This is shown in the following figure.

The second shift took place in the industrial structure. Since 1993 the ICT sector has increased its share of production and employment in the

national economy. In tertiary education this has meant growing demand for graduate and postgraduate degree holders, especially in engineering.

The third factor in income formation is the age of the graduates. The income level rises over time so that the older the employee is, the higher his/her annual income. A slight change has taken place in this respect during the past decade: age has more effect on income creation than before (see Figure 8).

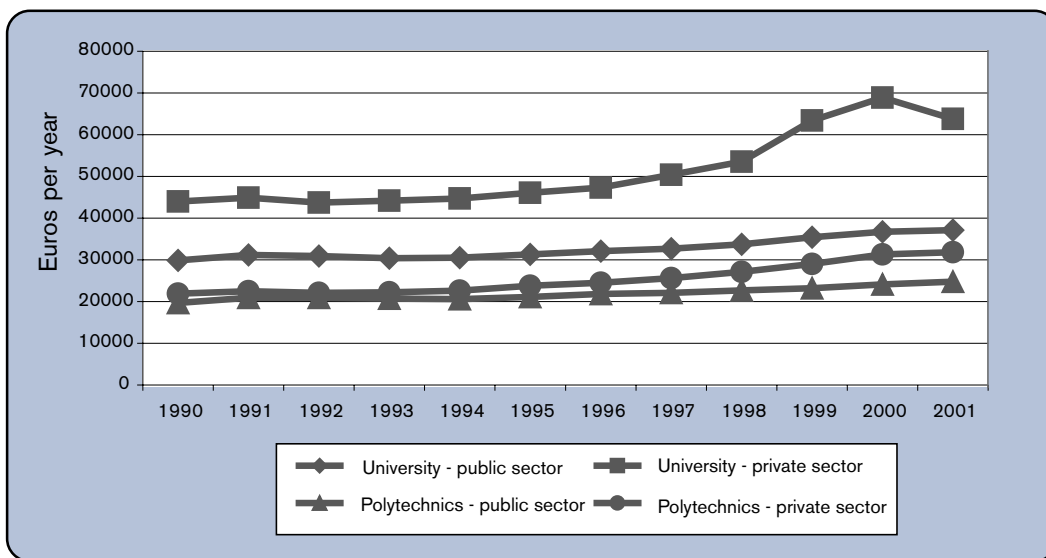


Figure 6. Annual income of polytechnic and university graduates according to the main sector of employment 1990–2001, euros

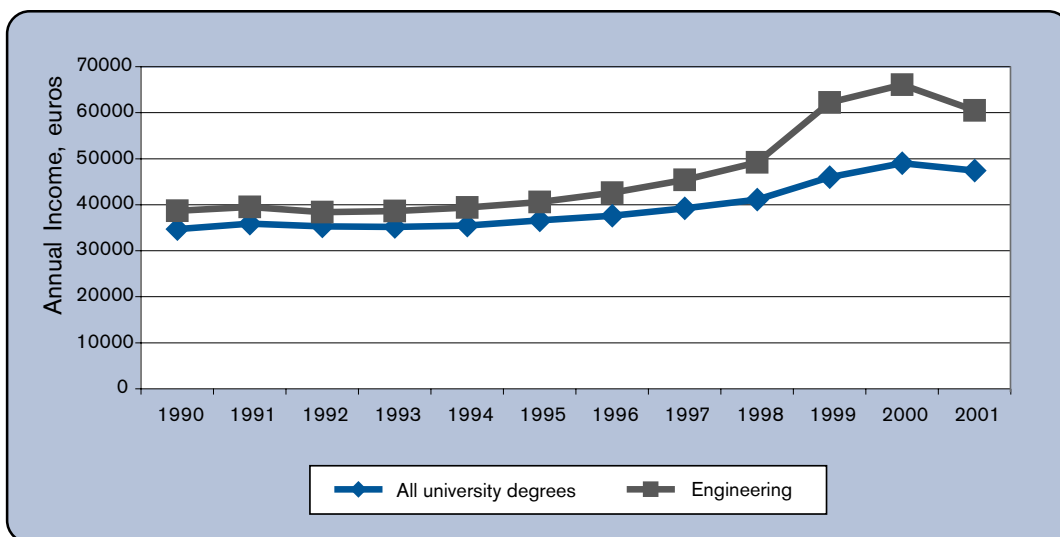


Figure 7. The annual income of all university graduates and engineering graduates 1990–2001, euros

This means that when the population ages, the average income level will grow if the income system remains unchanged.

Looking at the annual income from the point of the typical graduate occupations, we find out that a certain number of non-graduates are also employed in these occupations. The income level of university-educated employees is much higher than the other education groups. But if we compare

employees with only upper secondary school certificates – those who have not completed higher education studies – and polytechnic graduates, the difference in the income levels is not as substantial.

The income level varies according to the fluctuations of the national economy. The variation has been largest in post-graduate groups while university graduates have succeeded in maintaining and even increasing their income.

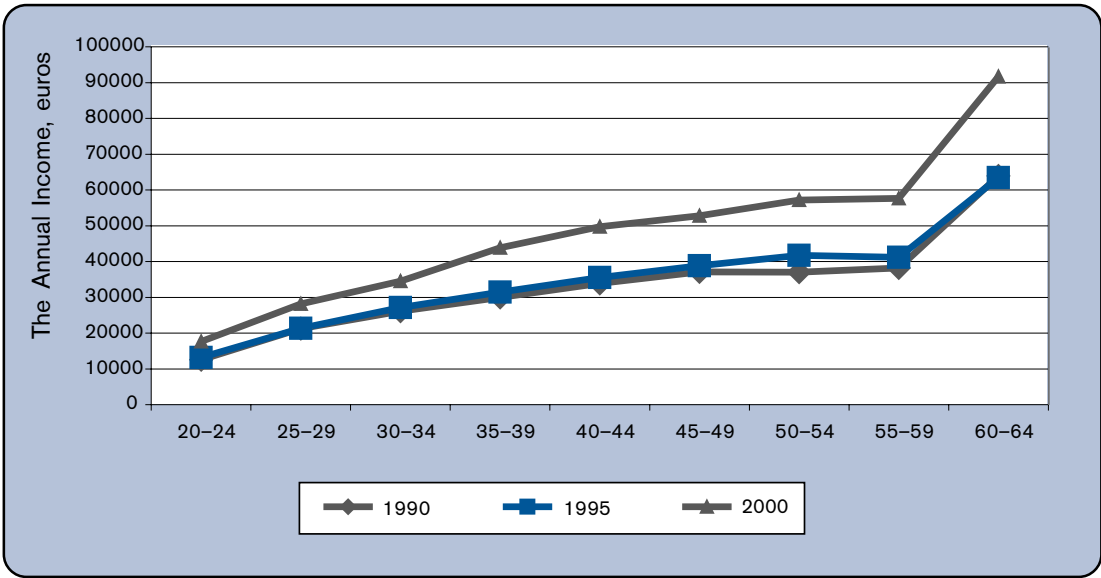


Figure 8. Annual income of all university graduates by age in 1990, 1995, 2000, euros

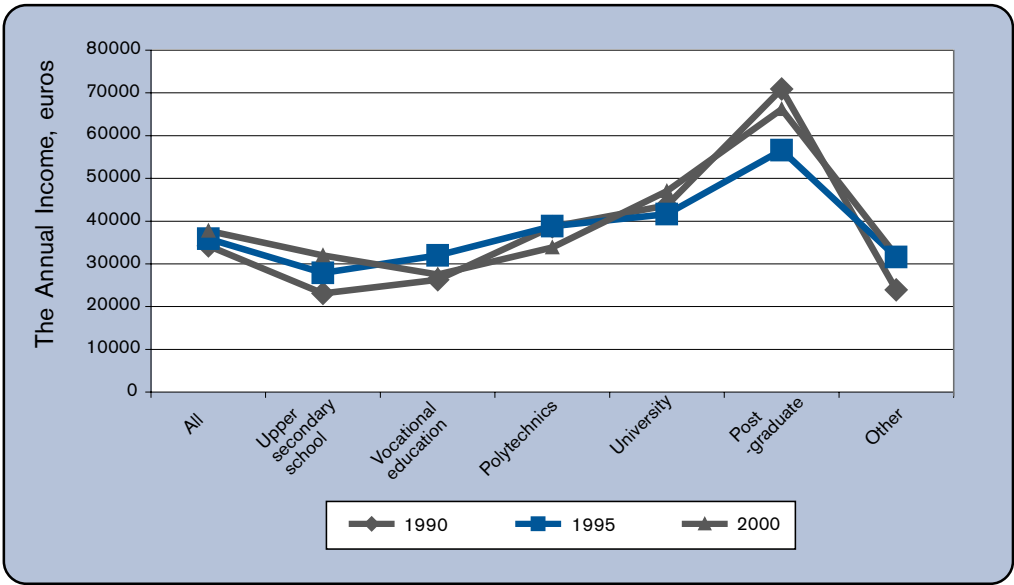


Figure 9. The annual income in Typical Higher Education Occupations by Sector of Education in 1990, 1995 and 2000, euros

CHAPTER 4.

The regional role of tertiary education

4.1 Finnish regional policy

In Finland, regional policy was discussed extensively in the 1960s and the 1970s. At that time, the focus was on the industrialisation of developing areas and the development of public services. The government played a central role in the development efforts. The first laws on regional policies were stipulated in 1966–1969 and 1970–1975. Their ideology was based on the principle of solidarity towards most depressed regions. One important target at the time was the regional expansion of the university system in order to balance regional supply of university places.

For the years of 1975–1981 a special law was stipulated to improve developing regions. That was the starting point of planned period of regional policy, which lasted up to the end of 1980s. The main target was a balanced national development. The ideology was based on legitimate justice. It was considered legitimate to invest on dynamic regional centres, if this investment will not surpass the interests of any other regions. At the same time university policy was targeted to structural changes in degree system and administration.

In the late 1980s, systematic efforts were made to develop the Finnish innovation system with a

view to better international competitiveness. It was seen important to invest in activities which generated and enhanced knowledge. The universities had an important place in the efforts. Another aspect which began gradually to gain ground was the need to develop the regions based on their own strengths. The government's role was to help create basic infrastructure in the regions and conditions conducive to effective operation of the infrastructure.

In the 1990s, the focus in regional development shifted to programme-based regional policy and legislative measures. The main responsibility for regional development still rests with the government and the local authorities. For administrative and operational purposes, the country is divided into regions (*maakunta*⁵). The regional councils became regional authorities, with responsibility for general regional policy planning. The Government has launched several regional programmes, in which the programmes for centres of expertise and regional centres have important functions. The ideology is based on utilitarianism, which is supposed to serve the whole national entity.

Another significant reform was a regional administration restructuring in 1997, in which employment and economic development centres were put in place to back up development in the regions. The regional authorities in the Ministry of Education sector are the provincial state offices, which have administered higher education matters mainly with regard to EU Structural Fund projects.

In the 21st century, the regional development legislation was amended with the aim of devolving decision power on the regions in matters concerning them. Each regional council devised a four-year regional programme for its *maakunta*, outlining regional development and its priorities. The regional councils prepare implementation plans for each year; the aim is that these are agreed with central government. Although higher education does not belong to the matters governed

by the regional development legislation, the *maakunta*-specific implementation plans list a number of expectations regarding universities and polytechnics.

Finland's accession to the European Union in 1995 was a milestone in regional development. The Structural Funds made resources available for various regional programmes and projects. Between 1995 and 1999, the Ministry of Education funded altogether 1,170 projects, allocating a total of EUR 420 million to them. The HEIs received nearly half of this sum. The European money has been especially welcomed to polytechnics, which started to take their first steps in research and development.

The Finnish Government is currently preparing measures for devolving central government responsibilities on the regions. The university and polytechnic networks are already regionally decentralised and therefore not included in this set of projected measures.

4.2 Decentralised tertiary education system

The Finnish tertiary education system of 20 universities and 29 polytechnics covers the whole country. Higher education has been developed as a dual system, in which each sector has a profile of its own. The universities are charged with academic research and education based on it and the polytechnics with higher education geared to the world of work and R&D which serves education, the world of work and regional development.

The Finnish university system grew into the present regionally comprehensive network during the 1960s and 1970s. The present 20 universities are based in 11 cities and towns, providing degree education in over 20 different localities. The aim of the regionally decentralised network is to make full use of the talent reserve of the country and to produce highly educated workforce for the needs of the growing public sector and the business sector.

⁵ *Maakunta* = a traditional county, not part of the official or elective administration; for a longer explanation see footnote in Chapter 3.3.

In the 1980s, the universities were increasingly seen as engines of regional development. This trend gained impetus from the improved possibilities for universities and the private sector to develop research cooperation. In the nineties, the focus in university development was on quality. At that time, the polytechnic system was being created.

The university network will not be expanded further. The focus is currently on enhancing the regional impact of the universities through closer cooperation and networking with business and industry and other regional players. This is a challenge especially with regard to R&D, which can thrive only in higher education units of sufficient size and versatility. The regional impact of universities is further strengthened by the adult education network, which also covers the whole country, and the recently established university centres. There are voices in national debate, which argue that university system is already too large. According to that argument universities cannot succeed in international competition, unless they are bigger in size. Some ultimists even claim that many units should be disclosed.

The official government policy stresses the importance of co-operation within the university system and with the polytechnics. For this purpose there are new kind of networked tertiary education institutions, which operate in six towns (Lahti, Mikkeli, Kajaani, Kokkola, Pori and Seinäjoki), providing an umbrella organisation for the fairly small university units in these places with a view to diffusing researched knowledge more effectively in the regions. Each network has a "parent university" responsible for the operation of the centres.

The polytechnic system was created in the early 1990s with the aim of upgrading vocationally oriented education and catering for the changing needs of the regions and the labour market. There is at least one polytechnic in each *maakunta*. Polytechnics provide degree education in over 80 different localities. Their adult education provision also covers the whole country.

Polytechnic education is currently being developed in two dimensions: as a stem network of degree education and as a service network providing

extension education and other services. The aim is to build a network in which all the degree education units are large enough to provide high-quality education and to conduct high-quality R&D in support of their regions. This will enable them to evolve into units of a high European and international standard. The structure and provision of polytechnics will be developed to enable them to become key factors in their regions, supporting local municipalities, businesses and work communities and catering for local residents' self-development aspirations.

4.3 Tertiary education and the national and regional innovation systems

At present universities and polytechnics are seen to be key components in the national and regional innovation systems, in which they operate in close interaction with business and industry and other regional players. As a result of the current technological advances and knowledge-intensive operations, economic and social development is increasingly built on human capital. The competition takes place in a globalising and increasingly international market. Innovative operations require ever more rapid knowledge and technology transfer and growing cooperation between all those involved in innovation. This means that the HEIs have a growing role in producing new knowledge and diffusing knowledge and know-how.

Since the nineties, Finland has been systematically creating a national innovation system, with the aim of putting all innovation resources and products to use as speedily and effectively as possible through strong and efficacious cooperation networks. The development of the innovation system is led by the Science and Technology Policy Council of Finland, which is chaired by the Prime Minister. The HEIs play a key role in the innovation system.

Universities have a special place among the regional stakeholders and have been variously called

"anchors", "dynamos" and "magnets". A university is an anchor when it offers such research-based assets to businesses in the region that they cannot afford to move their operations, at least not all of them, elsewhere. A dynamo generates new business and a magnet attracts new business. In addition to this regional mission, universities should naturally operate as strong traditional academic institutions which provide undergraduate, postgraduate and extension education based on spearhead research.

An obvious axiom with regard to HEIs is that the higher the quality of their education and research, the better their regional impact. High-standard education and research attract good students, researchers, experts and possibly also businesses. All this has many positive economic, psychological and cultural effects on the region where the university is situated. When this high-standard knowledge starts to generate regional, national and international networks between other researchers and research teams and businesses, it sets in motion a virtuous circle deepening and complementing knowledge and promoting effective utilisation of knowledge. This reinforces the economic base of the region and improves the competitiveness of local businesses.

Another, fundamentally more difficult, question is how HEIs should operate in order to generate these virtuous circles. There are basically two alternative procedures. In the first, HEIs base their focus on research, looking for influences, benchmarks and partners from world-class research. The danger is that the HEI may provide high-standard education and conduct world-top research, which may attract students and researchers but for which there is no or little demand or need in the region. The high-standard knowledge and competence trickles out of the region to other parts of Finland and possibly outside Finnish borders.

The other alternative is for HEIs to make a conscious, goal-oriented effort to anchor their education and research to the needs expressed or anticipated in the region by focusing their education provision on fields in which there is demand for knowledgeable workforce. Correspondingly, they focus their research activities on those fields of science and technology that are

known to be in demand among the businesses in the region.

The risk in this strategy is that such a heavy anchor in the perceived and expressed needs is not necessarily a sufficiently challenging basis for a HEIs operations and long-term development. There are regions in Finland which offer a challenging environment for HEIs, but not all do this. Lowering the sights will inevitably mean that the HEI will not be capable of conducting research at a level that would open gates to international spearhead research. Before long, their research would wither, as would, subsequently, their education.

In principle the solution is for HEIs to build their operations on further enhancing the strengths and opportunities in local production, while seeking to achieve the highest possible level in the chosen research fields. This makes it possible to bring about a state of affairs in which both local businesses and HEIs benefit. However, this requires adjustment from both business and HEIs. The major problem is not necessarily the supply of knowledge and know-how, but the capacity of business enterprises to assimilate knowledge and know-how.

4.4 The new regional role of universities

The regional and societal mission of HEIs is recorded in legislation. According to Section 4 of the Polytechnics Act, the mission of polytechnics is to provide education for professional posts and positions based on the needs of working life and its development and on research and artistic considerations; to support individual professional development; and to conduct research and development which supports regional development and is geared to the industrial structure of the region. The Act specifies that in executing its mission, the polytechnic must cooperate with industry and working life especially within its own region, with Finnish and foreign universities and other educational institutions. According to the Act at most one third of the members of the board of

the polytechnic may be persons representing business and industry and other working life.

The Universities Act of 2004 provided "third" mission of universities. According to the Act, "The mission of the university shall be to promote free research and scientific and artistic education, to provide higher education based on research, and to educate students to serve their country and humanity. In carrying out their mission, the universities shall interact with the surrounding society and promote the societal impact of research findings and artistic activities." The Act provides that at least one member must and at most one third of the university senate members may be selected from amongst persons who do not belong to the personnel or the students of the university.

Debates concerning the third mission place strong emphasis on the need to enhance the regional impact of universities. The aim of the Ministry of Education has been to allocate additional sources to the HEIs for their societal mission in order to prevent this from undermining their basic operations and activities. In 2001, 2002 and 2003 the Government allocated extra EUR 16.5 million for the regional development of HEIs. Many projects were launched. Corresponding funds were proposed for 2004, but were not forthcoming.

The quality of higher education is seen to be a factor securing national competitiveness. Sustained economic development in the regions entails international competitiveness. One answer to this has been a policy for centres of excellence. Certain units in universities are designated centres of excellence as a reward for good performance in education, research or adult education and in polytechnics for high quality in education and R&D or in regional impact. Quality assurance systems are also being developed in both universities and polytechnics.

International competition highlights the significance of international contacts. The capability of HEIs to conclude international contacts is of crucial importance for the regions.

Measures are being taken to further develop participation in student and teacher exchanges and in other international cooperation in line with the internationalisation strategy devised by the Ministry of Education for higher education.

4.5 Strategies underpinning regional development

The growing regional and societal role of HEIs has led to wide use of development strategies. The Ministry of Education prepared a regional strategy for its own sector for the period 2003–2013 and, based on this overall strategy, the Department for Education and Science Policy devised its own detailed strategy for the education sector.

The point of departure in the Ministry's regional strategy is that "Finland has high-standard educational, research and cultural services extending to all parts of the country, which promote welfare in Finnish society and the welfare and equality of its citizens and are responsive to changes in the operational environment."

The vision for the development of education and research is that Finland's welfare and international competitiveness rest on the continued vitality and innovativeness of the regions, which is promoted by a regionally comprehensive provision of education and research.

The regional impact of HEIs will be further boosted by the development of R&D and adult education alongside initial education. The response to the new regional educational needs is to make full use of the HEIs' current knowledge and service reserves and to enhance adult education provision. The provision of polytechnic adult education will be diversified in response to the needs of local business and industry. The *maakunta*⁶-based university centres (networked HEIs) will be developed to respond to regional needs.

The activities of the decentralised higher education network are underpinned by

⁶Maakunta = a traditional county, not part of the official or elective administration; for a longer explanation see footnote in Chapter 3.3.

the universities' and polytechnics' mutually complementary knowledge production, which in turn is based on their respective strengths. Collaboration and structural development promotes the emergence of sufficiently large and diverse units needed to ensure the quality of education and research. The polytechnic network is developed as a stem network providing degree education and as a complementary service network. The present university network and the university centres will be further enhanced with a view to a stronger regional impact.

Measures are being taken to strengthen the capacity of HEIs for cooperating and networking with other stakeholders in the region. Research infrastructures and support services will be developed to make quality R&D findings available in different parts of the country. Especially cooperation between HEIs in the Helsinki Metropolitan Area will be stepped up and their knowledge will be utilised more widely in the country. Regional cooperation between universities and polytechnics in research will be boosted and their participation in the regional programmes, the centre of expertise programmes and in science and technology parks will be promoted.

The regional strategies jointly devised by universities and polytechnics will form the basis for further clarifying the division of work between the institutions. At the request of the Ministry of Education, the first joint regional strategies were drawn up in 2002. In the main, the strategies are good, and the Ministry has allocated project funding to several joint undertakings. Several projects have also been co-financed from the Structural Funds.

The Ministry of Education has requested the HEIs to update their joint regional strategies by autumn 2005. The common aim is to devise strategies for areas that are larger than a municipality or a *maakunta* and to incorporate new regional development policies into them. The strategic significance of knowledge is seen in the fact that many consultative bodies have been set up, mainly at the *maakunta* level, with members representing the local HEIs, the regional

administration, local authorities and local business and industry.

During 2004 the polytechnics will update their R&D strategies, which primarily deal with questions of regional development and the role of polytechnics in the regional innovation system.

One future aim will be to utilise the EU Structural Funds and other international financing in the regional development of education, research and innovation in a way which will systematically promote the realisation of the objectives set in national higher education and regional policies. Cross-border networking between HEIs and regions also boosts the application of new knowledge and know-how.

According to the policy outlined by the Ministry of Education, regional disparities in the supply of higher education will be reduced. The Ministry has launched relevant preparations. The work is being done in cooperation with HEIs, the regional councils, and the provincial state offices, which are the regional authorities in the Ministry of Education sector. The targets set for regional education supply form the basis for the target outcomes determined in the performance negotiations conducted with the universities and polytechnic, in which the parties agree on the provision of each institution.

In an examination of the regional role of HEIs, it is worth bearing in mind that, although HEIs are key players in the regions, they are only one among many other players. Business and industry are still the primary generators and appliers of innovations. Other important players are research and educational organisations, producers of business services, etc.

The economic and social relationship between these players is similarly a major factor. The new development logic favours regions which are able to offer a wide range of quality opportunities: an innovative environment.

4.6 Structural development of the higher education system

In the effort to boost Finnish competitiveness, great expectations are directed at the HEIs in the regions. At its worst this has led to the establishment of externally funded professorships in different locations and graduate-entry programmes and graduate schools of small intakes and narrow knowledge base. There has also been growing interest in launching doctoral programmes.

In 2001 a Ministry of Education committee put forward proposals for stepping up the regional development of HEIs. The rationale was that no new institutions should be established, but the existing institutions should be reorganised into larger entities. In early 2005 the Government issued a decision on the structural development of the public research system. It, too, was based on the rationale that larger units will ensure better quality and impact. At the same time measures must be taken to intensify cooperation and networking between HEIs, major research institutes and business enterprises. Future input should be targeted to sharpen university profiles and to enhance internationalisation, new growth areas and impact. There has also been a debate on what kind of higher education system Finland will need ten years from now, as the age groups keep getting smaller.

The Ministry of Education is launching an action programme for structural development with the aim of achieving better value for money in universities and freeing resources needed to attain the targets mentioned above. Another aim is to take a critical look at the educational responsibilities of, and division of work between, the existing educational units. The structural development programme will be a major topic in the 2007–2009 performance negotiations.

Alongside this development, there is an active quest for measures to enhance the regional and societal impact of universities. This is facilitated by the possibility for universities to set up companies or purchase stock in companies whose aim is to

promote knowledge transfer and the commercialisation of inventions. The joint university-polytechnic regional strategies devised in autumn 2005 seek to intensify interaction between HEIs and the region where they are located. HEIs have also been actively involved in national programmes for regional development, such as the regional centre and centre of expertise programmes.

CHAPTER 5.

The role of tertiary education in research and innovation

5.1 Introduction

In the division of labour between universities and polytechnics in research, universities are responsible for scientific research and education based on it, including researcher training. Doctorates are awarded only by universities. Polytechnics mainly conduct R&D which caters for working life needs, serves teaching, supports industrial life and regional development, and is based on the industrial structure of the region. Universities also maintain most of the general scientific and research infrastructure, which is funded through the university budget.

The Development Plan for Education and Research 2003–2008 sets general priorities for R&D conducted in universities and polytechnics. According to it, the prerequisites of university research and polytechnic R&D will be strengthened, and development will stress high-quality, internationally competitive and ethically sustainable research. A more recent policy document, already mentioned above, is the Government Resolution on the Structural Development of the Public Research System (April 2005), which is expected to have a strong influence on the development of the whole higher education and research system in the coming years.

5.2 Financing sources for HEIs

Finland's input into R&D has grown substantially from the mid 1980s. In 2002 R&D expenditure totalled EUR 4.8 billion, which makes 3.5% of the gross domestic product. Investment in R&D has grown especially rapidly since the mid 1990s as the private sector has increased its R&D input radically. At the same time there has also been a considerable increase in public R&D funding. The substantial increase in R&D in the business enterprise sector has been mainly due to the ICT sector and more specifically certain major actors in the field.

From the mid eighties, when Finland's input into R&D was around EUR 900 million, it had more than doubled by the mid nineties. Today the total R&D expenditure in Finland is about EUR 5.250 million, which is five times the mid-eighties figure. The tertiary education sector expenditure (universities, polytechnics and university central hospitals) has grown accordingly from EUR 200 million in the mid 1980s, through some 400 million in the mid 1990s, to about EUR 1,000 million today.

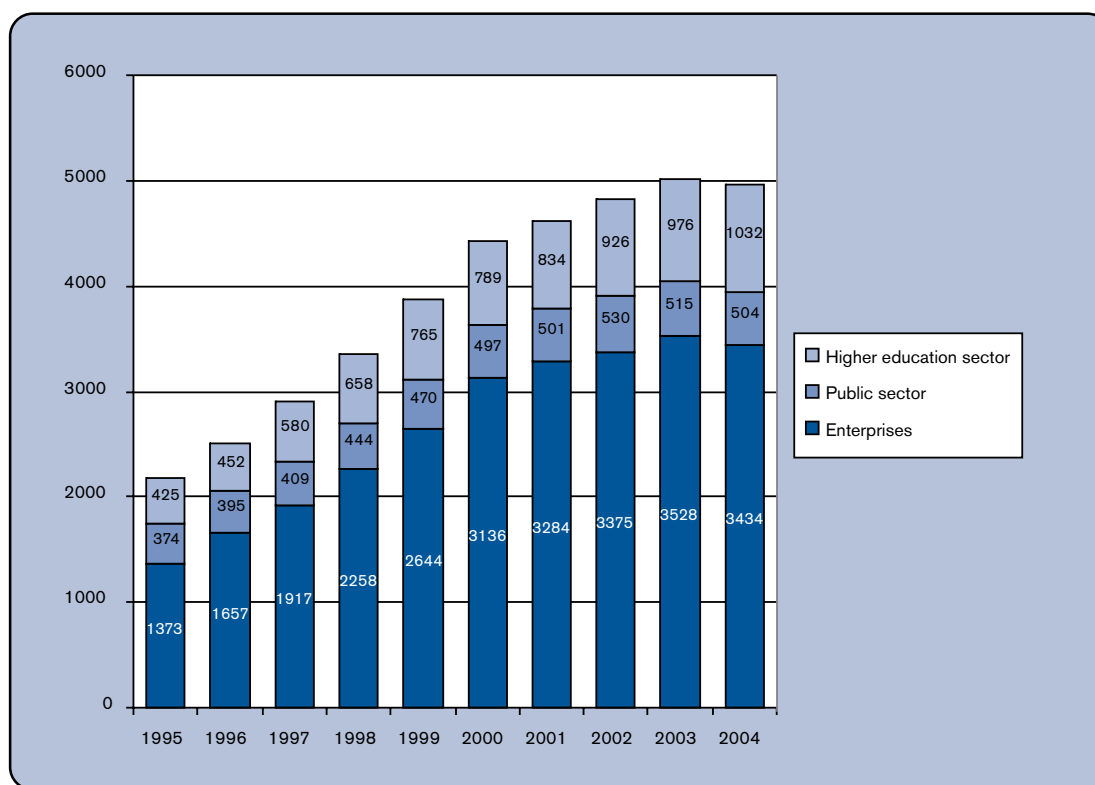


Figure 10. R&D expenditure by sectors (million euros) Source: Statistics Finland, Science and Technology Statistics

Table 4. Tertiary education sector R&D expenditure 1999–2003, million euros (Statistics Finland)

| | 1999 | 2000 | 2001 | 2002 | 2003 |
|------------------------------|------|------|------|------|------|
| Polytechnics | 27 | 32 | 44 | 56 | 67 |
| Universities | 667 | 689 | 716 | 786 | 820 |
| University central hospitals | 70 | 69 | 75 | 84 | 75 |
| <i>Total</i> | 764 | 790 | 835 | 926 | 962 |

Compared with the core funding of the universities and government research establishments, the competitive funding (the Academy of Finland, TEKES) has increased considerably faster. Consequently the Academy of Finland and TEKES are the most important sources of extramural research funding in universities. Their role and the volume of funding though is quite different in different institutions of higher education.

The total university funding was EUR 1,824 million in 2003. This comprised funding from the state budget and external financing. In 2003 budgetary funding accounted for 65% and external funding 35%. Broken down by performance areas, the total university spending in 2003 was as follows: teaching 39%, research and artistic activity 51% and societal services 10%, and the university core funding was: teaching 49%, research and art 41% and societal services 10%.

Historically scientific research has concentrated on universities. During the last years the scientific role of universities has been emphasized in public debate. Partly this is due to international ranking lists, which show that Finnish universities are do not appear at the top of the lists. There is also a strong belief that intensifying research is the key to economic success of the country.

The political tradition of Finland emphasizes equality between universities. It is a strong socially oriented belief that students in North-Karelia should be served as equally than those studying in

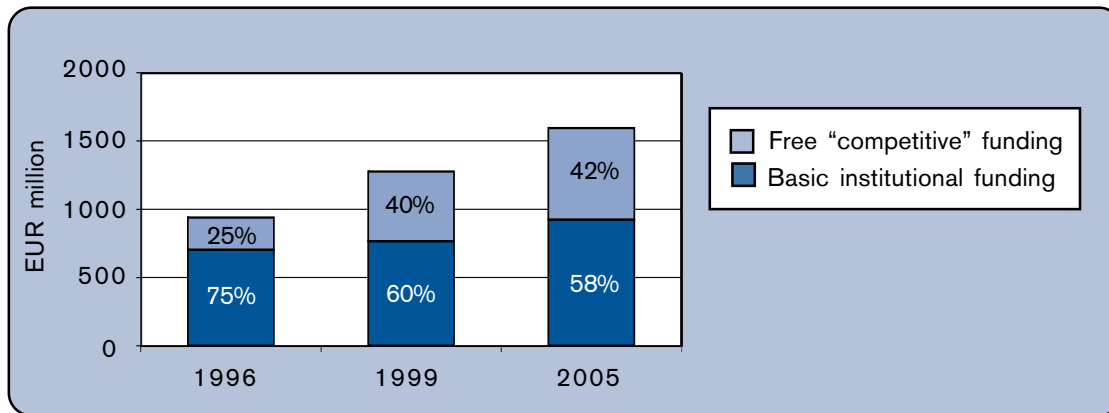


Figure 11. Structure of Government R&D

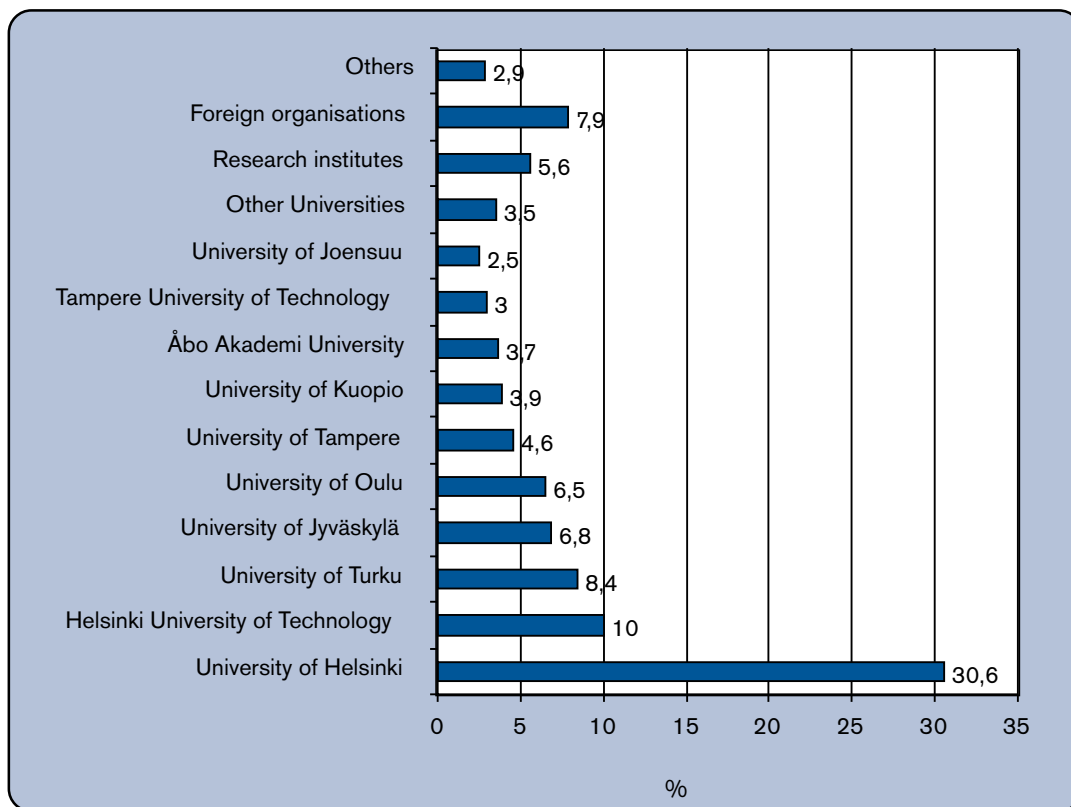


Figure 12. Funding decisions by the Academy of Finland in 2004 by site of research

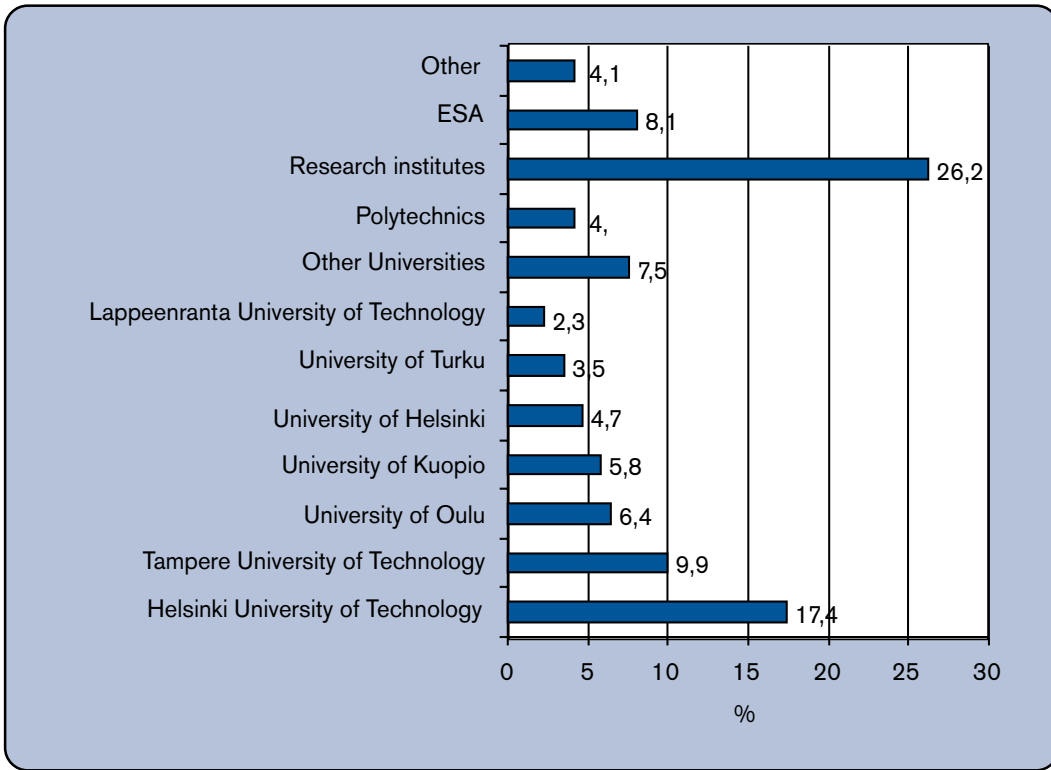


Figure 13. TEKES' funding for public research projects in 2004

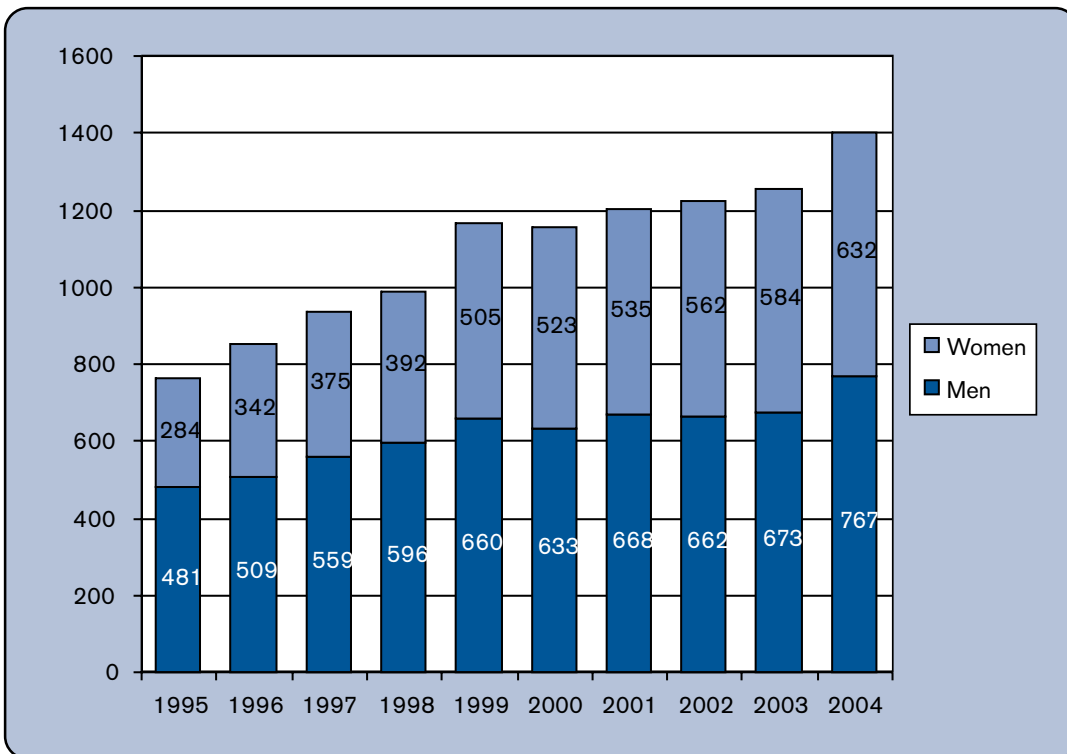


Figure 14. Doctorates 1991–2004

Helsinki. In reality there are evident differences in scientific output between universities. It is however obscure where the lines go. Some universities in depressed areas have made better reputation than those of metropolitan areas. discussion lines in discussion are very confusing and there is lack of rigour in public policy.

At the outset polytechnics were considered mainly as teaching organisations but their role in research has increased very rapidly over the past few years and at the moment R&D are included in their statutory tasks too. On the whole their role in research is still quite small. Statistics on polytechnic R&D input are available from 1999, when Statistics Finland started to collect them.

In their research role, the Polytechnics have two main problems. The first one is lack of basic funding for research activities. The second is lack of tradition. Genuine research communities in polytechnics are only slowly emerging. Progress in both directions has been quite slow. The (geographically) rather scattered structure of the polytechnic system also makes it difficult for robust research environments to emerge.

5.3 Human resources in research

In Finland some two per cent of the employed labour force work within R&D, which is the largest percentage in the OECD. In 2002, the total number of R&D personnel was 73,000, of whom 54% worked in business and industry and 32% in the tertiary education sector. The average annual increase from 1995 to 2002 has been 6%. In 2002 the number of the tertiary sector R&D personnel was 23,100, of whom 82% worked in universities, 10% in polytechnics and 8% in university central hospitals. Women accounted for nearly 46% of the R&D personnel within tertiary education. The number of person years in the sector was 16,900 in all, of which 90% in universities.

In universities the teaching personnel was 7,849 (in person years) in 2002, of whom 28% were professors, 9% senior assistants, 18% assistants, 28%

lecturers, 3% full-time instructors and 14% other (part-time) instructors. Other personnel were 21,043 in all, of whom 27% were researchers and 7% student-researchers. The number of personnel and their relative shares vary from one university to another. (Source: KOTA database 2002).

In 2003 polytechnics had a total of 5,921 full-time teachers, of whom 16% were principal lecturers, 58% senior lecturers and 26% lecturers. Of the teaching staff, 6% had doctorate, 11% licentiate and 67% Master's degrees. In addition, there were part-time teachers and lecturers, accounting for 339 person years in all, and external teachers (purchased services) corresponding to 503 person years. Other personnel in polytechnics (including purchased services) amounted to 5,031 persons, of whom 529 (11%) worked in R&D. (Polytechnics 2003).

There is a Government Decree which determines the duties of polytechnic teachers. Alongside their teaching and guidance duties, lecturers (1) develop teaching in their field in response to changes in working life; (2) participate in curriculum design and student selection; (3) perform duties relating to R&D assigned by the polytechnic; (4) participate in updating and upgrading training assigned by the polytechnic and undertake secondment to industry; and (5) perform duties relating to membership on polytechnic administrative bodies and other duties belonging or assigned to them.

The number of foreign researchers working within R&D is considerably lower in Finland than in the other EU countries. With a view to attracting foreign researchers, which is an important objective for Finland, measures are being taken to promote a high level of R&D and high-standard research conditions and to eliminate obstacles to the recruitment of foreign researchers.

Over the past ten years, Finland has made significant input into developing researcher training. In 1995, the Ministry of Education put in place a postgraduate scheme of fixed-term graduate schools. The selection of both the graduate schools and the students is based on competition. Students study full-time in the schools, aiming for a doctorate in four years. One important aim has

been to step up guidance, to enhance the quality of postgraduate education and to lower the age of doctoral candidates. As Finns still show great interest in researcher training, there has been no shortage of competent applicants. The decision to establish a graduate school is made by the Ministry of Education based on an evaluation made by the Academy of Finland. At the beginning of 2003 there were altogether 114 graduate schools attached to universities, with 1,426 student researcher posts financed by the Ministry. In addition, the graduate schools have approximately 2,500 researcher posts financed from other sources. The graduate schools are cooperation networks of universities and research institutes.

Since the early 1990s, there has been a significant increase in the number of doctorates: from 490 in 1990 to 1,257 in 2003. The proportion of women has grown from 32% in 1990 to 46% in 2003. In 2002, the average age of new PhDs was 36 in the whole country but 32 in the graduate schools.

The development of postgraduate education will continue. The Development Plan for Education and Research 2003–2008 sets a target of 1,600 doctorates in 2008. Another important aim is to enhance conditions for professional researcher careers. The Ministry of Education appointed a committee in October 2004 to propose a strategy for developing professional researcher careers and for making it an attractive career choice. The aim is to ensure varied expertise for the public and private sectors. The committee is to complete its work by the end of 2005.

5.4 Quality assessment and impact analysis in research

Evaluation plays an important part in the development of the research system. International evaluations are an established tool for research and science policy.

The decisions made by the Academy of Finland and TEKES on research funding are predominantly

based on expert evaluations.

There have also been several evaluations of individual universities and research institutes. Further, universities themselves organise evaluations of their activities and operations. For example, the University of Helsinki conducted an evaluation in which international experts assessed the quality of research in its faculties. The University has used the findings in its internal resource allocation.

The Academy of Finland undertakes a review of Finnish research every three years in accordance with the Government Resolution on the Development Plan of Education and Research and the performance agreements concluded between the Academy and the Ministry of Education. The Academy has conducted a review of the state and quality of scientific research in Finland in 1997, 2000 and 2003. The primary aim of the review is to serve the needs of national and international bodies and organisations responsible for science and technology policy as well as research funding. The theme cutting across the most recent review was the impact of research.

The Academy organises disciplinary reviews which look at the inputs made in the field, research processes and results. The quality of research is compared with international research in the field under review. The findings are generally used to put right the weaknesses identified in the review. These evaluations have also led to wider science policy development, such as the establishment of the graduate schools and new research programmes. An action programme was put in place for implementing the recommendations put forward in the evaluation report *Biotechnology In Finland. Impact of Public Research Funding and Strategies for the Future* (2002). The recommendations concerning the funding of biotechnology in universities have been realised: the performance agreements between the Ministry and universities for 2004–2006 include a statement that the core funding of the five bio-centres will be kept at least on the 2003 level (M€ 16.6). Special project funding of about seven million euros will be allocated for research, equipment purchases and new development projects in 2004, 2005 and 2006.

Attached to the Ministry of Education is an Higher Education Evaluation Council, which assists the Ministry and HEIs in evaluation, evaluated polytechnics applying for accreditation and organises evaluations relating to HEI operations and higher education policy. The Council makes proposal to the Ministry of Education for polytechnic centres of excellence in regional impact and has also conducted impact analyses in universities.

5.5 Cooperation with business and industry

For several years now, measures have been taken to step up cooperation between HEIs and businesses. There is not, however, any specific policy or programme to this end. Objectives for strengthening cooperation have been included in major strategic lines in higher educator and research policy.

In its reviews, the Science and Technology Policy Council has stressed the importance of HEI-business cooperation. According to the Council, effective contacts and flexible cooperation forms have a significant effect on the spread of research findings and, with it, on the emergence of knowledge-intensive business. They further strengthen the capacity of the research system to react to changes in business life and to respond to research challenges arising from business and industry. According to the Council, universities, research institutes and polytechnics must be developed as active and dynamic cooperation partners to business and industry with balanced development of research organisations' resources. The rules of the game in cooperation must be clarified and developed to give more incentive.

The Development Plan (2003–2008) also stresses the importance for universities and polytechnics to cooperate with business and industry. The aim is to clarify the principles underlying this cooperation and to develop the capacity of universities and polytechnics to promote the utilisation of research findings.

TEKES funding has had a great role in promoting cooperation between HEIs and business. TEKES has an aim to enhance the competitiveness of manufacturing and service industries by financing and activating product development and R&D projects conducted by companies and by universities, polytechnics and research institutes. TEKES has financed the development of the technological knowledge base of universities and polytechnics and their cooperation with business and industry. TEKES funding is specifically targeted to technologies and natural sciences.

Most of Academy of Finland financing is targeted to research conducted in universities and research institutes. The Academy supports researcher training by awarding grants to persons active in working life for doctoral studies. The applicant must have a postgraduate education plan approved by a university and be in an employment relation with his or her employer for the whole duration of the doctoral studies.

The centres of expertise programme administered by the Ministry of the Interior encourages the regions to utilise their top expertise in order to strengthen the competitiveness of the region. There are 22 centres of expertise to this end. The programme seeks to enhance the innovation environments in regions by improving cooperation between the research sector and local business and industry. The centres of expertise are mostly run by the local science/technology park. Technology/science parks also implement the TULI (From research to business) programme financed by TEKES, which seeks to identify research-based business ideas especially in universities, polytechnics and research institutes. It offers expert services to research teams and researchers in commercialising ideas.

Universities and polytechnics offer several different support services relating to research and innovation. The most important services relate to the acquisition of R&D funding and contractual procedures. In addition, they offer careers and recruitment services to students and employers; some HEIs offer business incubator services to students. Universities and polytechnics offer different extension and piloting and testing services to business.

CHAPTER 6.

Achieving equity in and through tertiary education

6.1 Introduction

When Martin Trow worked as an expert for OECD in Europe in the beginning of 1970s he distinguished three phases in the development of higher education: elite higher education is accessed by less than 15% of the age grade, mass education accommodates from 15 to 50%, and universal education more than 50% of the youth cohort (Trow 1974). When Trow (1999, 307–308) decades later returned to this report, he could state that there is really only one aspect he was unable to forecast fully. The traditional enrolment rate counted from cohorts can no longer serve as an unambiguous criterion because the composition of the student body has changed. Trow's famous distinction was appropriate as long as higher education was mainly accessed by youngsters, but soon only half of all higher education students will belong to the young cohorts. The other half comprises adult students complementing their education according to the principle of lifelong learning and those who take up higher education studies purely in pursuit of self-development. Access understood as 'enrolment' has to be replaced by a conception of 'participation' in lifelong learning

(Kivinen et. al. 2004).

In Finland – as in the other Nordic welfare states – the central goal has been to provide equal opportunities for students from different backgrounds (socio-economic starting points, gender, place of residence, etc.). All equal opportunity concepts involve determining where to draw the line in the equalisation of opportunities and at which point to hold it fair that individuals should make an effort on their own and compete with each other (Roemer 2000). In the case of Finnish higher education, the government has sought to level out the field first and foremost by means of comprehensive basic education, but just as importantly by increasing study places in higher education (new universities and the polytechnics) – with a view to equal opportunity in regional terms – in different parts of the country.

6.2 Social equity

The following is a discussion of the correlation between expanding higher education and equal opportunity. Evidence is presented in terms of four factors: parental education, place of residence, gender and age. In Finland, the most appropriate data available for the purpose is the longitudinal census data. The following is mainly uses data on 20-to-24-year-olds⁷. Other data sources are mentioned where needed.

Equal opportunity in education has been systematically operationalised as differences in participation in higher education (e.g. Hermunen 1984, Isoaho et al. 1990; Kivinen et. al. 1996, 2001, 2002, 2004). In Finland the differences in participation to university education between children with academic fathers and those whose fathers only have basic education remained large throughout the 1980s and 1990s.

Table 5. Participation in tertiary education of 20-to-24-year-olds by father's educational level

| Father's educational level | 1985 % | 1990 % | 1995 % | 2000* % |
|----------------------------|--------|--------|--------|---------|
| Tertiary (>4 yrs.) | 45.2 | 47.8 | 48.0 | 43.2 |
| Vocational II (3-4 yrs.) | 22.9 | 24.0 | 25.1 | 23.6 |
| Vocational I (<3 yrs.) | 10.1 | 10.1 | 10.7 | 11.9 |
| Primary | 6.4 | 7.5 | 8.5 | 9.5 |

* In 2000 the father's degree classification was updated by Statistics Finland. The data in this table has not be adjusted to accommodate the change. It should be noted that tertiary education in 1985, 1990 and 1995 was almost exclusively university education.

Table 5 shows the university participation rates of the 20-to-24-year-olds in 1985, 1990, 1995 and 2000 by father's educational level. The stable trend from 1985 to 1995 seems to be disrupted in 2000: while the relative number of those with poorly educated fathers participated kept growing, those with highly educated fathers participated less. One explanation is that the competition for university education places reached a saturation point among young people from favourable family backgrounds, while less-advantaged young people still predominantly do not participate (see Kivinen et. al. 2001, 2002). Another reason is the establishment of the polytechnics in the mid 1990s. Since then, students with highly educated parent, who previously went to universities, have also opted for the most attractive alternatives offered by the polytechnics.

The overrepresentation of the offspring of academic fathers in universities, as indicated by

⁷ The so called youth data sets comprise the entire age group of 20 to 24-year-olds in the longitudinal census data (see Statistics Finland 1996). The information regarding university registration is obtained from the registry of HEIs. In addition, information regarding the education, profession and socio-economic status of the parents of the group is included from the longitudinal census data set. The 1985 data includes 377 983 young people, and the 1990 data focuses on 343 608 young people. The 1995 and 2000 data sets are 50% random samples of the same age group comprising 152 526 and 163 615 young people respectively.

odds-ratios in five-year terms from 1980, has been slightly decreasing, the odds being 13–12–11–10, whereas in 2000 there was a drop to 7. As such, a seven times greater chance to participate is still a considerable advantage in equal opportunity terms. Some recent Finnish studies have taken both parents' educational attainment into account (Kivinen et. al. 2001, 2002, 2004). The results are consistent with the trend shown above. The differences in participation rates between children of PhD parents and children of parents who have only basic education are substantial and persisting, the odds ratios remaining above 28 through 1980s and 1990s. When both parents' educational attainment is taken into account, the differences between the father's and mother's educational attainments have only marginal effect on girls' or boys' participation and they are embedded in a wide spectrum of differences in family backgrounds.

As regards university education, the relative chances (odds-ratio) of young people with academically educated fathers were ten-times those of their less advantaged counterparts throughout the 1980s and 1990s. At the turn of the millennium, the relative advantage due to a favourable family background was still almost seven-fold. At the other extreme, the relative chances for non-participation of those with untrained fathers remain unchanged. Overall, as regards the family background of the 20-to-24-year-olds, the situation still is that the offspring of fathers with tertiary education go to university, while the offspring of untrained fathers find full-time jobs or seek other training.

What has been said about university level education applies, albeit less robustly, to the polytechnic sector. The social background of the polytechnic students resembles more that of university students than that of secondary vocational students. There is, however, a clear social distinction, as shown by Table 6.

Table 6. 20-to-24-year-olds students by sector and father's education in 2000

| | Father's education | | | |
|-------------|--------------------|------------|--------|--------|
| | Basic | Vocational | Higher | Total |
| Polytechnic | 34 | 50 | 16 | 31.756 |
| University | 22 | 40 | 38 | 27.027 |

The most recent national data (Kivinen et. al. 2004) relates to intergenerational inheritance of educational opportunities and outcomes from 1940s to 2000s. Kivinen's findings show that the transition from the era of the elite university ("baby-boom generation") to the era of mass higher education ("baby-boomers' offspring") entails not only persistent educational legacy, but also even growing differences in the inheritance of the benefits of education (i.e. labour market status and income).

6.3 Regional equity

As noted above, probably the most important measure taken to promote equal opportunity in Finland was the regional expansion of the university sector. In the name of regional policy, efforts have been made to guarantee equal opportunity for young people to participate in university education, irrespective of their place of residence. Table 7 presents the distribution of 20-to-24-year-old students by father's educational level (basic and tertiary) in 1985, 1990 and 1995⁸. The proportion of students with academic fathers has increased in all university towns except Vaasa. Correspondingly, the relative number of students with untrained fathers has fallen without exception. The most significant change (in percentage points) in terms of family background is that the share of young students with untrained fathers has decreased in multi-university towns.

⁸ Concerning years 1985, 1990 and 1995 the information on the location of the university at which the students are enrolled is available. For 2000 this information is not available.

Table 7. University students (20-to-24-year-olds) by father's educational level in 1985, 1990 and 1995.

| multi-university towns | Basic | | | Tertiary | | |
|------------------------|-------|------|------|----------|------|------|
| | 1985 | 1990 | 1995 | 1985 | 1990 | 1995 |
| Helsinki | 28 | 23 | 15 | 45 | 48 | 57 |
| Turku | 37 | 30 | 22 | 31 | 34 | 39 |
| Tampere | 42 | 31 | 21 | 25 | 32 | 39 |
| Oulu | 45 | 37 | 26 | 25 | 29 | 36 |
| University town | | | | | | |
| Jyväskylä | 45 | 38 | 22 | 22 | 27 | 39 |
| Lappeenranta | 38 | 33 | 24 | 24 | 30 | 36 |
| Kuopio | 43 | 38 | 25 | 24 | 30 | 34 |
| Joensuu | 52 | 42 | 30 | 18 | 21 | 33 |
| Rovaniemi | 41 | 33 | 28 | 27 | 28 | 31 |
| Vaasa | 48 | 34 | 33 | 20 | 30 | 29 |

* Multi-university towns offer the whole range of studies from arts and humanities to engineering and medicine.

There are no comparable figures available for 2000. However, judging by the odds-ratios presented above and the figures in Table 7, there is no reason to believe that the trend has changed. In other words, the share of young students with academically educated fathers is likely to continue increasing in the university sector as a whole. Similarly the share of students with untrained fathers will probably continue to decrease more rapidly in multi-university towns than in university towns. The first trend is primarily due to an overall increase in the number of higher education graduates and the latter to the diversifying faculty structures in the universities.

Table 8 shows the breakdown of demand (20-to-24-year-old students by the location of their secondary school) and supply of university education for young people (total enrolment by the location of university) by regions in 2000. As the regional over-/under-representation coefficients show, young people from the Helsinki Metropolitan Area are heavily under-represented in the universities of that area. As was already shown in Table 6, the universities in the Helsinki Metropolitan Area are more "selective" in terms of the family background of students. The

corresponding regional over-representation is located in the rest of southern Finland and in the eastern Finland.

Earlier studies (Hedman & Hyyppä 1997; Hedman & Aaltonen 1999) have analysed the move from the place of birth via the university town to the place of residence of the graduate population. Although the data is not up-to-date, they can be used to describe some basic mechanisms of migration related to the regional structure of the university sector.

As shown in Table 9, about half of the graduates have also been born in the area. Further, about one third of all graduates both originate from and settle in the province. A significant difference between the university towns is that in Helsinki seven out of ten 'native' graduates settle in Helsinki after graduation. The other centres fall clearly behind in this figure. The explanation for the rather large migration of 'native' graduates is two-fold. First, many professional posts (e.g. teachers, physicians etc.) are local authority posts and therefore some university graduates "have to" to move all around the country. Second, a larger proportion of academic posts are located in the Helsinki Metropolitan Area, which means that some

Table 8. Regional representation in university education in 2000.

| Region | 20-to-24-year-old students by location of their secondary school | Total enrolment by location of universities | Regional under-representation coefficient | Regional over-representation coefficient |
|--------------------------------------|--|---|---|--|
| Uusimaa (Helsinki Metropolitan Area) | 25% | 35% | 0.71 | - |
| Rest of Southern Finland | 12% | 4% | - | 3.0 |
| Eastern-Finland | 12% | 9% | - | 1.3 |
| Oulu | 10% | 11% | 0.9 | - |
| Lapland | 1% | 3% | 0.3 | - |
| Ahvenanmaa/Åland | 0% | 0% | - | - |
| Western-Finland | 40% | 38% | - | 1.1 |
| Total | 100% | 100% | | |
| N | 27 413 | 19 919 | | |

Source: Census data, KOTA-database

Table 9. Graduates of selected universities originating and settling in the university province.

| Multi-university town | graduated by 1995 | A | B | share of settling graduates (B) from originating graduates (A) |
|-----------------------|-------------------|--|---|--|
| | | share of graduates originating from province | share of graduates originating and settling in the province | |
| Helsinki | 100% | 45 | 32 | 71 |
| Turku | 100% | 53 | 33 | 62 |
| Tampere | 100% | 39 | 21 | 54 |
| Oulu | 100% | 52 | 30 | 58 |

Source: Hedman & Aaltonen 1999

graduates from other university towns "have to" migrate to the capital area. A feature all the Finnish universities share is that they promote the mobility of both students and graduates. Since the number of universities and their locations and structures have remained unchanged, it is fair to assume that the migration flows have not significantly changed from the 1990s.

The general conclusion to be drawn as regards policies designed to even out social and regional

disparities in educational opportunity is that the only effective and thus widely and consistently used measure has been to increase education provision at all levels and throughout the country. However, in spite of the at times aggressive expansion, differences in participation rates have been relatively slow to decrease, which is an indication of the mechanisms of social selection operating within the educational system.

6.4 Gender equity

For almost three centuries, higher education was an overwhelmingly male pursuit. In Finland, first women entered university in the 1870s. Later on, the number of women students increased rapidly, and throughout the 20th century Finnish women's participation rates have been relatively high, compared with other European countries. In 1905 as many as one third of the university entrants were female. Ten years later their share was 40%. The fifty-fifty landmark was reached during the 1950s. Today, women account for 54% of university students and 53% of polytechnic students.

This academic activity of Finnish women derives from the western liberal, individualistic and utilitarian concept of the human being and is connected with the development of the nation state. The structure of the Finnish education system effectively channelled women's demand for education through the upper secondary school to higher education. Overall cultural development and ideas of women's education coincided with social and economic development which opened many jobs for women, especially within the education system itself but also in other spheres of society. (Ahola 1995.)

For several decades, women have been in majority in Finnish higher education. Only the field of Engineering has remained a male territory. In the early 21st century, women account for some 20% of engineering students in universities. Fields like economics and natural sciences have equal numbers of women and men. On the other hand, education, psychology and health sciences are examples of huge female overrepresentation, their percentage rising as high as 80% of annual enrolment (see Table 10).

In the university sector, the overall increase in the enrolment of both men and women was 31% from 1990 to 2003. A look at the relative increase in female enrolment in different fields of study shows a clear difference to men's participation. Veterinary Medicine, for example, has become almost exclusively women's field in Finland: women's enrolment has grown by 40% and men's

enrolment plummeted by 70%. Similar strong increases in women's participation can be seen in Law, Agriculture and Forestry, Art and Psychology.

In the polytechnic sector, the situation is similar to the universities. In the field of Technology and Transport, women made up only 16% of new students in 1997 and 20% in 2003, which was about the same as in the university sector. The largest majority of women (88%) is found in Social Services and Health Care (see table 11). The overall increase in enrolment in the polytechnic sector was 13% from 1997 to 2003. The relative number of women has grown fastest in Natural Resources and in Tourism, Catering and Home Economics. In Culture and in Social Services and Health Care the share of men has been growing faster.

Women's high participation rates in higher education are not an indication of increased equal opportunity as such. In the first place, it can be explained by their large proportion of upper secondary school leavers (matriculated students), which for instance in 2002 was 59%. Partly because of their educational preferences and partly because more female (76%) than male (70%) matriculated students apply for higher education, it is more difficult for women to gain entry to tertiary education. In 2002, 42% of women applicants and 58% of men applicants gained entry and enrolled. (Statistics Finland 2003.)

There are also clear differences in the chances of men and women to gain entry to different fields of study owing to their educational preferences and to the extent of supply in different fields. Selection criteria also vary from field to field, which also influences entry chances. In the polytechnic sector, where statistics on applicants' preferences are available, women whose preferred field was Administration and Trade were more likely to gain entry in 2003 (24% vs. 14%). A similar observation can be made regarding Social Services and Health Care (20% vs. 13%). In Technology and Transportation, on the other hand, male applicants were more successful in gaining entry than females (36% vs. 27%). Corresponding differences also exist in the university sector, but because of and the

Table 10. Women's share of new university entrants by field of study in 1990–2003

| | 1990 | 1994 | 1997 | 2000 | 2003 |
|----------------------------|------|------|------|------|------|
| <i>Veterinary medicine</i> | 72.9 | 85.4 | 94.0 | 90.7 | 92.5 |
| Health sciences | 95.8 | 92.2 | 91.0 | 95.8 | 91.1 |
| Pharmacy | 90.2 | 85.9 | 85.3 | 92.0 | 87.6 |
| Psychology | 77.8 | 79.5 | 85.2 | 85.1 | 83.6 |
| Education | 81.2 | 82.0 | 82.9 | 85.5 | 81.6 |
| Humanities | 77.2 | 78.0 | 77.5 | 79.5 | 78.1 |
| Social sciences | 64.7 | 62.2 | 65.6 | 68.6 | 65.7 |
| Arts | 60.0 | 57.2 | 59.6 | 59.9 | 64.1 |
| Agriculture and forestry | 53.0 | 55.1 | 53.7 | 63.6 | 62.7 |
| Law | 53.2 | 55.7 | 48.8 | 62.0 | 59.9 |
| Medicine | 64.7 | 65.4 | 65.1 | 68.7 | 59.5 |
| Dentistry | 71.6 | 74.1 | 69.6 | 67.1 | 59.0 |
| Theology | 51.8 | 63.6 | 64.3 | 62.6 | 57.8 |
| Sport sciences | 46.0 | 50.6 | 46.0 | 58.5 | 49.6 |
| Natural sciences | 47.6 | 44.8 | 44.8 | 50.1 | 48.5 |
| Economics | 48.4 | 46.4 | 45.7 | 49.7 | 46.6 |
| Engineering | 19.3 | 18.7 | 19.7 | 22.9 | 22.9 |

Source: KOTA

Table 11. Women's share of new polytechnic students by field of study in 1997–2003

| | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|--|------|------|------|------|------|------|------|
| Social services | | | | | | | |
| health and sports | 88,5 | 88,3 | 87,1 | 88,2 | 89,3 | 89,9 | 88,1 |
| Humanities and education | 63,0 | 76,8 | 69,4 | 72,9 | 72,9 | 72,1 | 83,2 |
| Tourism, catering and domestic services | 69,1 | 71,5 | 71,6 | 73,4 | 74,5 | 75,1 | 78,7 |
| Culture | 69,5 | 67,6 | 69,2 | 67,2 | 70,6 | 68,6 | 69,2 |
| Social sciences, business and administration | 60,9 | 62,3 | 64,0 | 65,4 | 64,1 | 61,7 | 68,6 |
| Natural resources | 44,6 | 47,0 | 50,1 | 46,3 | 49,1 | 50,9 | 55,4 |
| Technology, communication and transport | 16,2 | 18,6 | 17,4 | 18,1 | 18,6 | 17,3 | 19,6 |

Source: AMKOTA

admission system and the manner in which the applicant statistics are compiled, it is more difficult to get reliable data for conclusions.

In the university sector, where over half of the entrants are female, the discussion on women's equal opportunities now focuses on postgraduate studies. The higher on the echelons of power we look, the fewer women there are. In the early 1990s women's share of basic university degrees (Master's) was 54%, but only 31% of new doctors and 13% of professors were women. In 2003 the corresponding figures were 60%, 47% and 22%. The current equal opportunity policies seek to promote women's research careers and equality in academic employment. In addition, special programmes are being launched in the field of Engineering in order to encourage more women to take up technology subjects. Another policy decision which has helped women's research careers was the establishment of Graduate Schools in the mid 1990s. These policy measures have been very effective: from 1990 to 2003 the number of male PhDs doubled, the number of doctorates awarded to women rose by 277%.

Overall, women's share of doctorates is lower than their share of Master's degrees. We can also see from Figure 5.1, if we exclude the 'deviant' case of engineering, there seems to be a clear correlation between the proportion of women in a given field of study and the probability that they continue in postgraduate education. In Law and Theology, where 59% of Master's graduates are females, women are less likely than men to go on for the doctorate. In Health Sciences, on the other hand, where nearly all Master's graduates are women, most of PhDs are also women. Dentistry is the only field in which the share of female PhDs (73%) slightly exceeds their share of Masters (71%). Engineering makes an interesting exception. Notwithstanding the male dominance in the field, those women who pursue engineering studies continue to postgraduate studies almost as often as their male colleagues. As pointed out above, there might also be some labour market reasons for these phenomena.

6.5 Access and the problem of late entry

A special Finnish problem is the so called matriculation backlog (see Ahola 2002) and the resulting delayed entry to higher education. Eligible for university education in Finland are those who have a certificate of the Finnish matriculation examination, the International Baccalaureate or the Reifeprüfung. In addition to this, applicants who have a higher vocational diploma (e.g. vocational college and polytechnic graduates) or whom the university otherwise considers to have sufficient knowledge and skills for admission may be accepted. In a situation of persistent over-demand for higher education, it is also justified in terms of equal opportunity that most fields set entrance examinations.

The annual intake in the university sector is about 21,000, which represents one third of the corresponding age group (19-year-olds). Together with the total intake in the polytechnic sector (26,000 in youth education), the supply corresponds to three quarters of the relevant age group. This means that roughly one in four 19-year-olds is left outside higher education. Since only half of the age group takes the matriculation examination, in principle all matriculated students could enter tertiary education and still leave places for half of the non-matriculated young people. In light of this rough calculation, Finland offers good opportunities for young people to continue in tertiary education (HEIs). However, the competition for admission is as tough as ever.

The ground rule is that the universities, their faculties or departments select their own students based on matriculation examination grades, the school-leaving certificate and/or entrance examinations. For some ten years, the universities and the Ministry of Education have agreed on joint targets to speed up transition from secondary to higher education. The aim has been to put in place a nation-wide co-ordinated application system serving both applicants and universities, which is now about ready to be launched. The recent development has been geared to speed up entry to

and graduation from higher education with a view to providing labour force to fill the vacancies opening due to the retirement of the baby-boom generation.

Finland's university admissions system is unique in Europe. It is highly decentralized in contrast to other Nordic countries, for instance Sweden and Norway, where the system is more centralized and based mainly on grades in school certificates. In Finland admission is based on entrance examinations, which in majority of cases differ from one university to another. The system in general is considered to be heavy and expensive. The Ministry of Education has permanently pushed universities to collaborate, with a relative small success. One reason for the growth of various forms of entrance examination has been the belief – supported by some research – that school success does not necessarily lead to success in higher education. Separate examinations have also served as a part of "second chance" policies, especially in those fields where the number of adult applicants is relative high. Also the interests of the applicants themselves have also geared an increasing number of exams.

Due to the persistent over-demand for higher education, and the mismatch of the educational preferences of secondary school leavers and the available places in higher education, an enormous pool of potential applicants has accumulated during decades. At the moment the annual number of applicants is three times the size of the matriculated cohort. Every year only a half of these gain entry to higher or vocational education, while the other half remains in the backlog, waiting for next year's application round (see Table 12). In view of the type of entrance examination used in Finland, it is not difficult to guess that the 'old timers' have better chances of getting in than the 'greenhorns'. In spite of all this delay great majority of students find their learning place within three years.

Table 12. Applicants with Matriculation Examination, their success rate, and the size of the annual matriculation cohort 1995–2002

| | Total number of applicants with Matriculation Examination | Successful applicants (%) | Annual number of matriculated students |
|-------------|---|---------------------------|--|
| 1995 | 87 896 | 50,9 | 34 506 |
| 1996 | 99 737 | 45,2 | 34 817 |
| 1997 | 100 416 | 47,8 | 35 187 |
| 1998 | 97 829 | 50,6 | 34 883 |
| 1999 | 104 692 | 51,7 | 34 489 |
| 2000 | 109 588 | 51,2 | 35 864 |
| 2001 | 109 981 | 50,8 | 35 500 |
| 2002 | 110 997 | 52,9 | 36 524 |

Source: Statistics Finland

¹ Includes applicants of all post-secondary education

The present Government has recently set an objective to raise the overall employment rate of the work-age population to 75%. As a part of this policy, young people should enter higher education without delay, study more effectively, graduate faster, and stay in the labour force longer than before. In order to realise the 'fast in – fast out' goal, the Ministry of Education has agreed with the universities in the performance negotiations that about 50% of new students should be recent secondary school leavers. For instance in 2003, only a quarter of new university students were the same year's matriculated students, and another quarter had matriculated in the previous year. Admission to university takes 2–3 years on average. In the polytechnic sector those entering are of age 19–20, which indicates that the problem of late entering is not as acute as in universities.

According to the Ministry, the forthcoming simple and transparent joint selection and admission system would give newly-matriculated students better chances of gaining entry to university. In order to avoid age discrimination, which could result from this, the Ministry has plans for enhancing the open university track, making full

use of the of the new two-cycle structure promoted by the Bologna process, and developing special admission procedures for older students who have prior studies or who are already studying in higher education.

The aim of the government is that 55% percent of new entrants to the universities by 2008 will be matriculated in the same year. The age of entering to universities will lowered according to the plan with one year by 2008. For this goal government have launched a programme consisting of several measures.

Figure 15 shows the age distributions of university and polytechnic students in 2002. Especially in the university sector the problem seems to be two-fold: late entry and a relatively large share of delayed studies. In 2002 the median age of polytechnic students was 23 and that of university students 26. Of those entering into university studies in 2003 one fourth (24 per cent) were older than 25 years. The relatively large numbers of older students entering the system also reflect former lifelong learning policies. In this respect, the Finnish tertiary education system seems relatively open and flexible.

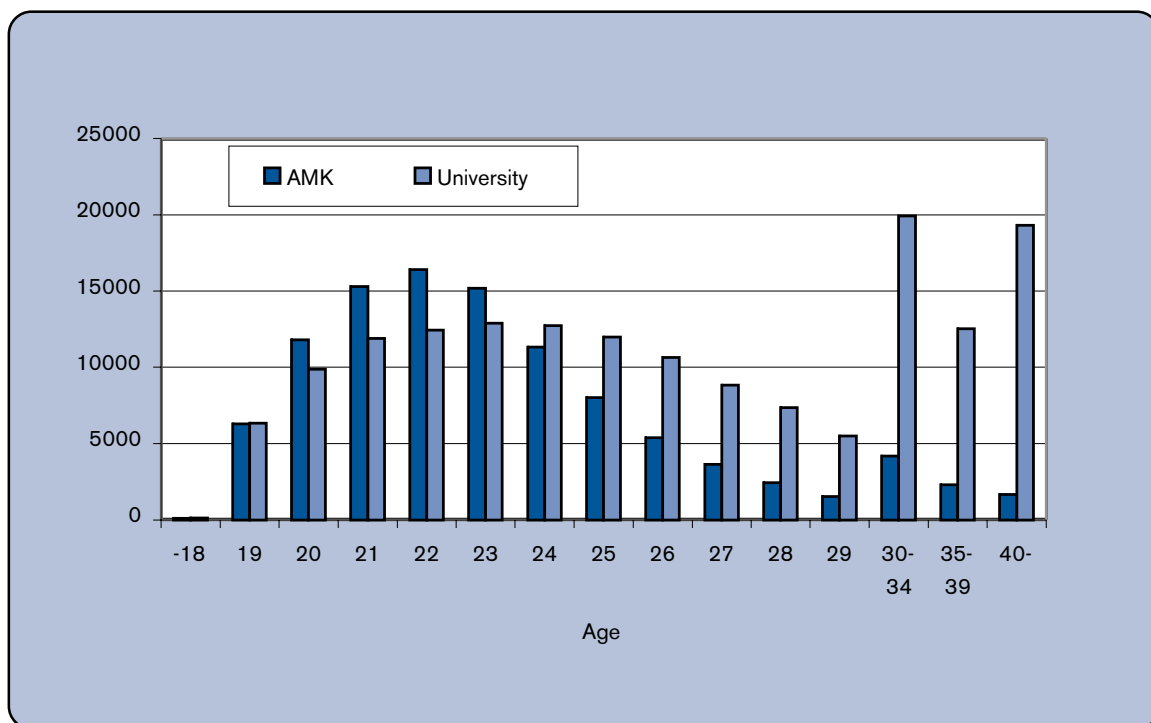


Figure 15. Student age distribution in the polytechnic and the university sectors in 2000

CHAPTER 7.

Resources in the tertiary education system

7.1 Staff and financing

Staff

Universities appoint their own teachers. The general qualification requirement is scientific competence. Recently more attention has been paid to teaching skills as well. Teachers' duties are teaching and research. The job description is agreed within the annual work time plan.

The aim has been that the salary level is corresponding across universities. This is why the salary structure and salaries are negotiated as part of the state collective bargaining system. The university salary system will be reformed during 2005 with a view to effecting a competitive salary level. Another aim is to review the viability of the post structure and to make necessary changes.

The tertiary education system is increasingly required to cooperate with business and industry and with other stakeholders. This will entail changes in the job descriptions of the teaching staff. On the other hand, the increase in project funding has brought with it a large number of fixed-term teaching and research personnel, whose status in the system has been felt to be problematic to some extent.

Owing to the age structure of university personnel, an above-average number of staff will retire in the near future. Thanks to the measures to set up postgraduate education, there will not be any shortage of competent teachers.

Financing

The education system in Finland is publicly funded and run. Municipalities are responsible for providing pre-primary and basic education and general upper secondary education. Vocational education and training is co-financed by the government and local authorities. Universities are state-run institutions with constitutional autonomy. Polytechnics are mainly funded by municipalities and private foundations. Market-based private institutions exist only in adult education.

Traditionally there has been no tuition fees on Finnish higher education institutions. Debate on the introduction of tuition fees for foreign students has lasted two decades. In August 2005 a ministerial working group proposed an introduction of 3500–12000 Euros annual tuition fees for students coming from outside EU and ETA countries. The group proposed also improvements on student services.

The student financial aid system was created in 1969 when the government began guaranteeing and providing interest subsidies for study loans. Prior to this, university studies had to be financed by the student's family or by students themselves by working; loan guarantees and small grants were available only for a limited number of disadvantaged talented students. The aim of the new study loan system was to offer equal opportunities to study; parental income or wealth no longer played such a great role in the financing of studies. A study grant was introduced to the student financial aid scheme in 1972. In 1977, a system much like the current one was adopted. In addition to the study grant and the loan, students with no family who lived in rented housing could apply for a housing supplement. Financial aid was available for seven years.

In the 1980s, much like today, there were

pressures for improving the financial situation of students, as well as for making the financial aid system more efficient. In 1992, the system was remodelled to consist of a study grant, which was double the previous amount, a housing supplement and a market-based, government-guaranteed study loan. The entitlement was set at 55 months. The maximum allowed work income for grant-recipients was lowered to encourage full-time studying. The current income limit, introduced in 1998, made the system more flexible.

A reform prepared during 2004 will increase the maximum amount of loan guaranteed by the government. After graduation, the repayment of the loan capital will be deductible in taxation. The new system will take effect in 2005.

Student financial aid is intended to provide an income for needy students whose parents do not have responsibility for financing their studies and who are not eligible for aid under some other schemes. In order to qualify, a student must have gained admission to a school, study full time, and be in need of financial assistance.

Student financial aid comprises a study grants, a housing supplement and a government guarantee for a student loan. The study grant and the housing supplement are government-financed benefits paid monthly to the student's bank. The study grant is regarded as taxable income.

The amount of aid depends on the type of school, the student's age and marital status, and the mode of accommodation. The student's overall financial situation is also taken into account. The means testing concerns the student's own income and, in some cases, the parents' or the spouse's income.

Student financial aid is available for full-time post-compulsory studies of at least eight weeks' duration in an upper secondary school, a folk high school, a vocational school or a HEI. Financial aid is also available for studies abroad. The total number of students eligible for student aid is around 500,000, but only 300,000 receive support (60%). This low percentage is due to the fact that support for students in secondary education under the age of 20 is means-tested. About 50% of university students study part-time and often make a living by

working and do not receive student support. It is also common for students in polytechnic sector to work during studies

Table 13 is an overview of the monthly grants available to students.

Table 13. Monthly rates of study grants (in euros before taxes)

| Student | Secondary school | Higher education |
|---|------------------|------------------|
| married or has dependents | 213,60 | 259,01 |
| lives alone, aged 20 or over | 213,60 | 259,01 |
| lives alone, aged 18-19 | 213,60 ↓ | 259,01 |
| lives alone, aged under 18 | 84,09 ↓ | 126,14 ↑ |
| lives with his or her parent, aged 20 or over | 63,91 ↑ | 105,96 ↑ |
| lives with his or her parent, aged under 20 | 21,86 ↓ | 38,68 ↑ |

The arrows indicate that amounts may be increased or decreased on the basis of parental income.

The category "higher education" comprises universities, polytechnics and university extension education centres. The category "secondary schools" includes all other educational institutes. A student living with his/her parents can get an increased study grant if the parents' taxable annual income is under EUR 26,100.

The housing supplement covers 80 percent of the accepted rent and can vary between EUR 26.90 and EUR 171.55. It is not granted if the monthly rent is under EUR 58,87 or for the part of the monthly rent exceeding EUR 214,44 (in 1.11.2005 it will be increased to 252 euros). Students who are not qualified for the housing supplement can apply for a housing allowance under the general benefit scheme.

Student loans are granted by banks operating in Finland. The interest rate, the terms of repayment

and other terms are agreed by the bank and the student. Repayment normally begins after the studies have ended. Because the loan is guaranteed by the government, no other security is required. Interest is capitalised (added to the loan) as long the student is enrolled in higher education or in adult education. At this stage, the student pays interest at a rate of one percent twice a year. When repayment begins the interest is 3.5–4%.

The number of students eligible for loans is around 300,000, but only 125,000 use this option. Table 14 shows the monthly loan amounts guaranteed by the government.

Table 14. Monthly sums of student loan guaranteed by the government (in EUR)

| | | | |
|--------------------|-----|---------------------------------------|-----|
| Student 18 or over | 220 | Recipients of adult education support | 310 |
| Student under 18 | 160 | Student studying abroad | 360 |

Interest assistance is available to all those who have a low income and who have not received financial aid for a specified period. In order to qualify, the gross income may not exceed EUR 775 per month (on average) in the four months preceding the due month. Higher income limits apply to those with dependent children.

As regard other benefits, full-time undergraduates and Master's students get concessions in public transport. Student cafés receive government subsidy for degree students' meals. Students get meals at the subsidised price by showing their student cards.

In addition, student housing foundations offer moderately priced accommodation for students. The rents are usually between EUR 120 and EUR 220 a month, for which students can get a housing supplement (single students) or a housing allowance (student families).

Students pay a health care contribution (€31.62) included in the student union fee. This entitles them to use physicians' or public health nurses' services at the Finnish Student Health

Service clinics free of charge.

As regards indirect support, all parents of students under 17 years of age get child benefits whether child is in school or not. There are no other indirect benefits (i.e. specific family allowance or tax relief). But the interest of study loans is deductible in taxation.

7.2 Finnish student's income

According to the 2002 report *Euro Student. Social and Economic Conditions of Student life in Europe 2000*, the share of parental support in the financing of studies was smallest in Finland. Similarly, students' working rate was lower in Finland than in the other countries under review, but when a Finnish student works, he/she spends more time on work and has a larger work income than students in other countries.

A corresponding, more recent study conducted in Finland in 2003 surveyed higher education students' income and expenditure, work, housing, studies and future prospects in 2003. The median income for all students was EUR 680 a month. A student's foremost sources of income were the study grant and the housing allowance. Over half of the students worked to supplement their income. Parental support was the third source of income, and loans came fourth. All in all, about 40% of the respondents had taken a student loan. By far the greatest cost for students was housing and the second largest expenditure was meals; these necessities together represented some 60% of students' costs.

7.3 Institutional resources

The main policy guidelines and development targets are determined at a general level in the Development Plan for Education and Research. Performance management and target outcomes constitute the most important tool for the Ministry of Education in steering the operations of the universities and the polytechnics. This is strategic

steering which implements the national higher education policy.

The polytechnics and universities are responsible for evaluating and developing their own operations and outcomes. The Higher Education Evaluation Council, established in 1995, is an advisory body assisting the universities and polytechnics and the Ministry of Education in evaluation matters and promoting evaluation as an integral part of institutional operations.

7.4 Performance management in universities

The procedures for steering universities were jointly developed by the Ministry of Education and the universities towards management by target outcome in the 1990s. In recent years, with the lessening of legislative and budgetary control, university autonomy has grown. The transformation in university budgeting started in 1994 with the introduction of one operational appropriation. From 1997 onwards there was a gradual transition to core funding based on calculational unit costs. The new Universities Act, promulgated in 1998, increased university autonomy by delegating many matters previously regulated by separate Acts and Decrees to the university decision-making bodies. The distribution of educational responsibilities between the universities is still determined by decree. In return for the larger latitude in resource use, the universities agree on target outcomes with the Ministry, monitor the achievement of the targets and report on them to the Ministry.

Steering system

The Ministry of Education is responsible for preparing Government matters in its sector, for ensuring appropriate operations and for steering relevant administration. The primary means to this end are resource allocation, legislation and information. One important tool is the performance agreement concluded by the Ministry of Education and each university, another is the performance

monitoring systems, notably the KOTA database.

With management by results and target-setting, the Ministry of Education seeks to promote the central aims set for the development of education and research in the Government Programme, the Development Plan for Education and Research, the Ministry's own Action and Economic Plan and other national strategic programmes.

The aims in the development of university performance management are:

- To secure favourable conditions for the operation of a regionally representative university system;
- To ensure strategic steering, with emphasis on evaluation in development;
- To support universities in defining their strategies and profiles; and
- To achieve a high quality of university operations and their strong impact on society and the regions.

The process of performance agreement and the setting of target outcomes starts in June (year n-2) when the Ministry sends the instructions based on the strategic guidelines to universities for the following performance negotiations. The university performance agreements determine quantitative and qualitative targets, the resources needed to achieve these targets, the monitoring and evaluation of outcome, and further development of operations. The university target outcomes are set for a three-year period. In the intervening years, the targets are reviewed and confirmed and resources are determined for the following year. Aims relating to quality and its enhancement are largely the university's own responsibility.

In the agreement period 2004–2006 quantitative targets are set for entrants to Bachelor's and Masters' programmes; for Master's degrees; for doctorates; for international student exchanges; for full-time equivalent student places in open university instruction; and students transferring to degree programmes via the open university track. The target numbers are set by fields of study. Where no quantitative targets can be determined for

societal impact, the objectives describe the nature of activities. All except the quantitative performance targets are common to all universities, but an effort is also made to take account of each university's own specific profile and relevant aims.

The performance agreement process also includes preparatory seminars and other joint events for the universities and the Ministry of Education before they embark on the actual performance negotiations. The aim of these events is to increase interaction between different levels and to promote commitment to the targets. The universities send their target performance materials to the Ministry in February (year n-1), such as strategic policy lines, project proposals and a brief memorandum describing the achievement of the previous targets and explanations for possible failure to do so. At this point, the KOTA data become available for the preparation of the performance agreements. In March, before the actual negotiations, the Ministry of Education sends a draft agreement to the universities. They give their opinion on the agreement to the Ministry before the negotiations, which are conducted in April when the universities' financial statements are available.

In the Ministry-university performance management procedure, monitoring is mainly based on the financial statements and the KOTA database. The database is being developed to include better-documented planning and monitoring data and to be more flexibly accessible to the various parties. In addition to these data, the Ministry requests separate reports on the progress made in national programmes and projects.

In the performance negotiations, the universities are given oral feedback concerning the previous year's performance. In September-October, the Ministry gives written feedback about the quality of reporting, the effectiveness of operations and development needs in strategic priority areas. University finances are audited by state auditors appointed by Parliament and the independent State Audit Office attached to Parliament.

The new steering system has highlighted the role of evaluation in university development.

The Universities Act assigns the universities a

statutory obligation to assess the quality of their operations. In the Finnish system, there is no significant connection between evaluation findings and the resource level, especially as concerns teaching. The purpose of evaluation is to enhance the quality of operations, and the main responsibility for acting on evaluation findings rests with the university. Evaluation findings are also used in the monitoring of activities which cannot be given quantifiable targets. Universities are assisted in educational and other evaluation by the Higher Education Evaluation Council. The Academy of Finland is responsible for evaluating research.

Operational expenditure in the agreement period 2004–2006

University resources consist of state funding, allocated by the Ministry of Education, and external funding. The resources for the Ministry of Education sector are annually decided by the Government in the budget framework. The Ministry determines the share of the university budget within this framework.

The Ministry of Education steers university activities financed from the core funding, primarily concerning itself with financing university research and relevant teaching and maintaining the relevant infrastructure and thereby the infrastructure of the whole national research system. The basic principle

is that the main responsibility for externally financed activities rests with the university. However, external financing is linked to the steering system through economic planning and net budgeting. The external funding should support the university's basic mission.

One aim in the development of the financing system is to include only the funding of essential development needs in the financing model and to ensure continuity. Another aim is to effect a closer connection between targets and resources, i.e. that the expanding activities and the growing facilities expenditure are reflected as a corresponding increase in the budget. The core funding formula based on unit costs has been developed as a national framework allocation model geared to secure both the core mission of universities – teaching and research – and the financing of the societal services they provide. Universities use their own criteria in internal resource allocation.

The financing allocated by the Ministry of Education to universities during the agreement period 2004–2006 comprises the following (as a percentage of operational expenditure in 2004):

- Actual core funding (89.4%)
- Financing of national tasks (1.5%)
- Financing of national programmes (4.7%)
- Project funding (1.9%)
- Performance-based funding (2.4%)

Table 15. Core funding in 2004–2006

| Core funding ¹⁾ (M€ 1 013) | | | | | | | |
|--|-------------------------|-----------------------|--|-------------------------------|--|---|--------------------------------------|
| Extent factor (19%) | | Education (44%) | | Research (30%) | | Societal services (7%) | |
| Basic component (M€ 65) | New students (M€ 65) | Facilities (M€ 65) | Master's degrees (M€ ~447) - targets 2/3 - realised 1/3 | Graduate schools (M€ 36,5) | Doctorates (M€ ~262) - targets 2/3 - realised 1/3 | Open university (M€ 13) - targets 2/3 - realised 1/3 | - Other societal services (M€ 60) |

¹⁾ The calculation is based on an assumed total of EUR 1013 million, from which the percentages are calculated. The extent factor and societal services are fixed sums. The teaching/research ratio is 60:40. Any increases in the framework funding must spent on finance teaching and research.

Core funding

The aim is to keep core funding as stable as possible and at a level which covers most operational expenditure, around 87%. The core funding is allocated by means of the unit-cost formula, which has been designed to be as transparent and predictable as possible. The purpose is to divide the framework funding between the universities, not to allot funds directly to different degrees or other activities. This will also secure resources for other activities besides undergraduate and graduate education. Whenever necessary, activities not covered by the formula are agreed as part of the societal services financing.

The formula used to allocate university core funding comprises four segments: extent of activities, teaching, research and societal services.

Apart from regulations concerning graduate schools and open university teaching, the university can allocate core funding at its discretion.

The extent factor comprises the basic component allocated to all universities, resources based on the target number of new students determined in the performance agreement, and facilities expenditure. The basic component is determined in relation to the 2003 operational expenditure. The new student allotment is determined in relation to the target numbers set in the performance agreements for 2004–2006 and the facilities expenditure is divided in relation to the 2002 data on realised budgetary expenditure on facilities as recorded in the KOTA database. The extent appropriation is agreed for a three-year period.

The criteria used in the teaching and research appropriations are the target numbers of Master's degrees and doctorates (coefficient 2/3) and the degrees conferred (coefficient 1/3) in each field of study. The realised number of degrees is calculated as a three-year average to minimise annual variation. The target and realised numbers of Master's degrees are further weighted with a field-specific cost coefficient.

As regards doctorates, it is assumed that the costs do not vary between fields to the same extent as in undergraduate education. The differences are further levelled out by external research funding.

Field-specific cost factors are difficult to determine because the fields of study differ in their internal structure. In addition, separate financing is granted for certain activities in some fields of study. There are still some weaknesses in the cost calculation data with regard to time-use.

The Master's degree coefficient in different fields of study in the period 2004–2006:

- I group (1.25): The Humanities, Economics, Law, Theology, Health Sciences And Social Sciences
- II group (1.5): Education; Sport Sciences; Psychology
- III group (1.75): Technology, Natural Sciences; Forestry-Agriculture
- IV group (3.25): Pharmacy; Veterinary Sciences; Dentistry; Medicine
- V group (Arts): Fine Arts and Art & Design (3.75); Music (4.5); Theatre And Dance (5.5)

In the research allotment, account is taken of the financing of graduate schools, which is decided by the Ministry of Education on the basis of Academy of Finland evaluations and the proposal of the graduate school follow-up group.

The size of the societal services appropriations depends on open university provision and other non-core services. The financing of open university instruction is based on the target and realised numbers of full-time equivalent student places (2/3–1/3).

The funding allocated to other societal services is intended to support equipment-intensive activities and those that reinforce the university's regional impact. The financing is partly calculated on the basis of R&D expenditure and research personnel.

National tasks

National tasks are activities of major significance in terms of national education, research or cultural policy and have been assigned to the universities in legislation. These tasks (e.g. the National Library) are not directly connected with degree education. The financing of national tasks also covers posts

based on cultural exchange agreements, and the teaching of languages and cultures less widely known in Finland. The government funding only covers part of the costs and the universities have to provide the rest themselves.

National programmes

The multi-annual national programmes initiated by the Ministry of Education derive from the Government Programme, the Development Plan for Education and Research and the Ministry's own resolutions.

Programmes relating to national priorities in the period 2004–2006:

- Educational development (two-cycle degree structure, student selection, quality assurance)
- The Virtual University
- Development of teacher training
- The national health project
- Language technology
- Business know-how
- Biotechnology
- Russia Action Programme
- Information industry
- Regional development

Project funding

Project funding is allocated to universities' own ventures which support nationally set objectives, universities' joint networking projects, and the furnishing and equipment of new buildings. This aid is targeted at strategic priorities which are a special focus in the year concerned. The aim is that universities take care of smaller projects by means of internal arrangements. The condition for the Ministry subsidy is that universities provide part of the financing themselves. The purpose is to ensure the university's commitment and thereby the continuity of the project even when the Ministry financing ends.

Where necessary, questions relating to national cooperation networks are agreed in the performance negotiations. Project funding is primarily allocated to cover the cost of coordination in joint projects.

The financing of projects necessary for the operation of educational networks is agreed with the coordinating university. Development projects implemented as educational networks must constitute a model of action which supplements the operations of the university institutes and enhances profile definition, structural development, cost-effectiveness and productivity.

Performance-based funding

Since 1998 some university resources have been allocated on the basis of performance. Performance-based funding rewards universities for the quality and effectiveness of their operations and gives incentive to develop the operations further. The performance-based funding is allocated according to performance criteria relating to policy objectives. The criteria are the same throughout the agreement period, with emphasis on centres of excellence, which are designated on the basis of evaluations and which highlight the quality aspect. Universities can decide independently whether to allocate these funds to their centres of excellence or to use them as their internal performance-based financing. The performance-based funds represent about 2.4% of universities' operational expenditure.

The performance criteria for 2004–2006 are:

Quality of research and artistic activity

- Centres of excellence in research designated by the Academy of Finland
- Academy of Finland financing
- Other external research funding
- Centres of excellence in artistic activity designated by the Arts Council of Finland

Quality, efficiency and effectiveness of education

- Centres of excellence in education designated by the Higher Education Evaluation Council
- Universities of excellence in adult education designated by the Higher Education Evaluation Council
- Progress in studies: credit accumulation, the proportion of Bachelor-level graduates, duration of studies before graduation

- Graduate placement: the graduate unemployment rate and changes in it
- Internationalisation: student exchanges, balance in exchanges, degrees awarded to foreign students.

Institutional reviews

According to a Ministry of Education resolution, institutional reviews are carried out in order to appraise the extent to which the personnel's view is taken into account in university activities, the measures taken to strengthen societal impact, and the university's capacity for renewal.

KOTA database

KOTA (<http://www.csc.fi/kota/kota.html>) is a statistical database maintained by the Ministry of Education. It contains data describing university performance by institutions and by fields of education from 1981 onwards. The universities are responsible for the accuracy of the data they provide.

KOTA has been designed to give the Ministry and the universities access to data needed in the planning, monitoring and evaluation of university operations and management. In the development of KOTA, overlapping data collection has been pruned and concepts have been unified. The technical design has been constantly improved from 1986 onwards. In response to changes in the operational environment, the data content has been gradually expanded and old concepts have been redefined.

The database is accessible in the Finnish inter-university network and stored at the Centre for Scientific Computing, which is also responsible for the technical design.

Each university has a KOTA liaison responsible for the updating of data, the sharing of information and other contacts. The liaison feeds the previous year's data directly into the database at the beginning of each year. Part of the data comes from materials provided by the National Board of Education, the Centre for International Mobility (CIMO) and Statistics Finland.

The KOTA data content has progressively

become more reliable and up-to-date, which has promoted its applicability. Most information concerning the previous year is available in KOTA in January – February.

After gradual expansion and inclusion of new data groups, KOTA now contains the following data mainly classified by university and field of study:

- Applications and admissions
- Students
- Foreign students
- Degrees
- Duration of studies
- Graduate placement
- Teaching staff
- Other staff
- Appropriations
- Costs per performance areas
- Premises
- Continuing professional education (extension education)
- Open university instruction
- Researchers' and teachers' visits abroad
- International student mobility
- Target number of degrees
- Scientific publications
- Courses taught in foreign languages
- Practice schools

In addition to the statistical data, KOTA contains instructions for use and data compilation, definitions and the classification of data. It includes a handbook which defines the classifications and the common data basis required for national university statistics and the compilation of data. The handbook is jointly updated by the Ministry of Education and Statistics Finland. The database also contains the contact information of the KOTA liaison in each university.

Today, the KOTA database constitutes a crucial monitoring tool for performance management. However, compared with state-of-the-art systems, it is somewhat outdated as regards both technology and content. The numerous changes that have taken place in the public sector and in the academic

environment necessitate a major overhaul of KOTA. In view of this, a process has been launched for developing the database into an interactive system which caters better for the needs of performance management and decision-making and which contains not only numerical data but also elements relating to quality and impact.

7.5 Performance management in polytechnics

Steering system

The polytechnics are governed by the Polytechnics Act and Decree. They determine their status in the education system, their mission, administration, management, evaluation, teaching and degrees, the eligibility of polytechnic graduates for further studies, teachers' qualification requirements, and the principle of free degree education.

Major policy guidelines and development targets are determined at a general level in the Government Development Plan for Education and Research. Performance management is the most important tool used by the Ministry of Education in steering the operations of the polytechnics. This is strategic steering based on the national polytechnic policy. The Ministry and the polytechnics have agreed on objectives and target outcome since 1994. Initially annual agreements, they are now concluded for three years, the current one for 2004–2006. Funding and education supply are determined for each year separately.

The performance agreements are the result of a year-round process:

- In the autumn, the Ministry of Education discusses the following year's agreement and targets with the polytechnic rectors and with stakeholders, such as the polytechnic student organisation, the Association of Local and Regional Authorities and labour market partners.
- In November, there is a seminar on targets and performance management for representatives of the Ministry of Education, polytechnic management and the owners of polytechnics.

- In December, the Ministry issues instructions to help the polytechnics draw up their proposals.
- In early February, the polytechnics submit their proposals.
- In March, the rectors meet to discuss the most important issues to be negotiated.
- The Ministry gives feedback to each polytechnic individually.
- Further negotiations are held in March – April.
- In September, after the negotiations have been concluded and the Government has published its budget proposal, the agreements are signed.

The agreements between the Ministry of Education and the polytechnics have the following structure:

- The polytechnic's own assessment of its performance
- Objectives common to the polytechnic system as a whole
- The mission of the individual polytechnic
- Goals for structural development
- Number of study places by fields of study, including adult education
- Other development objectives
- Development of teaching
- Regional development, cooperation with the world of work, and R&D
- Internationalisation
- Staff development
- Resources: core funding, project funding, performance-based funding.

Funding

The providers of polytechnic education (local authorities, joint municipal bodies or foundations) receive all their core funding from the government. Under polytechnics legislation, the government provides 57% of the core funding and local

authorities the remaining 43%, according to their populations. In other words, the local authority's share does not depend on how much education it provides or how many of its residents are participating in education, but solely on the number of residents.

The government share is recorded in the state budget as a net sum. The local authorities' share of the financing also goes through the government. If the education provider is a local authority, its own financing share is deducted from the sum allocated, whereas joint municipal boards and private educational providers receive all their core funding through the government.

Although local authorities have no obligation to use all the statutory government aid specifically on education and training, the Ministry of Education and the polytechnics have agreed in the performance negotiations that the polytechnics spend the core funding they receive on running costs in full.

Polytechnics obtain almost all their financing for degree programmes from public funds and charge no tuition fees. They also receive external funding, mainly for extension education services and R&D. This funding amounts to 22% of their budgets.

The polytechnics receive three kinds of government funding:

Core funding

Generally speaking, the system of core funding includes both statutory aid and subsidies for running costs and new establishment projects. It is calculated on the basis of unit costs.

The main characteristics of the unit cost system are the following:

- The unit costs are determined in advance for the following year; they are not influenced by any decisions taken by a local authority or other polytechnic owner concerning educational arrangements or any funds supplied by them for these purposes.
- The criteria used in granting and calculating the co-financing shares do not govern the actual use

of the funds. The financing of polytechnics is included in the overall sum of statutory state aid allocated to the local authorities, who have considerable leeway in allocating the resources at their disposal.

- The local authorities' co-financing share (43%) is based on unit costs, which are the same for all the local authorities.
- Statutory government aid is intended to cover running costs relating to polytechnic degree education and long-term specialisation programmes.
- The unit costs are calculated per student. The funds are paid directly to the owner of the institution which has admitted the student.
- The unit costs are calculated from realised expenditure every two years. Unit costs are different for different fields of study.
- To determine the basis for the following year's statutory government aid, the unit prices are multiplied by the number of students.

Project funding

The polytechnics also receive project funding. In recent years, this has been predominantly targeted to the support programme (staff development training, internationalisation, development of information networks and virtual learning environments, and careers and recruitment services); the basic prerequisites of R&D; and the development of the Virtual Polytechnic. Project funding is allocated to joint ventures involving all the polytechnics, the focus in the period 2004–2006 being on the development of studies. Growing resources are also allocated to polytechnics' regional projects. Polytechnics always provide part of the funding for these projects themselves.

Performance-based funding

The performance of polytechnics is assessed on the basis of five theme entities: the development of

teaching and teaching methods; the attractiveness of the education and progress in studies; relevance to the world of work and R&D; regional impact; and operations and capacity for renewal. The performance criteria have been determined and revised by a broad-based committee. Some performance-based funding has also been allocated to polytechnics on the basis of evaluations made by the Higher Education Evaluation Council, which in 2002 reviewed the centres of excellence in teaching and in 2003 the centres of excellence in regional impact. In 2003, an appropriation of 1.7 million euros was allocated on the basis of general performance criteria and 1.7 million euros to centres of excellence selected on the basis of the evaluations.

The government grants subsidises for certain national projects of a permanent nature, as in the university sector. These include web connections and information networks, the polytechnic monitoring and evaluation database AMKOTA, the student selection system, and library systems.

Reform of the financing system

There are plans for overhauling the system of polytechnic financing with a view to a more stable calculative and encouraging system. The old financing system was based on real student numbers and real costs in main fields of study. The system was quite instable and it missed encouraging elements.. The new system would base on calculative student numbers, which would be agreed in negotiations with the ministry and polytechnic and number of graduating students. The reform is connected into larger finance reform in social and health care system and is for the moment in preparatory stage.

7.6 Monitoring and evaluation database

The performance agreements concluded between the Ministry of Education, the organisations running polytechnics and the polytechnics constitute an important mechanism for translating

major higher education policy objectives into each polytechnic's reality.

The monitoring and evaluation of the objectives set for the polytechnic system form an important part of the steering system. The evaluation and monitoring database AMKOTA is a key tool for the Ministry in information-based steering and management.

The AMKOTA system has been developed from a traditional statistical database into a decision-making tool for the Ministry and a channel of communication in the performance negotiations between the Ministry of Education and polytechnics.

Data content and data production

Data on polytechnics' operations

The polytechnics use electronic forms or transfer files to update data not collected by Statistics Finland and data which, owing to the production timetable, are not otherwise ready in time for the negotiations.

Licence data

The provision of polytechnic education is based on a licence issued by the Government.

Degree programmes

The Ministry of Education makes decisions concerning degree programmes based on the polytechnics' proposals, determining what programmes and degree education each polytechnic offers. Polytechnics submit their proposals through AMKOTA. The Ministry makes its decisions with the help of AMKOTA; the necessary information is recorded in the database and the decision is printed out and signed.

Entrant places

Polytechnics make proposals for the number of entrant places for the following year, divided between the degree programmes determined in the Ministry's decision. Both the decision and

the entrant data are used in the writing of the study guides and in the joint national application system.

Project proposals

Each polytechnic and the Ministry of Education agree on project funding in the performance negotiations. The project proposals are submitted through AMKOTA. It contains a form which has sections for priorities, the number of projects, and cost and financing data, and a predefined structure for describing the purpose of the project.

Data from Statistics Finland

Statistics Finland has been contracted to produce statistics, publications and other materials which the Ministry of Education uses for planning and evaluation together with other AMKOTA data.

The statistics and data collection are primarily developed by Statistics Finland. The principle is to avoid overlapping and doubling in data collection and to acquire data from the source where it is recorded when a matter is processed. Statistics on polytechnic R&D are also compiled by Statistics Finland. They are delivered as files from which AMKOTA users can retrieve data in the form of reports or statistics.

Development of information management

The production of data needed for polytechnic evaluation and performance management and its development, the performance criteria and the quantification methods are reviewed regularly. The three-year agreements provide the time span within which development objects are examined.

The database is being expanded and the data processing improved with a view to developing a versatile tool for performance management and performance negotiations between the Ministry and polytechnics.

The development also caters for the needs of legislative work, financing and cost control. Data production must be capable of responding to new needs ever more rapidly. Some data needs are occasional, others periodical, while other needs are constant (student numbers, graduation rates). Data enquiries entail an interactive system.

OPALA, student feedback system

OPALA is a joint Ministry-polytechnic system for collecting student feedback. The OPALA questionnaire is used to collect current information about the placement of polytechnic graduates and students' opinions of education and work practice.

CHAPTER 8.

Planning, governing and regulating the system

8.1 Introduction

The Finnish tertiary education system comprises universities and non-university institutions, i.e. polytechnics. The Universities Act provides for the mission, overall administration and structure of the universities. There is a corresponding Polytechnics Act. The Government Decree on Higher Education Degrees lays down the status of each higher education degree. It determines the degrees to be awarded in higher education, their objectives and overall structure, the responsibilities of different HEIs for different fields of education and the degrees to be awarded in these fields.

The universities themselves determine the student selection procedure and the intakes. In the performance agreement, the Ministry of Education and each university agree on the target number of degrees, which forms the basis for the budgetary funds allotted to the university. The new Government Decree on Higher Education Degrees promulgated in 2004 replaced 20 former field-specific Decrees. All universities, including the art academies, have the right to award academic postgraduate degrees, doctorates. There is an intermediate postgraduate degree called the licentiate, which often has a professional focus.

Being autonomous, the university may determine the content of the educational programmes and courses it offers and the course profiles. In performance negotiations, the Ministry of Education may grant specific funding for a new educational entity, if this is in line with the national education policy objectives. In some fields (e.g. Technology), the Ministry approves and confirms the degree programmes offered by the universities. The purpose is to ensure national coordination and the quality of the programme within the scope of the university's educational responsibilities and the resources available to it. The new degree statutes are based on the principle that the Ministry of Education confirms and approves new Master's programmes with the aim of ensuring that the decisions are based on educational needs and have a high quality.

Universities have full freedom of research and teaching. The universities themselves decide on their research priorities. Similarly, the Ministry of Education takes these policy lines into account in steering the universities by means of performance negotiations and information-based guidance. The Academy of Finland has its own research policy

which is realised through its research programmes and different instruments it uses to develop research, such as centres of excellence and graduate schools, and implements its own research priorities through resource allocation. The Ministry of Education allocates resources to research areas it considers important by means of national programmes and projects for infrastructure and laboratory development.

Universities recruit their own personnel, appoint professors and elect their rectors and senates, but the Ministry of Education signs collective agreements with the employee organisations. The agreements determine the minimum terms, from which the universities can deviate upwards if they so wish. The aim is to adopt a new salary system in 2005, which will give universities more latitude in differentiating salaries on the basis of good performance.

The government uses a formula in the allocation of budgetary funding. Core funding is mainly allotted to universities in a block sum, which the universities can use at their discretion. Only a fraction of the core funding determined in the performance agreement is earmarked for specific purposes, such as postgraduate education salaries or jointly agreed development targets.

The universities themselves make decisions concerning their facilities. They do not own the premises they use, most of them belong to the state company Senate Properties. The Government determines the principles of rent collection. Since 1995 the universities have been able to decide independently on the construction of their facilities, which led to a building boom. The growing facilities costs have caused difficulties to some universities and led to demands for additional government funding. This is why a new procedure was adopted in 2003: all major construction projects need to be approved by the Government, and the state budget determines a ceiling for additional costs due to new investments in the university system. Universities may also rent premises in the commercial market but cannot own their own premises.

University autonomy and accountability have

been under active discussion for several years. University autonomy has been developed systematically and extensively for years. The Development Plan for Education and Research 2003–2008 records the aspiration to further strengthen university self-government. The university has full autonomy in scientific research, independent jurisdiction in personnel recruitment within the scope of the collective agreements, full decision powers in hiring personnel, full decision powers in determining its own organisation and faculties, and freedom in teaching within the scope of the Government Resolutions concerning fields of education and the conferral of degrees and the procedure whereby the Ministry of Education approves degree programmes on the basis of quality and educational needs.

Within their economic autonomy, universities can conclude agreements, acquire external funding and use the income generated through external funding. Universities have expressed their desire to be excluded from the system of auditing applied to other state agencies and from the supervision geared to ensure that budgetary funds are used according to the procedures and restrictions laid down in the budget. Universities have criticised the financial accountability regulations for rendering the content and form of bookkeeping and the closing of accounts too inflexible.

Universities have wanted larger discretion in the use of budgetary funds. In the 2005 budget, universities will be given more latitude for setting up business enterprises and participating in business with a view to implementing the missions assigned to them in the Universities Act, especially the third mission of contributing to social development. Similarly, the universities have wanted greater freedom in charging fees for courses. Debates, for instance in connection with a national globalisation review conducted by the Government in summer 2004, have raised the question of fees charged to foreign students, the possibilities of business and industry to purchase degree education and the possibility of the universities to enter the international educational market.

8.2 Priorities in expansion

During the past ten years, there has been considerable expansion in Finnish higher education provision: in 1995, the number of new students in universities was 17132 and in 2003 20936, the number of higher (Master's) degrees awarded 9807 in 1995 and 12412 in 2003, the number of doctorates 758 in 1995 and 1257 in 2003. The growth has been effected according to the Government's overall strategy, which sees education and training and a higher level of education as a means of improving Finland's competitiveness and welfare. Part of the growth has been due to special multidisciplinary expansion programmes (teacher education, information industry fields, business know-how), implemented in response to the rapid change in the demand for highly educated professionals and in the industrial structure and to the foreseeable shortage of highly educated workforce owing to the retirement of the large age groups.

Researcher training and the number of doctorates have grown three-fold in ten years owing to the stated political aim to step up researcher training and the Government Resolution to increase the level of R&D funding and relative R&D input (measured as % of GDP) to the world top. This increased the demand for researchers and for researcher training. Postgraduate education and researcher training were targeted to fields in which there is demand for researchers and researchers can find jobs outside the academic community.

The expansion was also geared to regional development: education in Economics and Business Administration was enlarged and initiated in new university units in Rovaniemi, Kuopio, Joensuu, Mikkeli and Pori. All other expansion schemes have also been regionally equitable. The *maakunta*⁹-counties, regions and cities have also sought to influence the expansion. As a result, university education is now provided in six new in university subsidiaries (the university centres of Pori, Lahti,

Mikkeli, Seinäjoki, Kokkola, Kajaani). These subsidiary units form a local university campus called university centre. Local stakeholders, cities, counties and businesses play an important part in their operations. The strategic steering of the Ministry of Education stresses regional cooperation between the new university centres and polytechnics.

Alongside the growing university supply, polytechnics have also developed rapidly. Polytechnic education is one to two years longer and of a correspondingly higher level than the education provided by the vocational colleges from which it was developed. In 2003 polytechnics awarded N higher education degrees.

8.3 Institutional governing bodies

The Universities Act contains provisions concerning the tasks and structure of university administrative bodies. According to a recent amendment, university senates must include at least one member external to the university from 2005 onwards, whereas the former provision stipulated that the senate may include external members. The Act further provides that university administrative bodies must have tripartite representation, i.e. of teachers, other staff and students. In its information-based guidance, the Ministry of Education has advised universities to devise comprehensive quality assurance systems and describe the good administrative procedures they seek to implement. Otherwise the universities are subject to the principles and regulations governing public administration.

Universities are autonomous institutions and have the right to disburse the lump sum budget they receive from the Government in accordance with their own decisions. Universities may take decisions on their management structure, student admission policies, the nomination of their

⁹Maakunta = a traditional county, not part of the official or elective administration; for a longer explanation see footnote in Chapter 3.3.

academic and other personnel and the content of the education curricula for their academic programs. In addition, since August 2005, universities have been permitted to establish private companies through which they can further support their activities such as the commercialisation and exploitation of research. Universities continue to be accountable to the Government for their activities and the manner in which they use funding from the public purse.

The government decides which fields of education each university is accredited to offer degrees in. Currently all universities which have the right to offer masters-level degrees also have the right to offer doctoral degrees. Both the needs of labour market and a range of quality requirements are taken into account before permission is granted. At the moment, systematic and comprehensive external quality assessment processes are not required in most cases. There is discussion as to whether the right to offer doctoral degrees should be limited to those institutions which fulfil a range of quality criteria.

In general, universities do not own the buildings and facilities they occupy, and they negotiate their usage of buildings with state-owned authorities. Most university buildings are 'owned' by the Government's Senaatti company, which is responsible for about 85% of buildings. Other building organisations are responsible for the remaining 15%. Government permission is required before universities negotiate new rental agreements, which take into account rent adjustments and the size of the overall capacity of the state budget. This requirement to match rental costs and growth to the capacity of the overall state budget effectively limits unwarranted growth in rental costs.

The new Polytechnics Act took effect on 1 August 2003. According to the Act internal administration of polytechnics is managed by the board and the rector. The board is composed of representatives of the polytechnic leadership, full-time teachers, other personnel, students, and local business and employers. The rector is appointed by the maintaining organisation.

The maintaining organisation decides on strategic development of the polytechnics and adopts the action and economic plan and budget. The autonomy of the polytechnic vis-à-vis the maintaining organisation is largely determined by the decisions taken by the maintaining organisation concerning financing and key objectives.

8.4 Improving institutional management

In passing an amendment to the Universities Act in 2004, Parliament called upon the Ministry of Education to explore means of improving university management and management procedures. The amendment requires that the university rector has proven management skills. Information-based guidance, which is part of the performance steering of universities, has stressed university management for several years. The Ministry of Education seeks to step up strategic management in universities and calls upon universities to improve their strategic operations by means of extensive strategic planning.

University financing involves performance steering, which means that targets are set for all university activities and that university funding is based on these targets and their attainment. In addition to financing based on target outcomes, the financing model includes funding based on good performance and good quality, i.e. quality awards. Steering based on target outcomes and the strong stress on the level and achievement of targets have played a decisive role in stepping up university operations.

In the early nineties, the Ministry of Education requested that all universities undergo overall evaluations of their operations and activities by 1997. In the performance negotiations the Ministry monitors the development measures taken as a result of the evaluations. The Ministry has also requested that the university management take the measures to be taken as a result of evaluation findings on their agenda. The need to increase the universities' competence in financial management

and to improve cost calculation in university management has been intermittently raised by state auditors, as well as in university performance negotiations and agreements. A special project for developing university cost calculation was launched in 2003 and is still going on.

8.5 Linkages among tertiary institutions and transfer of students

With a view to improving inter-institutional contacts, some fields of education have developed inter-university networks. These enable students to move between universities and participate in education at other universities (health sciences, social sciences, psychology). These collaborative networks have obtained special funds for producing virtual learning materials and developing courses. Economics and Business Administration has been initiated in new universities (Rovaniemi, Kuopio, Joensuu, Pori, Mikkeli) by means of a network led by a parent university. In the new university centres, the aim is that the students can choose courses from all the university centre partners. All the 112 graduate schools have been established to cater for students from several universities. Under the new Universities Act, the polytechnic degree provides eligibility for university Master's programmes.

On the whole, students move from one university to another through entrance examinations. The possibility for a student to transfer from a programme to another within one university varies from university to university, but is generally difficult. Some universities require above-average study attainments for such transfers, but commonly also an entrance examination even when the student is already enrolled in some university. The entrance examination system may sometimes lead to a situation in which students use university studies in some field as a stepping stone to another field, for example studies in chemistry as a means of gaining entry to medical studies. Universities do not often provide clear written information to students

about the possibility to transfer from one programme to another, but this information can be obtained through personal guidance counselling. Generally, universities and faculties do not take a very positive view of programme changes because they want to hold on to their good students. There are no data available about transfers from one programme to another or one university to another.

Students graduating in polytechnics have the eligibility to continue their studies in universities and vice versa. It is up to individual institutions to decide how much credits they will give of earlier studies.

8.6 Linkages between tertiary institutions and other forms of education

All universities offer adult education in the form of open university and extension education. Successful completion of a sufficient number of credits in open university instruction entitles the student to gain entry to degree studies. The aim is to give adults an opportunity to study for the lower university degree in the widest possible selection of fields. Open university studies are counted towards the degree.

Since 2003 the Ministry of Labour has been able to arrange and finance university education for unemployed persons who have discontinued their studies at a late stage in their studies in order to enable them to graduate. All universities offer extension education against fees, which employers can purchase and offer to their employees. The Ministry of Education sees that extension education must be profitable for the universities since they operate on the free education market alongside other training organisations.

8.7 Diversity between the tertiary education system

Polytechnics aspire to offer postgraduate (Master's) degrees alongside their polytechnic degree (B.A./

Sc.) programmes. There is a pilot geared to assess the feasibility of polytechnic postgraduate degrees with a view to a decision on a permanent system to be taken during 2005. It now looks that the postgraduate polytechnic degree will be made permanent and the question is whether to empower all the polytechnics to offer masters programmes. This would require considerable financial input, which would mean a significant additional investment in the polytechnic sector.

Polytechnics are actively planning the further development of their R&D. Their representatives have expressed wish that polytechnics obtain a share of the funding allocated to scientific research. Some polytechnic rectors speak openly about polytechnic doctorates. For the moment new postgraduate degrees, which correspond to Master degrees in universities have been official response to this debate. Post-graduate studies are directed towards working life problems and they are not in their nature academic in traditional meaning of the term.

additional points in admissions for prior studies or for work experience. The fact that entrance examinations require prior knowledge has also led to a situation in which students first pursue studies elsewhere in order to gain entry to university or in a related faculties to gain knowledge and skills needed to gain admission to their preferred field. School guidance counsellors provide information about higher education studies. There is a national selection guide which presents the provision of all the universities and outline career prospects in different fields of education. All the universities actively recruit students, publish information materials intended for use in upper secondary schools and arrange open-doors and other events in order to present their provision to upper secondary students.

8.8 Credit transfer

In its policy, the Ministry of Education has encouraged universities to count studies completed elsewhere fully towards the degrees they offer. To this end, the Finnish universities have concluded an agreement which guarantees students the right to study in other universities and include these studies in their degree programmes to the extent approved by their own university. Universities take a very critical view of credit transfer from polytechnics. The Ministry of Education has required that knowledge acquired elsewhere must also be recognised and counted towards the study requirements. The Ministry calls upon universities to introduce personal study plans, which also provide for the transfer of credits acquired elsewhere with a view to preventing overlapping in studies, but in a way which ensures that the student fulfils the knowledge requirements set for the degree.

There is no centralised data about credit transfer and about the use of prior learning in selections and in credit transfer. In some fields, students get

CHAPTER 9.

Assuring the quality of tertiary education

9.1 Finnish approach

The idea of systematic evaluation of Finnish HEIs was first presented in 1985 by a Ministry of Education committee deliberating university performance assessment (KOTA committee). According to the committee, evaluation was needed and, when professionally done, could help universities to respond to existing and anticipated needs, improve performance and tackle their weaknesses. The report recommended that two kinds of evaluations be conducted: institutional reviews and national disciplinary evaluations of research and teaching. The national university data base KOTA was established for the purpose. It made quantitative data on the resources and performance of universities publicly available (www.csc.fi/kota/kota.html). Further, in 1986, the government called upon universities to put in place their own evaluation systems.

External evaluation or external quality assurance covers research, degree programmes, institutions, and specific themes, such as admissions and student guidance counselling. As quantitative information on the performance of HEIs is available

in KOTA and AMKOTA, the approach in external evaluation is mainly qualitative. Following the Berlin Communiqué, a new approach – audit of the quality assurance systems of Finnish HEIs – is being planned.

Finnish higher education institutions are obliged by legislation to evaluate their own activities and performance on a regular basis. They are also obliged to take part in external evaluations and publish the results of the evaluations.

It is mainly up to the institutions themselves to decide which evaluations they participate in. Participation in the thematic reviews initiated by the Finnish higher education evaluation council are also based on voluntary participation. This has led to a situation where adequate systematic and comparable information on the quality of Finnish universities and polytechnics does not exist.

The operating environment of Finnish higher education institutions has rapidly changed, and in international cooperation the institutions' legal status is not seen as an adequate proof of their high quality. The need to have evidence of good quality for international partners, students and employers call for a change in Finnish evaluation policy.

There is no doubt that the Finnish quality assurance system fulfils all the European criteria both in standards and in methodology. But as the political aim is to increase the competitiveness of Finnish higher education, there is a need to create a kind of quality assurance system which would increase the visibility of Finnish higher education in international setting. Thus a welcome idea for the Finnish system is the forthcoming recommendation by the European Union to allow institutions to choose any accredited international quality assurance agency to evaluate them. The relationship between a national quality assurance system and a more international approach needs to be considered when amending the present legislation on evaluation.

9.2 National quality assurance agencies

The main responsibility for the quality of tertiary education rests with the universities and polytechnics themselves. The Finnish Higher Education Evaluation Council (FINHEEC) was established in 1995 by a decree (1320/95 and 465/98) and started to operate in 1996. FINHEEC is an independent expert body funded through the Ministry of Education. FINHEEC deals with both tertiary education sectors. According to the decree FINHEEC

- assists HEIs and the Ministry of Education in matters relating to evaluation
- evaluates polytechnics for accreditation for operation on a permanent basis
- organises evaluations relating to the operations of HEIs and to higher education policy
- takes initiatives concerning tertiary education evaluation and policy
- participates in international evaluation cooperation
- promotes research on tertiary education evaluation

- evaluates and accredits professional non-degree courses offered by HEIs.

The Academy of Finland is responsible for research evaluation.

In addition, there are some professional organisations (especially in the field of business studies) which monitor the learning experiences of graduates, mainly concerning institutions and programmes in that field.

9.3 Methods used to assess research quality and teaching quality

FINHEEC emphasises enhancement in its evaluations; accountability has a minor role. The focus on improvement rather than control is possible because of state regulation of tertiary education and the KOTA and AMKOTA databases. The evaluation of education mainly follows a model comprising a coordinating body (FINHEEC), self-evaluation, external peer review and site visits, and a published report. In the peer review, it is common, but not obligatory, to use international teams. In addition to the four-step model, both national and international benchmarking is used. International benchmarking was used in the evaluations of polytechnic libraries and institutional administration. National benchmarking was applied to the development of language instruction and work-based learning (FINHEEC reports 12:1999; 14:1999; 6:2001; 7:2001).

Generally Finnish tertiary education evaluation has no direct link with funding, but the evaluations conducted with a view to designating centres of excellence in both tertiary education sectors serve as one indicator in performance-based funding.

Research evaluation serves competitive research funding. Research evaluation is the responsibility of the Academy of Finland. The Academy designates centres of excellence in research. This policy predates a similar policy applied to high-quality units in teaching. The aim of the centre-of-excellen-

ce scheme is to enhance the quality of Finnish research, its international competitiveness and visibility, and the attraction and appreciation of research. The centre-of-excellence programmes are open to all disciplines. One key objective is to promote interdisciplinary research. The model used in research evaluation is mainly based on international peer reviews.

9.4 The role of students and graduates in quality assessment

Students have an important role in the internal quality assurance of Finnish HEIs. In universities, this is due to their established position in university administration. The formal position of polytechnic students in the administration of their institutions is under consideration; concerns have been aired that they cannot make their voice heard.

FINHEEC involves students in all evaluations and in each phase. The 12 Council members include a representative of both university and polytechnic student unions. In addition, students are represented in various planning and steering groups and external panels. In tertiary education evaluation, a better term for 'peer review team' would perhaps be 'external panel'. The Nordic quality assurance agencies conducted a joint project on student involvement in tertiary education in order to emphasise the importance of students' role in quality assurance.

Graduates (alumni) participate in quality assurance less frequently than students, but some institutions have established or are developing graduate feedback systems.

9.5 Mechanisms to ensure international comparability

From the outset, FINHEEC has invited international members to its external panels. First it was as much about learning as about international comparison and exchange of ideas. International

peers also increase legitimacy. FINHEEC encourages HEIs to benchmark their activities internationally, and offers both financial and professional support for the purpose.

The system of Finnish tertiary education degrees is undergoing an extensive restructuring within the Bologna process. The international comparability of Finnish tertiary education is an important consideration in the audit of the quality assurance systems of all Finnish HEIs.

FINHEEC is an active member in the European Network for Quality Assurance in Higher Education (ENQA).

9.6 Key audiences for quality assurance information

Since the focus of Finnish tertiary education evaluation is on quality enhancement, the primary users of evaluation findings have been HEI management and academic staff. The recommendations are addressed to the institutions or programmes under review. Thematic evaluations especially cater for policy makers, and research evaluations obviously for the funding organisations. The growing role of student and staff mobility has meant that potential exchange students and teachers are becoming important target groups in the dissemination of information about the quality of the Finnish tertiary education system.

Finnish HEIs have a statutory duty to evaluate their activities and to publish the salient findings. The findings of external evaluations conducted or commissioned by FINHEEC are always published – either as printed reports in the FINHEEC series or on the FINHEEC web site. The findings and recommendations of evaluations carried out by the European Foundation for Management Development (EQUIS) and by the European University Association which have been accepted by FINHEEC as part of the national scheme are also published by FINHEEC either as printed or e-reports. Each evaluation project starts with a launching seminar and ends in a concluding seminar. The concluding seminars are open to all those interested.

9.7 The relationship between inputs and outputs

Due to the current demographic trends, the age of tertiary education entrants, the duration of (degree) studies, and graduation rates are topical issues in tertiary education policy and in public discussion. The median age of those graduating from polytechnic degree is 25 years and from universities (master degree) 27,3 years in 2003. As is indicated in Table 16 the age has increased from year 2000. Main explanation may be economic depression in 2002, which worsened employment and students wanted to delay their graduation.

Table 16. Median age of graduation from tertiary institutions in 2000–2003

| | 2000 | 2001 | 2002 | 2003 |
|--------------------|------|------|------|------|
| Polytechnic degree | 24,7 | 24,8 | 24,9 | 25 |
| University degree | 27,1 | 27 | 27,1 | 27,3 |

There is great variation in the duration of studies between disciplines: from 10–11 years in Architecture to under 5 years in Health Care. In polytechnics, the median time of degree studies is four years for young students, and 2–3.5 years for adult students in 2002.

HEIs have taken measures to improve student guidance and counselling in order to lower dropout rates. Some improvement can be seen, especially in the university sector. From 1994 to 2003, the median duration of Master's degree studies has decreased by six months – from 6.5 to 6 years. According to a recent amendment to the Universities Act, the maximum duration of university Master's degree should not exceed five years, except for some special reasons.

9.8 Expansion and quality

The median study time in Finnish universities is six years and in polytechnics four years (three for adult students). The graduation rate in universities is

75% and in polytechnics 91%. The longest study time in polytechnics is in Technology, Communication and Transport and in Natural Resources and the Environment (4.4 years). The long study times in universities have been considered a serious problem for some time now, but no effective cure has been found yet.

The establishment of the polytechnic sector was the largest expansion in Finnish tertiary education to date. Since it involved upgrading the former vocational colleges to the tertiary level, it also brought more research, independent study and interdisciplinary content into the programmes, which meant longer study time in some fields, such as Business. Students also needed more guidance counselling. An important factor for improved quality was that teachers' qualifications were raised. The principal lecturers are required to have at least a licentiate, and an increasing number have a doctorate.

Universities have also taken measures to improve the quality of teaching, for instance by means of teachers' pedagogical training. The most important reform to this end as the establishment of graduate schools, which has stepped up postgraduate education. Doctoral studies have in fact been the most rapidly growing area of university education.

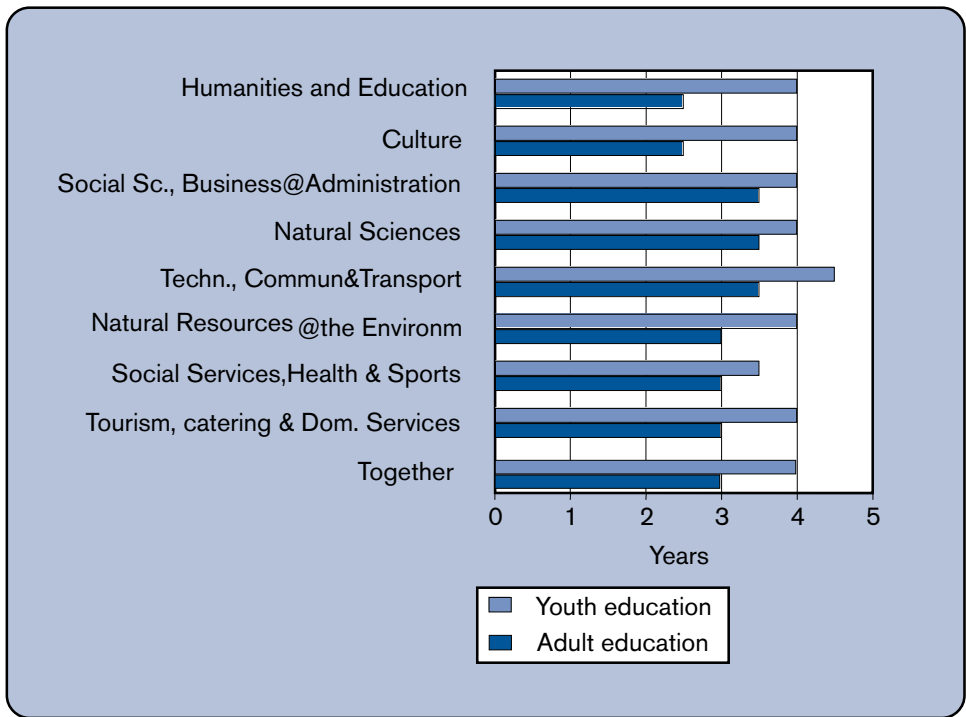


Figure 16. Duration of Studies in Polytechnics by Field

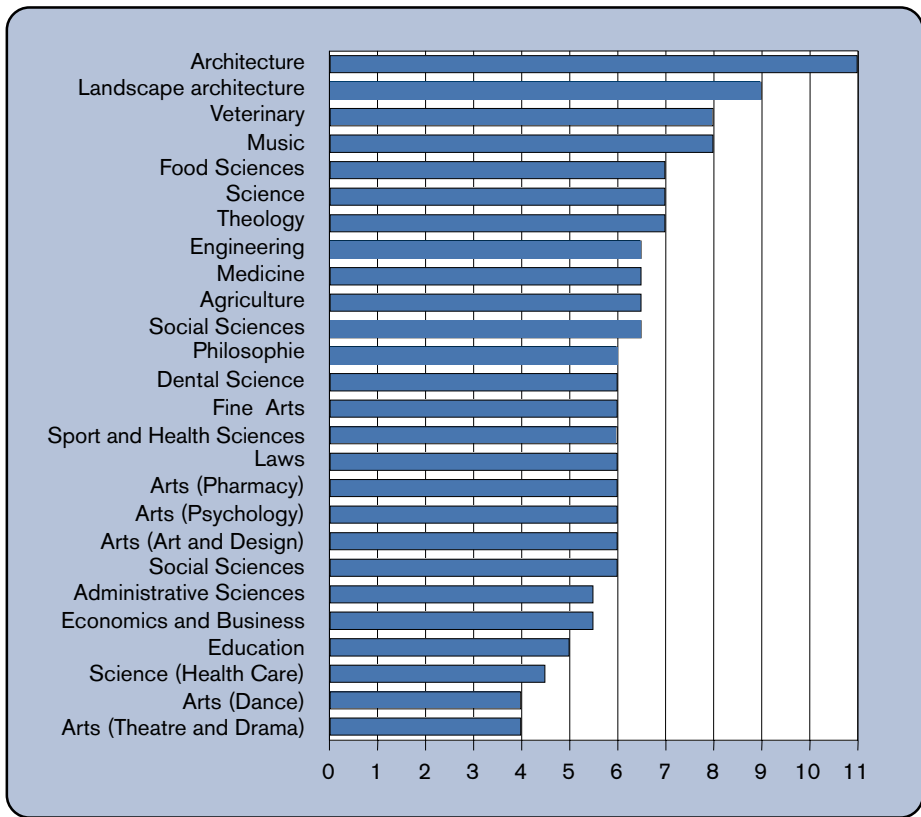


Figure 17. Duration of Studies in Universities by Field

CHAPTER 10.

Internationalisation of tertiary education

10.1 Two generations of internationalisation strategies

The internationalisation of education became an important education policy goal in Finland in the late 1980s. The impetus was of course the changes in Finland's international position at the time, especially involvement in the European integration process.

Participation in the integration process called for a great increase in international activity at all levels and form of education, and especially in tertiary education. There was a rapid increase in the need for expertise when Finland's rather closed society and economy was opening up to international cooperation and competition, which required a profound transformation of established practices.

The essence of the first internationalisation strategy was to set quantitative goals for student exchanges: approximately one in three university students should study part of their degree studies abroad every year. International interaction was seen as a means to enhance the quality and relevance of education and to enlarge the educational opportunities of Finnish students. Reciprocity in student exchanges was an understood, albeit not clearly articulated, goal.

One of the primary means for international cooperation was Finnish Centre for International Mobility and Exchange Programmes CIMO, which was established in 1991. CIMO was composed of central government units responsible for student, trainee and expert exchanges and administering grants of different kinds at three ministries. From the outset, CIMO has been responsible for marketing Finland as an 'education country'.

Oriented towards EU education programmes, Finland, like most EU/EEA countries, invested in European student and teacher exchanges and networks during the 1990s.

However, the situation has changed for a number of reasons. These changes were seen to be significant enough to warrant a "second-generation" internationalisation strategy for tertiary education in 2001.

One of the changes in the operating environment was a transition in the tertiary education scene from "learning from each other" to a more competitive approach. But the picture was not black and white: On the one hand, there is ever keener competition for talented students, teachers and researchers and for external, often international, funding. This development has led to the emergence of an international education market - a concept that hardly existed at the time of the first internationalisation strategy. On the other hand, a concerted effort has been made to strengthen European competitiveness vis-à-vis the United States and Asia. This approach calls for more networking and pooling of resources and less intra-European competition.

The rationale behind the new internationalisation strategy was both labour market needs in the ageing Finland and growing cultural and ethnic diversity in Finland, which was expected to continue and intensify. According to several estimates, immigration to Finland will continue to grow steadily in the coming years. At present, major immigrant flows to Finland come from the former Soviet Union. Unforeseeable changes in the political, social, or economic systems of countries or regions could lead to uncontrolled flows of migration, for which Finland must be prepared.

The European Union has set a goal to formulate

a common immigration and refugee policy. There have already been efforts to bring the status of citizens of third countries closer to that of EU citizens by, for example, facilitating their entry to the internal labour market.

The conclusions drawn in the internationalisation strategy of 2001 were clear: Finland must strengthen its international competitiveness in tertiary education and research, which are seen to underpin its overall economic competitiveness. The internationalisation of tertiary education is a means of responding to the demands of globalisation. To succeed, Finland must take an active part in building up European higher education and research and develop its own capacity for operating on the international education market.

The need to strengthen the international activities of HEIs is justified by both the new challenges arising from the international operating environment and the need for domestic development.

"By 2010, Finland will be a well-known and influential part of the European education and research area, and a successful player in the global contest for skills. The higher education community will be international and the demands of internationalisation will be taken into account in the content of education. Finland will have a community of 10,000–15,000 foreign degree students (around 4% of all higher education students) and the annual volume of student exchanges will be around 28,000. At least 15% of graduate school students will be foreigners. The numbers of students with immigrant backgrounds will have increased considerably. The numbers of foreign teachers, experts and researchers working at Finnish HEIs will be double what they were in 2001. Finnish businesses will already be benefiting from the labour input of foreigners who have studied in Finland". *An International Strategy for Higher Education*. Ministry of Education. 2001

10.2 Instruments for realising the policy goals

The political commitment to the internationalisation of Finnish tertiary education has been recorded in the Development Plan for Education and Research 2003–2008. Qualitative and quantitative goals are accordingly for each institution in the three-year performance agreements.

The Ministry of Education monitors the achievement of the quantitative goals annually, and the best-performing universities and polytechnics are rewarded. To boost the development of student and researcher exchanges and the recruitment of foreign degree students, the Ministry grants funding to HEIs for the development of English-language degree programmes. The Ministry has also allocated extra funding to CIMO for stepping up its marketing of Finnish tertiary education at the global level.

The 2001 internationalisation strategy also calls for national action, notably concerning the degree structure, quality assurance, funding and higher education legislation.

Both university and polytechnic legislation has been amended to implement the Bologna objectives. The quality assurance systems will be developed to include a national element.

In addition to traditional student exchanges and the recruitment of degree students to Finland, the Ministry of Education has called upon the institutions to be active in building joint degree programmes with foreign institutions. To establish clear ground rules for this fairly new form of international cooperation, the Ministry issued guidelines for good practice. The Ministry has actively promoted the piloting of joint degrees between Russian and Finnish universities and at the Nordic level, and has undertaken a feasibility study with a view to establishing a Finno-Russian Cross-Border University.

10.3 Major policy issues arising from the impact of internationalisation

It is clear that the emerging international educational market and the progressive liberalisation of cross-border education services will have implications for the competitiveness of all national education systems. Finland is facing many challenges: a small linguistic area of two national languages, limited experience of market-driven education, collegiate decision-making traditions in the institutions, and an almost exclusively publicly-funded tertiary education system – with little or no prospect of substantial increases in government funding in the future.

The worst threat for a systematic internationalisation policy will probably be a failure on the part of the authorities to recognise the competitive position in which tertiary education finds itself and complaisance. The threat is two-fold: first, Finland will not be able to attract enough foreign students and researchers; second, its own students and researchers will go abroad to study and work.

General attitudes undermine all major efforts by the HEIs to market Finnish education abroad and to promote internationalisation, particularly as the number of applicants to HEIs exceeds three-fold the intake and as HEIs cannot charge tuition fees to international degree students.

Another threat relates to the operations of the HEIs themselves. It would appear that the institutions think that they have reached the limits of their internationalisation. Although the number of outgoing exchange students has not been growing as expected, the number of incoming students has continued to grow. The institutions feel that they cannot ensure the quality of their international operations with their present resources.

Apart from the general level of appropriations, scarce resources may also be due to the fact that HEIs overlook international activities in their internal resource allocation. This may be because they do not yet appreciate the true value and nature of

international operations. Internationalisation has not been integrated into all tertiary education operations, i.e. teaching, research and support services.

Equal opportunity is high on the agenda of Finnish policy-makers. Traditionally it has been seen that equity is best realised by means of tuition-free education. The same principle is applied to international activities. Unless there is a change in the near future, HEIs cannot possibly meet the Government's ambitious quantitative goals for internationalisation. The policy of fee-free education is not well suited for the new EU initiatives for attracting students from other continents to study in Europe. Recently an ad-doc committee has made a proposal for introducing fees for foreign students.

Finnish institutions have been very cautious in entering the international education market because of lack of resources and certain ambiguities in Finnish legislation on this point. Some institutions have seen it important to establish a global presence. Proposed amendments in budget legislation will make it easier for universities to set up limited companies or buy shares in companies, which should also be charged with commercialising education and research services.

This will open new vistas for universities' international activities, although questions relating to WTO-GATS will have to be clarified first.

In yet another respect, the threat concerns growing competition on the home front: a respected, renowned foreign HEI operating in Finland would offer a viable alternative for Finnish and foreign students and teachers, and could undermine the standards of Finnish higher education.

If Finnish universities and polytechnics are unable to offer competitive, globally recognised and valued degrees and attractive research environments, brain drain will be a real problem. This is a genuine concern in the new two-tier degree structure: if institutions and authorities are not alert, they may find themselves in a situation in which a growing number of Finnish students choose to take Bachelor's degree at home and go abroad for their

Master's. If such a trend reaches mass proportions, it could well have serious consequences for the quality of tertiary education in Finland.

11 Conclusions

The roots of the Finnish university system go back four centuries to the Turku Academy (established in 1640). From its beginning in a small Swedish-language university, highest learning has spread all over the country and today the higher education system comprises 20 universities and 29 polytechnics. Finnish society has always had high expectations of the highest scientific and scholarly research and education.

The tertiary education system covers the whole country. There is one HEI per 100,000 inhabitants. Fifty-three municipalities have a university (or campus) and 88 municipalities have a polytechnic (or campus). Part of the explanation for the extensive geographic distribution of higher education institutions is the presence of the 'open university'. In the Finnish system, open university studies can be pursued in a variety of units belonging to parts of the network of educational institutions. A total of 196 municipalities have an open university unit (196), in all, 62% of Finnish municipalities are "university and polytechnic towns".

However, when looking at the second mission of the tertiary education system, research, the pattern is significantly less diffuse. Basic research is conducted in universities in major cities, and the polytechnics are only beginning to launch their R&D activities, which could be described as applied research. There are only few major centres of research in Finland.

Finnish society has great confidence in its higher education institutions. According to recent research, nearly 80% of Finns think that scientific and scholarly research is conducted efficiently and competently. Similarly, they believe that HEIs are able to solve economic, social, and welfare- and health-related problems. As a corollary of this confidence, Finns expect a great deal from their HEIs. The national government, citizens, and business and industry expect HEIs to produce economically significant innovations, to educate experts and to strengthen the educational and cultural underpinning of the country.

So far, HEIs have been fairly successful in responding to these expectations. Over the past five decades, Finland has become a country of high technology and high civilisation. The tertiary education system is the mainstay of the national innovation system. Nearly half of the younger age groups study for a tertiary education degree, and the aim is to raise this figure to 70%.

The polytechnics, which were created during the 1990s, have carved a place for themselves in the Finnish tertiary education system, which now is genuinely dual-sector. Compared with universities, polytechnics are more practically oriented and have closer relationships with business and industry. The postgraduate polytechnic degrees will consolidate this dualism and create a genuine a further education track for polytechnic graduates.

A special characteristic of Finnish education is that tuition fees are not charged for degree studies. In addition, students may get a maximum of US 600 dollars a month for living expenses. International comparisons show that Finland does not spend excessively on tertiary education. According to OECD data, Finland spends some US 6,000 dollars per student annually, which is below the OECD average of US 6,360 dollars. The Finnish figure is substantially smaller than the corresponding US figure of US 10,240 dollars per student.

Yet, a higher rates of study efficiency is desirable. Only half of university students graduate in seven or fewer years and 25% never graduate. These problems are mainly concentrated in the Helsinki metropolitan area. The least efficient fields of study

in these terms are social sciences and the humanities. No governmental measures to help solve this problem have been effective so far.

The Finnish tertiary education system is going through a period of reform at the moment. A degree reform in the 1970s introduced uniform, long degree programmes, in which the Master's degree was the first degree, but in the 1980s and 1990s the intermediate (Bachelor's) degree was reintroduced in some fields. This year, as a result of the Bologna Process, universities across the board are adopting the two-cycle degree system. At the same time, polytechnics are introducing higher degrees. Whereas the university Master's programmes are intended for young people about the enter the labour market, the polytechnic degrees are targeted at polytechnic graduates already active in the work force.

The degree structure reform makes it necessary to consider the higher education landscape as a whole: is there a market for two-tier structure in both sectors in all fields of study, or should the division of labour between universities and polytechnics be reconsidered in some, especially small fields. The dual structure has helped to diversify Finnish higher education, but given that a considerable expansion of higher education provision has taken place in both sectors, there could be a need to consider whether a dual system requires a dual institutional presence in all parts of the country, especially in areas where the share of young people is declining.

We do not yet know how the two-cycle model will work in practice. No clear professional content has yet been planned for the university first-cycle degrees and students are admitted to study up to the Master's degree cycle. This raises questions about the value the labour market will see in the first cycle degree. The worst case scenario is that it will only have a curiosity value and will not offer an essentially better chance of succeeding in the labour market than mere year 12 completion.

Polytechnic degrees have also been developed in the Bologna spirit. In March 2005, the government submitted its proposal for developing the polytechnic degree structure to comprise polytechnic degrees and Master's degrees. The two-cycle structure

would enable some polytechnic graduates to upgrade their knowledge after a period of work experience by taking a polytechnic Master's degree. The polytechnic Master's degree would provide the same eligibility for public posts as the university Master's. In principle the character of polytechnic Master's degrees differs fundamentally from the university Master's degrees as they are intended to serve those already active in the work force.

The polytechnic Master's degrees gained permanent status in autumn 2005. They are different from university master's degrees. Their duration will be one-and half years (60–90 ECTS credits). The degree can be taken flexibly alongside work and without leaving the labour market. This provides a significantly quicker and more economic alternative for polytechnic graduates than for students in a university Master's programme.. The minimum entry requirement to Master's degree programmes in polytechnics will be a polytechnic degree and three years of work experience.

One possible trend in the future might be that the university Master's programmes will become more closely linked to research training, whereas the polytechnic Master's will build on work experience gained in the labour market. The development of both university and polytechnic Master's programmes will entail greater input into teaching and into new teaching methods.

The realization of polytechnic Master's degrees will finalise the building of the structure of the Finnish dual system. The structure follows Finland's mainstream educational policy, to build up a transparent and functional educational structure for tertiary education. For the moment the duality of the Finnish tertiary educational system is stable but there are indications of increasing intra-institutional differentiation. The academic drift phenomenon is quite visible as far as the Master's programmes are concerned but it is by no means the leading force in the development of tertiary education.

According to the government, the Finnish tertiary education system is geographically comprehensive and there is no special need to further expand it. On the other hand, more cooperation between units is needed, and there is

the possibility that some units could be closed down. Only a few multi-faculty universities can claim to have an international standing in research.

Regional co-operation between universities and polytechnics has increased considerably. Some argue that these developments should go further, for instance through consortia between institutions in each sector. Growth in international competition and assuring future prospects for diminishing cohorts of younger age groups has increased the intensity of this discussion.

In the debate on the size and direction of tertiary education, two lines of thinking have competed with each other. The first argument is that all existing institutions should be of equal and high quality. The opposing "world class universities" argument states that for a small country like Finland, it is vitally important that resources be concentrated into fewer world-class units. To date, official thinking has been in favour of the first argument, but there are also voices that favour the latter argument.

The scale of the higher education system has been strongly criticized, especially by the business community. It is argued that there are too many universities and polytechnics in a small country like Finland. One recent proposal (from a working group from the Prime Minister's Office) has been to subordinate polytechnics into the state administration. According to the argument, this would help with a rationalisation of the system, as polytechnics are currently the responsibility of local municipalities or private institutions. This proposal came as a surprise for many because only ten years ago, several of the former colleges were state institutions. Final policy on this issue is yet to be decided.

A real pressure for institutional rationalization will be based on diminishing age cohorts in some parts of the country. In particular, the northern and eastern parts of Finland have lost population and in the future there will be no rationale to maintain the existing network of institutions. In some regions the supply of study places will exceed demand for them.

New statutes and regulations have sought to increase university autonomy. The capacity for Finnish universities to operate as independent

economic units is still limited when compared with universities in many other countries. An appropriate balance between basic and competitive funding should be found, the general aim being to increasingly link the provision of funds to special projects and achievements in quality of research and teaching. The new Polytechnics Act stresses the autonomy of polytechnics, which *de facto* is restricted by the power of the organisations running them. In future, the development of autonomy will hinge on the stance taken in Finland with regard to the right of HEIs to charge tuition fees.

Rectors of all universities would like to have more autonomy. One suggestion is that universities be permitted to apply for and accept commercial loans. Two universities, (the University of Helsinki and the Åbo Academy (in Turku)) differ from the rest, because they have relatively wealthy private foundations, which own many of the buildings and facilities used by these universities. This provides them with an additional level of autonomy. Rectors of the other 18 universities would like to have the same flexibility.

It is also the case that vocational higher education institutions, the polytechnics, are subject to a different type of 'control', whereby they are effectively 'owned' by foundations, limited companies or municipal authorities, although primarily funded by the Government. Universities would like to have the same level of independence.

Some universities would like more independence to decide on the salaries they pay to their staff. Currently the State Employer Authority sets nationwide salaries via a process of negotiation with staff unions, which includes establishing the basic salary levels. However, each university is responsible for the final implementation of the established salary principles and ultimately decides on the actual salaries paid to all university staff.

The major concern expressed by universities is that as state-funded authorities, they are required to abide by the same, sometimes strict, rules which all state organisations are required to follow. Some of these accountabilities are seen as being inappropriate to universities. However, the recently promulgated Finnish constitution stresses the im-

portance of accountability as to how the taxpayer's money is used.

The government argues that the current level of university autonomy is already high and that this ought not be an obstacle to either high quality in research or education for the exploitation of knowledge. The level of accountability and transparency which universities are subject to have been criticised, but they must be confirmed at a high, reliable level before the existing autonomous link between the university and the state could be changed.

The government has also stressed that managerial professionalism and the strategic skills of university /boards should be improved as a precursor to greater economic autonomy. At the present time, each university rector is nominated by huge general internal meetings of representatives, some of which have more than one hundred members. This makes the nomination process difficult and to date, no systematic comparison of candidates' skills and competencies has taken place. Recently the Government proposed that rectors should be selected by the university senate/board. This was not accepted by the parliament. One reason was the active lobbying against the proposal by rectors themselves.

The Government agrees that the composition of university senate/board, and the way rector is selected, should be changed to improve the professionalism of university management and strategic leadership.

The Finnish tertiary education system is still national to a high degree. There are few foreign students and only a handful of genuinely international units. The Ministry of Education has set ambitious targets for increased international exchanges. One key point in this policy is to increase internationalization within Finnish higher education institutions. Not all of these targets has yet to be attained. Finnish higher education institutions have much to gain from participation in the global education market. For the time being, national legislation may be seen as hindering this. In a competitive market the present quality assurance system needs to be reconsidered so that willing Finnish institutions could benefit from international evaluations.

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