

## **5 The Employment Situation About Four Years After Graduation**

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### **5.1 The Economic, Labour Market and Educational Context**

The objective of this chapter is to characterize the labour market situation of the graduates from institutions of higher education in 11 European countries and Japan about four years after graduation, i.e. at the moment in which they filled the questionnaire. Beforehand, we describe the the economic and labour market situation as well the patterns of educational expenditures and enrolment of the countries included in this study.

As an indicators of the countries' relative level of development, we included in the Table 5.1 the GDP per capita, measured in dollars converted through the purchasing power parity (PPP), in Table 5.1 even though, as it is well known, this is just a proxy for the actual level of development. Accordingly, Norway and Japan are the richest countries of the sample with over \$24.000 PPP followed by Germany, the Netherlands and Austria (between \$22.000 and \$23.000). Further countries, i.e. France, Italy, the United Kingdom, Sweden and Finland are at \$20.000 or somewhat higher, while Spain and the Czech Republic are the poorest in the sample (below the level of \$16.000 PPP).

The labour market indicators chosen here are the labour market participation rate and the unemployment rate. Sweden and Norway show the highest participation rates, in both cases over 84 percent. In the other extreme, we find Spain (70%) and Italy (64%) with the lowest rates. With respect to the unemployment in 1997, the Netherlands have the lowest level at 2.3 percent, i.e. only in the range of frictional unemployment. In contrast, we find Spain with 15. percent. France and Finland also show rates over 10 and Germany close to 10 percent.

As regards educational expenditure we note that the Nordic countries outperform the rest of the countries in the sample. The share of public and private education among the GDP in Sweden reaches 8.5 percent, followed by Finland (6.9%), Austria (6.7%) and Norway (6.6%). In contrast, a level below 5 percent for this indicator is found in Italy and Japan. Looking at total expenditures in tertiary education (column 4 of Table 5.1), we find again that the highest level holds true for the Nordic countries: Only Sweden, Norway and Finland spend mor than 2 percent of the GDP on tertiary education, while. Italy and the Czech Republic report the lowest relative tertiary education expenditure. However, in calculating the ratio of expenditure by student over GDP per capita, we note a somewhat different ranking order. Again, the expenditures are relatively highest in Sweden, but Austria, Germany and Netherlands follow, while Spain is at the end of the list.

**Table 5.1 Statistics of Economic Development, Unemployment, Educational Expenditures and Enrolment in Europe and Japan, 1997**

	(1)	(2)		(3)	(4)	(5)		(6)	(7)	(8)	(9)
NO	26.876	6,6	**	1,4	2,1	38,0	+	84,4	3,1	6,0	56,0
JP	24.616	4,8	*	1,1	Nd	41,0		78,3	3,3	33,0	# 36,0 #
AT	23.054	6,7		1,5	1,7	43,0	+	70,5	4,1	8,0	28,0
NL	22.142	5,1		1,2	1,5	45,0		73,0	2,3	Nd	52,0
DE	22.049	5,9		1,1	1,2	43,0		75,0	9,9	14,0	# 28,0
FR	21.293	6,4		1,2	1,2	34,0		77,2	10,7	Nd	Nd
IT	21.265	4,9		0,8	0,9	nd		63,5	9,5	Nd	42,0
FI	20.843	6,9		1,7	2,0	35,0		78,4	11,1	12,0	58,0
UK	20.483	4,6	**	1,0	1,3	40,0	++	79,8	5,1	27,0	48,0
SE	20.439	8,5		1,7	2,4	64,0		84,1	7,4	Nd	59,0
SP	15.990	5,8		1,2	1,3	32,0		67,9	15,8	9,0	41,0
CZ	13.087	5,5		0,8	0,9	41,0		79,3	5,3	13,0	22,0

Source: OECD (2000). Education at a Glance: OECD Educational Indicators 2000. Paris: OECD.

(1) GDP per capita (dollars PPP)

(2) % of expenditure in education (public and private) plus subsidies to families

\* It does not include subsidies. \*\* It only includes public expenditure

(3) % expenditure in tertiary education over GDP without subsidies to families

(4) % expenditure in tertiary education over GDP including subsidies to families

(5) Expenditure per student in tertiary education over GDP per capita

+ Without family subsidies. ++ Including only public education

(6) Participation rate in the labour market of population between 25 and 64 years old

(7) Unemployment rate, population between 25 and 64 years old

(8) Net rate of entrants in tertiary education type A. # gross rate

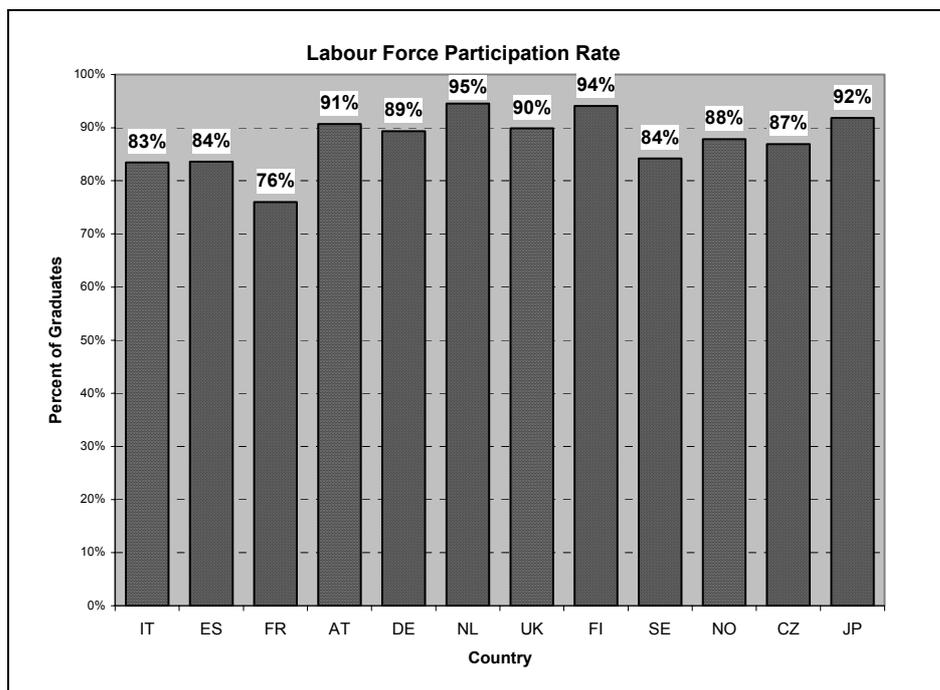
(9) Net rate of entrants in tertiary education type B. # gross rate

The last two columns provide information on the size of enrolment in higher education. Column 9 addresses new entrant students at higher education in bachelor programmes or longer university-type programme, i.e. the type of students who were addressed in this graduate survey, while column 8 provides information on new entrant students in other tertiary education programmes requiring at least two year of study. According to column 9, the Nordic countries have the highest rates, while the Czech Republic, Austria and Germany have lowest rates of new entrants.

## 5.2 Labour Force Participation and Unemployment Rates

Four years after graduation, more than 85 percent of the graduates surveyed in the CHEERS study participate in the labour force (employed, self-employed or unemployed). As Chart 5.1 shows, the rate is above 90 percent among graduates from the Netherlands and also from Finland, Japan and Germany, but below 80 percent in Spain and France. In general, the labour force participation rate of the graduates surveyed four years after graduation is higher in all the countries analysed than that of the whole population (cf. Table 5.1).

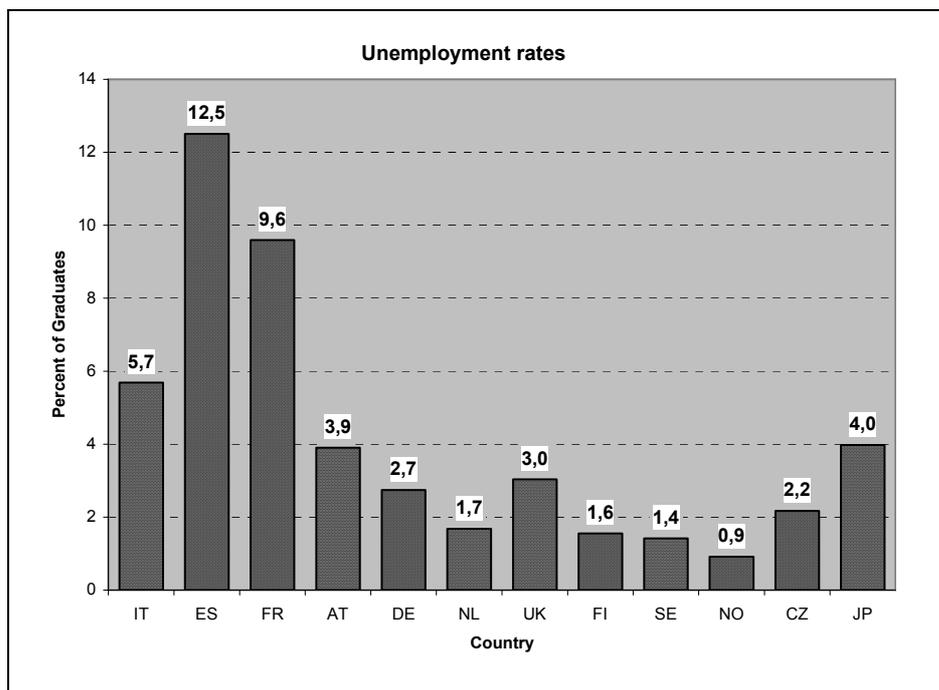
**Chart 5.1 Graduates’ Labour Force Participation by Country (percent of graduates about four years after graduation)**



Question ...

Chart 5.2 shows that the unemployment rate for those graduates surveyed, who participate in the labour force (i.e. not the proportion of all graduates responding) about four years after graduation, is highest in the cases of Spain (12.9%) and France (9,6%); in both countries, the unemployment among the respondents does not differ substantially from the overall national employment rates. In all other countries the unemployment rates among the graduates surveyed are between about 1 percent and 6 percent. Thereby, the rates of Finnish and German graduates are lowest as compared to the national unemployment rates in the overall labour force; also available statistics of the unemployment rates by educational attainment confirm that higher education-trained persons in these countries have a relative low risk of being unemployed as compared to persons not higher education-trained, while higher education-trained persons in Spain and France have an almost average risk of being unemployed.

**Chart 5.2 Unemployment Rates of Graduates by Country (percent of graduates in the labour force about four years after graduation)**



Question ...

Among the female graduates surveyed, 84.0 percent participate in the labour force about four years after graduation as compared to 91.4 percent of male graduates. The unemployment rates were 3.0 percent and 5.0 percent respectively. Altogether, the participation rate in the labour force of the women surveyed was more than 7 percent lower and the rate of those employed (including self-employment) almost 10 percent lower than that of the men surveyed.

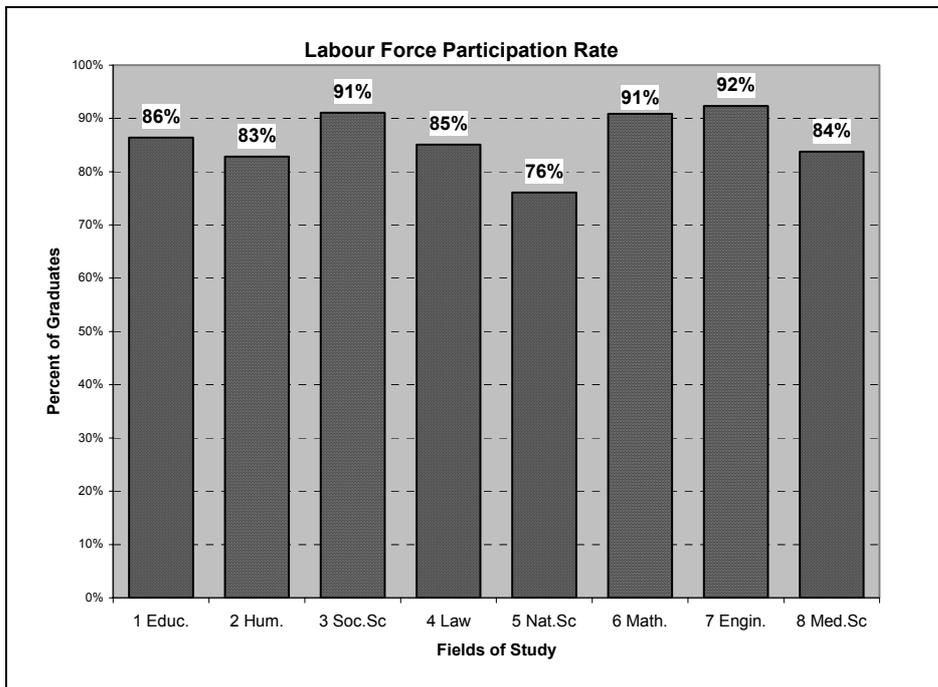
Table 5.2 shows that, in contrast to the dominant pattern, the labour market participation rate about four years after graduation of the women surveyed in France is not lower than that of men; on the other extreme, 17 percent less women than men participate in the labour force in the Czech Republic. There are exceptions in the unemployment rate as well: women in the United Kingdom and Norway are even clearly less often unemployed and in Finland slightly less often unemployed than male graduates about four years after graduation. On the other hand, the unemployment rate about four years after graduation of female graduates in Italy and Sweden is threetimes as high as that of men.

**Table 5.2 Gender-Specific Labor Force Participation Rates and Unemployment Rates of Graduates by Country (percent and ratio of graduates/graduates in the labour force about four years after graduation)**

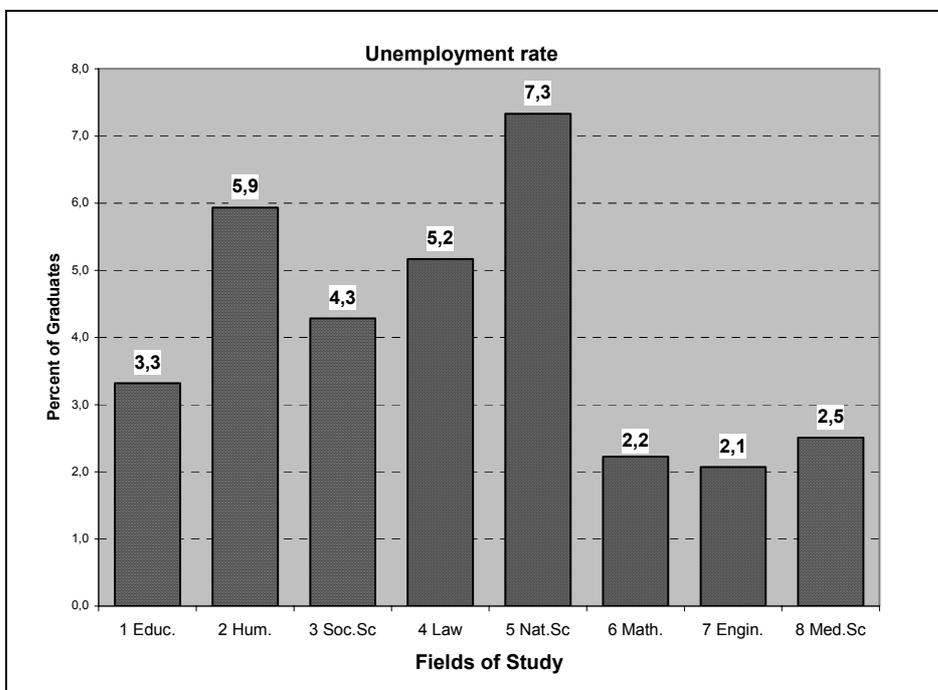
Country	Labor part.		Unemp. Rate		Relative LFP of woman to man	Relative unemployment rate of woman to man
	Male	Female	Male	Female		
IT	86.58	80.68	2.68	8.58	0.9	3.2
ES	87.31	80.77	9.20	15.26	0.9	1.7
FR	75.93	76.08	6.34	12.73	1.0	2.0
AT	94.11	86.50	2.63	5.61	0.9	2.1
DE	93.22	83.75	2.07	3.77	0.9	1.8
NL	97.44	91.77	1.34	2.07	0.9	1.5
UK	92.66	87.96	3.97	2.35	0.9	0.6
FI	97.09	91.71	1.65	1.48	0.9	0.9
SE	89.27	80.47	0.67	2.03	0.9	3.0
NO	92.54	84.57	0.93	0.91	0.9	1.0
CZ	94.31	77.44	1.71	2.89	0.8	1.7
JP	94.31	86.81	3.65	4.72	0.9	1.3

Chart 5.3 and Chart 5.4 show that the graduates surveyed differ according to field of study to a similar extent as according to country as far as these employment indicators are concerned. Both the labour force participation rates and the unemployment rates are lowest for graduates in natural sciences; one has to bear in mind, though, that a high proportion of them are predominantly active in advanced academic or professional training about four years after graduation. In contrast, a high labour force participation is reported by graduates from engineering, mathematics and social sciences, whereby, however, the unemployment rate of the latter is about twice as high as that of the graduates from the two former fields.

**Chart 5.3 Labour Force Participation Rate of Graduates by Field of Study (percent of graduates about four years after graduation)**



**Chart 5.4 Unemployment Rate of Graduates by Field of Study (percent of graduates in the labour force about four years after graduation)**



### 5.3 Economic Sector and Occupational Group

In addressing the economic sector, where the graduates surveyed are professionally active about four years after graduation (see Table 5.3), we note that the highest proportion of graduates work in the education sector (almost 18%), followed by mining and manufacturing (about 14%), the health sector (10.4%) and public administration (8.6%). Only these four sectors account for about half of the graduates. One should bear in mind that in all these sectors, except for engineering, a degree from an institution of higher education tends to be a mandatory entry requirement for a professional career. High proportions of graduates in Finland (35%) and Sweden (23%) are active in the education sector. The highest proportion of graduates in mining and manufacturing is observed in Japan (20%). Germany has the highest proportion of graduates employed in public administration (13%) while Norway leads the ranking in the health sector (26%).

**Table 5.3 Economic Sector of Graduates by Country (percent of graduates employed about four years after graduation)**

	IT	ES	FR	AT	DE	NL	UK	FI	SE	NO	CZ	JP	Tot.
Agriculture, hunting, forestry, fishing (A+B)	0.3	0.2	0.7	0.1	0.5	0.5	0.6		0.3	0.2	2.8	0.6	0.6
Mining & manufacturing (C+D)	17.8	13.0	16.8	12.8	17.3	11.4	11.6	16.9	14.3	10.8	15.5	19.6	14.7
Electricity, gas and water supply (E)	0.2	0.9	0.9	1.3	0.8	0.4	1.1	1.0	0.8	1.0	2.1	2.2	1.1
Construction (F)	0.8	4.3	1.0	1.8	1.6	2.0	3.5	1.0	1.1	2.0	7.2	5.3	2.7
Trade (G,H)	7.4	6.8	8.8	5.4	2.6	6.2	7.7	2.8	5.2	2.0	6.9	11.4	6.1
Transport, storage and communication (I)	3.6	4.0	5.7	2.1	3.3	3.9	5.4	6.0	2.9	1.9	3.8	3.5	3.8
Financial intermediation (J)	4.9	8.7	5.9	7.2	4.9	7.4	5.4	3.2	3.3	1.4	6.9	7.8	5.5
Computer and related activities	3.5	4.1	10.4	4.4	5.6	7.8	5.0	2.1	5.1	3.1	4.9	2.9	4.8
Research&Development	2.5	2.1	1.4	2.1	2.9	1.9	1.4	4.0	4.2	1.9	1.5	4.6	2.6
Legal activities	8.6		2.8	3.5	2.7	1.5	3.1	0.7	1.0	1.2	4.8	1.9	2.7
Arch.& eng. Consultants	6.6		0.8	2.6	4.0	4.7	0.9	1.3	2.8	4.7	0.6	1.4	2.6
Other business activities (K)	10.8	13.1	6.3	7.6	7.3	11.9	7.4	4.9	7.5	2.1	2.3	0.7	6.7
Public administration (L)	8.5	5.2	7.9	6.1	13.1	7.5	8.4	5.9	9.1	10.2	6.6	12.0	8.6
Education (M)	11.4	17.8	20.4	19.4	17.9	14.1	18.3	34.9	22.9	14.4	17.5	10.3	18.0
Health	7.8	14.5	2.3	13.1	8.2	9.3	10.3	7.7	10.2	26.0	7.5	5.3	10.4
Social work	1.8		2.4	3.2	3.1	5.0	1.4	2.0	3.2	14.8	0.6	0.9	3.4
Other service activities (O,P,Q)	3.6	5.2	5.4	7.3	4.3	4.4	7.5	5.7	6.1	2.2	8.5	8.1	5.6
Other	-						1.0					1.4	0.2

Table 5.4 shows the extent to which graduates are concentrated or dispersed over economic sectors. We note the highest concentrations of graduates from medical fields in the health sector (79%) as well as that of graduates from education in the education sector (68%). Similarly, though not in a single category, we observe about 60 percent of graduates from engineering in mining and production-dominated industries as well as 55 percent of the graduates from law in legal activities and public administration. The concentration is lower for graduates from the humanities (33% in education) and mathematics (35% in computer and related activities, while graduates from the social sciences are widely dispersed across economic sectors.

**Table 5.4 Economic Sector of Graduates by Field of Study (percent of graduates employed four years after graduation)**

	1 Educ.	2 Hum.	3 Soc.Sc	4 Law	5 Nat.Sc	6 Math.	7 Engin.	8 Med.Sc
Agriculture, hunting, forestry, fishing (A+B)	0.2	0.2	0.3	0.1	0.8	0.1	1.9	0.1
Mining & manufacturing (C+D)	2.4	9.8	13.7	4.6	20.0	10.8	34.3	2.3
Electricity, gas and water supply (E)	0.1	0.1	1.0	0.7	1.7	0.4	2.7	
Construction (F)	0.1	0.7	1.8	1.0	1.2	0.3	8.9	
Trade (G,H)	2.0	7.9	10.1	3.8	4.2	3.9	4.0	4.0
Transport, storage and communication (I)	1.0	3.7	4.9	2.6	3.1	6.8	5.5	0.0
Financial intermediation (J)	1.2	2.5	12.1	9.7	1.4	9.0	1.2	0.3
Computer and related activities	1.0	2.1	3.8	1.1	6.8	35.0	6.7	0.1
Research&Development	0.3	1.5	1.2	0.7	12.5	2.7	4.9	1.1
Legal activities	0.4	1.0	1.2	27.4	0.5	0.1	0.4	0.1
Arch.& eng. Consultants	0.2	0.7	0.6	0.1	2.7	0.9	10.4	0.0
Other business activities (K)	1.1	6.9	12.8	8.7	3.7	5.0	3.8	0.4
Public administration (L)	3.3	6.9	12.1	27.6	5.5	4.9	4.7	2.3
Education (M)	68.7	33.3	8.5	4.8	26.0	17.4	6.3	5.2
Health	2.4	2.5	4.2	1.7	5.2	1.4	1.7	79.2
Social work	11.6	1.4	5.4	0.9	0.6	0.1	0.1	4.1
Other service activities (O,P,Q)	4.0	18.2	6.2	4.3	4.0	1.0	2.3	0.7
Other	0.1	0.6	0.2	0.1	0.2	0.2	0.2	

As Table 5.5 shows, the vast majority of graduates work about four years after graduation as professionals (60.4%) or as legislators, senior officials and managers (9.9%). Thus, about 70 percent are active in those occupational groups which are consistently viewed by experts as appropriate for graduates; this holds true for most graduates in all countries except for Norway (46%) and Japan (45%). The proportion of those active as technicians and associate professionals – a category viewed as appropriate by some but as not fully appropriate by other experts is 18.4 percent; it is highest in Norway (53%). Finally, 11.2 percent of the graduates are employed in remaining occupational groups (notably as clerks and as well as service and sales workers) often not or at most partially considered as appropriate for graduates, among them most frequently graduates in Japan (51%) and additionally graduates in Spain (24%).

**Table 5.5 Occupational Group of Graduates by Country (percent of graduates employed about four years after graduation)**

	IT	ES	FR	AT	DE	NL	UK	FI	NO	CZ	JP	To.1
Legislators, senior officials and managers	3.7	9.6	16.2	1.9	5.2	24.6	21.8	7.0	5.0	7.7	5.2	10.0
Professionals	57.3	63.2	50.0	92.8	77.6	43.6	51.9	85.7	41.3	73.9	39.9	60.4
Technicians and associate professionals	29.5	3.5	24.1	3.0	11.9	25.0	14.9	4.8	52.7	16.4	3.7	18.4
Clerks	6.7	17.3	4.7	1.7	4.1	4.5	6.8	1.2	0.2	1.2	28.4	6.8
Service workers and shop and market sales workers	2.1	4.7	2.7	0.5	0.6	1.1	2.8	0.5	0.3	0.6	18.5	3.2
Skilled agricultural and fishery workers	0.1		0.2	0.0	0.2	0.1	0.2	0.4	0.0	0.1	0.3	0.2
Craft and related trades workers	0.1	0.2	0.7		0.2	0.6	0.7	0.0	0.2		1.4	0.4
Plant and machine operators and assemblers	0.1	0.6	0.5		0.1	0.3	0.3	0.1	0.1	0.1	1.3	0.3
Elementary occupations	0.3	0.8	0.9	0.1	0.2	0.2	0.7	0.2	0.1	0.1	1.3	0.4

The majority of graduates from all groups of field of study are classified as active about four years after graduation as professionals or as legislators, senior officials and managers. The proportion of those active in either of these two categories ranges, as Table 5.6 shows, from slightly more than 60 percent in the humanities, social sciences and medical fields to about 80 percent in mathematics, natural sciences, engineering and education. The proportion of technicians and associated professional is very high among the graduates in medical fields (35%) – this is mostly true for graduates in nursing and other types of para-medical education. Finally, the relatively highest proportion of those active as clerks or service and sales workers come from the humanities and social sciences.

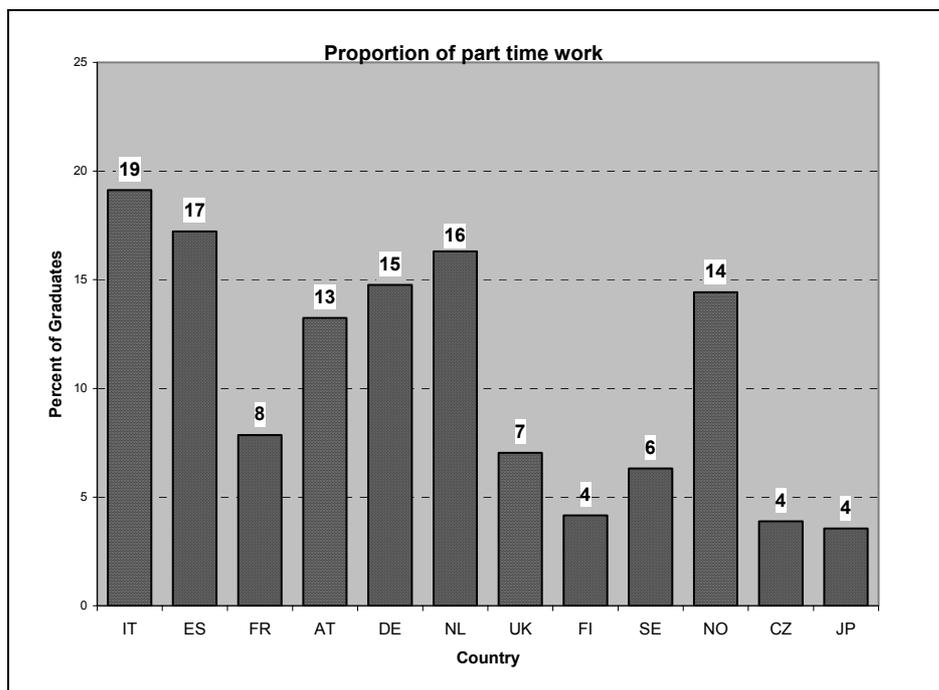
**Table 5.6 Occupational Group of Graduates by Field of Study (percent of graduates employed about four years after graduation)**

	Educ.	Hum.	Soc.Sc	Law	Nat.Sc	Math.	Engin.	Med.	Tot.
Legislators, senior officials and managers	11.2	8.8	15.3	6.9	5.1	6.0	8.8	2.2	9.8
Professionals	65.6	55.7	46.7	67.5	73.1	75.9	70.5	61.0	60.4
Technicians and associate professionals	18.8	15.3	19.0	10.9	15.3	14.6	16.2	35.1	18.4
Clerks	2.4	12.7	12.2	9.9	2.5	2.4	1.7	0.7	6.8
Service workers and shop and market sales workers	1.5	5.5	5.5	3.9	1.9	0.5	1.1	0.9	3.2
Skilled agricultural and fishery workers	0.1	0.1	0.1	0.1	0.4		0.4	0.0	0.2
Craft and related trades workers	0.1	1.0	0.4	0.4	0.4	0.1	0.4	0.1	0.4
Plant and machine operators and assemblers	0.2	0.2	0.2		0.7	0.3	0.7		0.3
Elementary occupations	0.2	0.8	0.6	0.5	0.6	0.2	0.3	0.0	0.4

## 5.4 Full-time/Part-time Employment and Working Hours

Of all the graduates employed (including self-employment) about four years after graduation, 11 percent are employed part-time. As Chart 5.5 shows, the proportion of those in part-time jobs is highest in Italy (19%), but also above average in Spain, the Netherlands, Germany, Norway and Austria, while even below the 5 percent mark in Finland, the Czech Republic and Japan. Often the part-time quota is high under problematic labour market conditions, but part-time employment policies play a role as well (notably in Norway and the Netherlands).

**Chart 5.5 Part-time Work of Graduates by Country (percent of graduates employed about four years after graduation)**



Part-time work is most frequent among graduates from the humanities, medical fields and education (18-19%), i.e. the fields with highest proportions of women. It is around average (8-12%) in fields with a balanced gender composition (social sciences, law and natural sciences), and it is lowest (4-5%) in engineering and mathematics, i.e. male-dominated fields. Obviously, the difference of part-time employment is largely due to the by far more frequent part-time employment of women (16% altogether) than of men (6%).

The differences of part-time work are relatively small by occupational groups with managers below average (8%), technicians and associate professionals above average (13%) and professionals as well as others (clerks, office and sales workers etc.) around average. As regards economic sectors, we note four – again women-dominated – sectors with very high proportions of part-timers:

- social work (27%),
- education (20%),
- health (19%), and
- other service activities (16%).

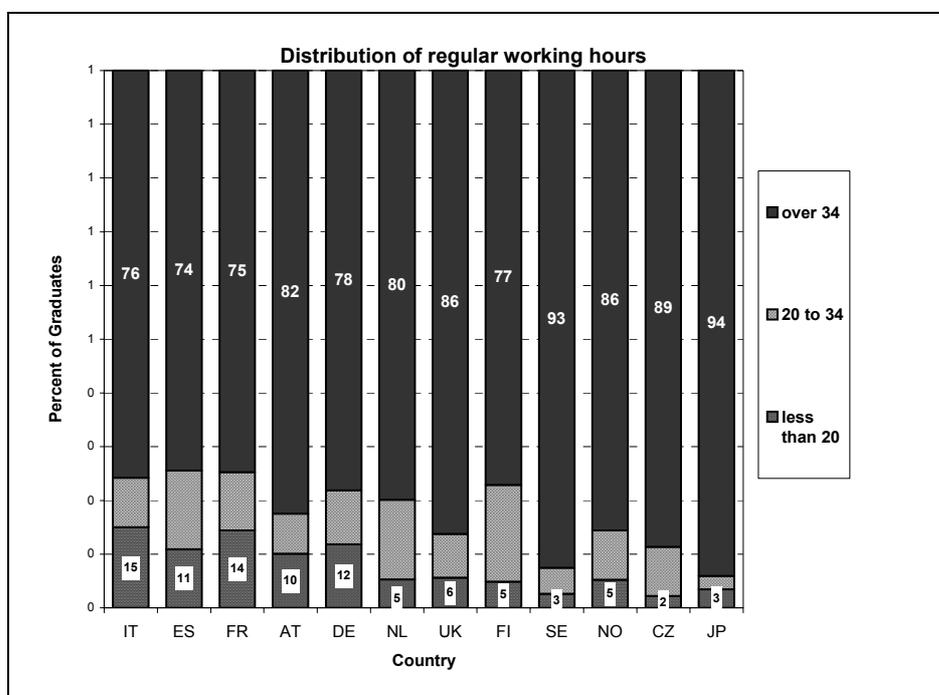
In all other economic sectors, part-time work occurs below average.

Altogether, we note similar findings in analyzing the weekly working hours. The graduates surveyed report that they are professionally active for 43 hours on average (including overtime). In excluding overtime, we note that more than 80 percent are on a job requiring at least 35 hours a week.

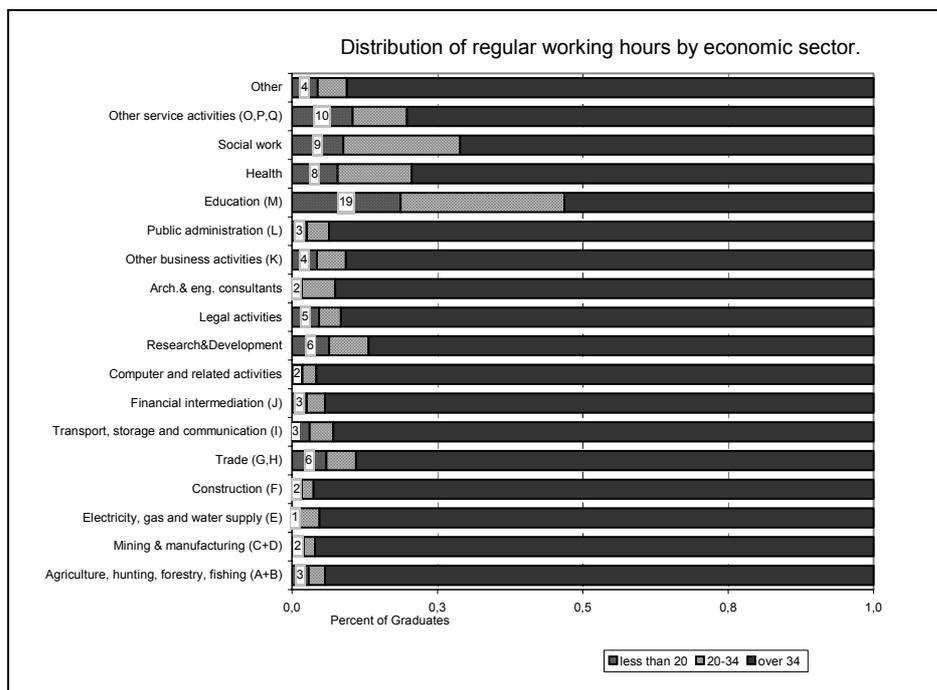
Again, being on a less-than-35-hours job is more frequent among women than among men. Less than 20 hours-jobs are held by 10 percent of women as compared to 4 percent of men, and jobs comprising a 20-34 hours work load are held by 15 percent of women as compared to 5 percent of men.

Jobs with fewer than 35 hours are most frequent among graduates in Spain, Italy (as the data on part-time employment have shown as well) and in France (see Chart 5.5). Graduates from education and from humanities are even less often in jobs with less than 35 hours than one could have inferred on the basis of responses regarding part-time employment. Chart 5.6 shows clearly that employment between full-time and about half-time, which is not consistently understood as part-time by the respondents, has a relatively wide spread mostly in social work, education and to some extent as well in the health sector.

**Chart 5.6 Weekly Working Hours of Graduates by Country (percent of graduates employed about four years after graduation)**



**Chart 5.7 Weekly Working Hours of Graduates by Economic Sector (percent of graduates employed about four years after graduation)**



### 5.5 Self-employment or Dependent Employment

Self-employment is opted for by somewhat more than 6 percent of all the graduates surveyed who are professionally active four years after graduation. Men (7.5%) have a slightly higher propensity to self-employment than women (5.3%).

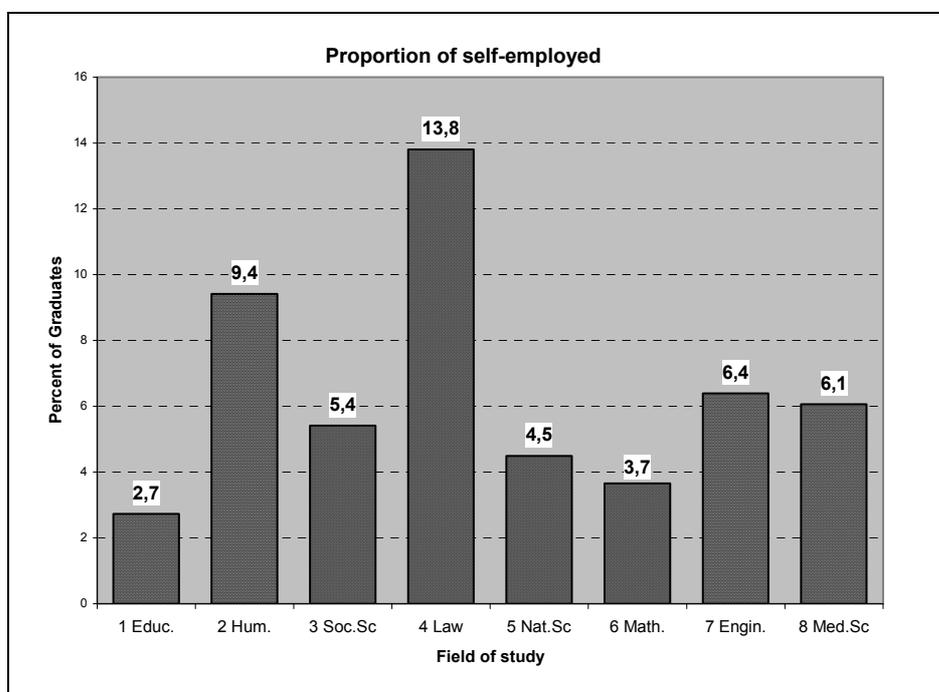
The most striking differences can be observed by country. As Chart 5.7 shows, self-employment is by far most frequent among graduates professionally active four years after graduation from Italy (20%) and second most frequent among those from Spain (10,7%). Self-employment is also above average among graduates in the Czech Republic, Austria and Germany (8-9%), while below average (ranging from 2-5%) in the remaining countries. The highest proportion of self-employed graduation is noted in countries where graduates face substantial problems in transition to employment and embarking on a professional career; as confirmed by the income distribution (check!), a substantial proportion of the self-employed graduates in these countries are in lowly paid self-employment situations.

As regards field of study (see Chart 5.8), we note that the proportion of those self-employed is highest for graduates from law (14%), which reflects the status of independent legal professionals, and additionally above average for those from the humanities (9%). In contrast, relatively low levels of self-employment are observed among graduates from education, mathematics and natural sciences (3-4%).

**Chart 5.8 Self-Employment among Graduates by Country (percent of graduates employed/self-employed about four years after graduation)**



**Chart 5.9 Self-Employment among Graduates by Field of Study (percent of graduates employed/self-employed about four years after graduation)**

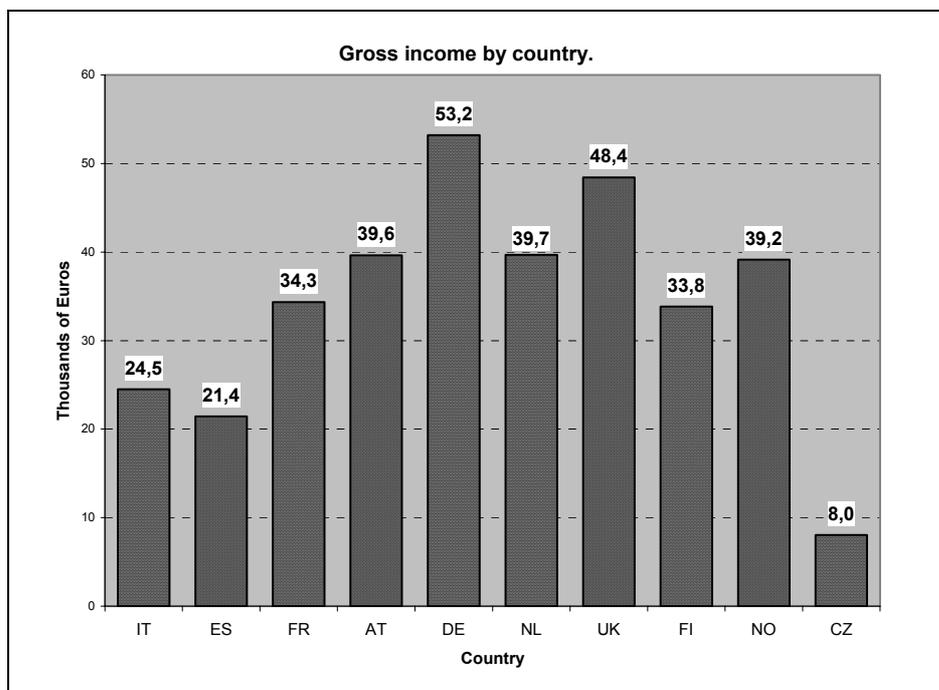


With respect to the economic sector legal services score the highest in the proportion of self-employed (28%) – due to the fact that many lawyers work independently. Other sectors with high rates of self-employment are architecture and engineering services (19%), other business activities (17%) and agriculture (13%). The last sector named is characterised by the highest level of self-employment. Besides, many graduates active in the agricultural sector in various countries may be owners of small o medium size land resources. The smallest rates of self-employment can be found among the graduates working in the public administration (1%) and the electricity-water-gas sector (2). The nature of the employer, public administration, and the large size of electricity-gas-water companies explain the small proportions.

## 5.6 Income

A key characteristic of the quality of a job is the income that can be generated from it, in case of self-employment, or the wage, in case of dependent work. Chart 5.10 shows the gross income of graduates by country measured in euros. Consistently with Table 5.1, we see that the lowest earnings correspond to graduates living in the Czech Republic (only 5,500 euros) and Spain (16,100) which also had the lowest levels of income per capita, even after correcting by the purchasing power parity. Nevertheless, there are differences in the income of graduates by country which would remain if they were corrected by the price level. The highest nominal gross income is reported by graduates from Germany (38,400 euros) and Norway (35,600 euros as compared to slightly less than 28,000 euros on average among all professionally active graduates surveyed).

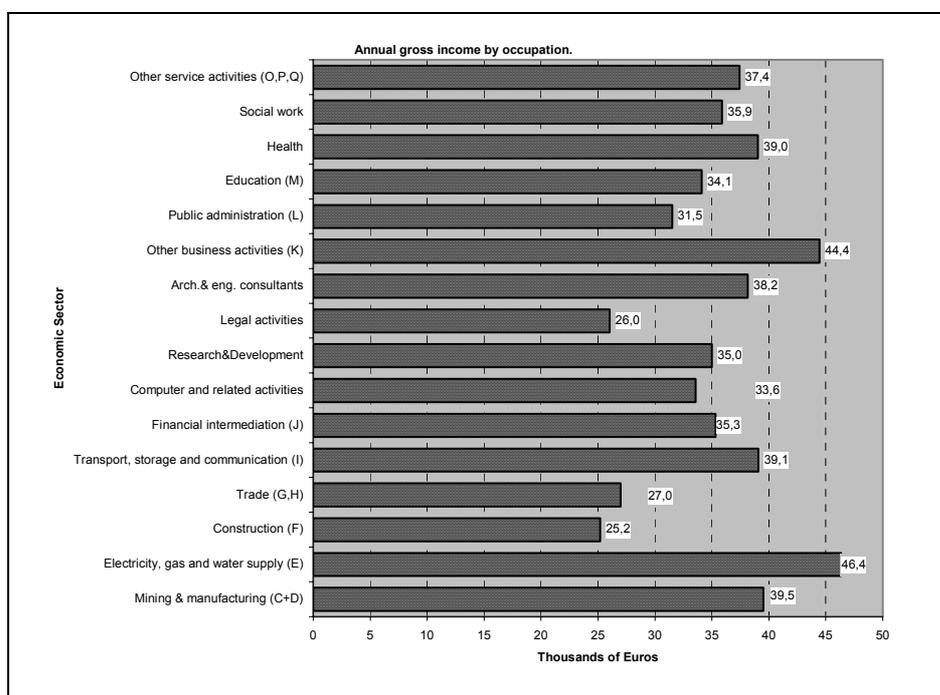
**Chart 5.10 Annual Gross Income of Graduates by Country (in thousands of euros, graduates employed about four years after graduation)**



The income varies to a lesser extent by groups of field of study. It is highest on average for graduates from mathematics (34,000 euros) many of whom are active in new technology jobs. By contrast, graduates from education have the lowest level of income (21,800 euros) whereby only part of it is likely to be compensated by high indirect incomes of civil servants. In part, the income differences by fields of study are linked to different proportions of women, who on average earn 21 percent less than male graduates about four years after graduation (those working part-time included).

With respect to economic sector, Chart 5.11 that the highest incomes are earned by graduates in computer and related activities (33,700 euros), financial intermediation (32,300 euros) as well as mining and manufacturing (31,000 euros). The lowest level of gross income is found among graduates working in education (23,100 euros).

**Chart 5.11 Annual Gross Income by Economic Sector (in Thousands of Euros)**



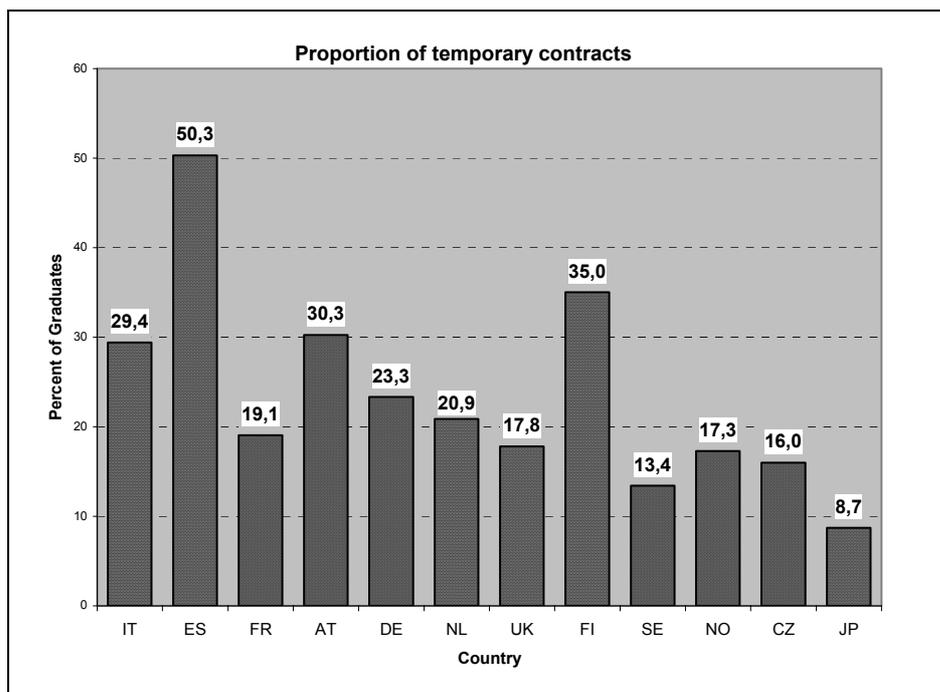
## 5.7 Permanent or Temporary Contract

A permanent contract is generally viewed as a characteristic of the quality of employment. During the first few years after graduation, however, temporary contracts are frequent and are not consistently a sign of shaky career prospects, as notably the public service in various European countries provides for a temporary contract over a few years as an entry stage of a regular career. Actually, altogether more than 20 percent of the professionally active graduates surveyed have a temporary contract about four years after graduation.

Chart 5.12 shows that the proportion of temporary contracts is by far the highest in Spain where it applies to half of the professionally active graduates about four years after graduation. This is due to the fact that the temporary contract became the general

pattern of employment in Spain as a consequence of a reform of employment conditions in the mid-1990s. The second country in this respect is Finland where 35 percent of the graduates have a temporary contract. In contrast, Japan is the country where temporary contracts represent by far the smallest percentage; short-term contracts had remained uncommon at the time the graduates surveyed became employed.

**Chart 5.12 Temporary-Contract Employment of Graduates by Country (percent of graduates employed/self-employed about four years after graduation)**



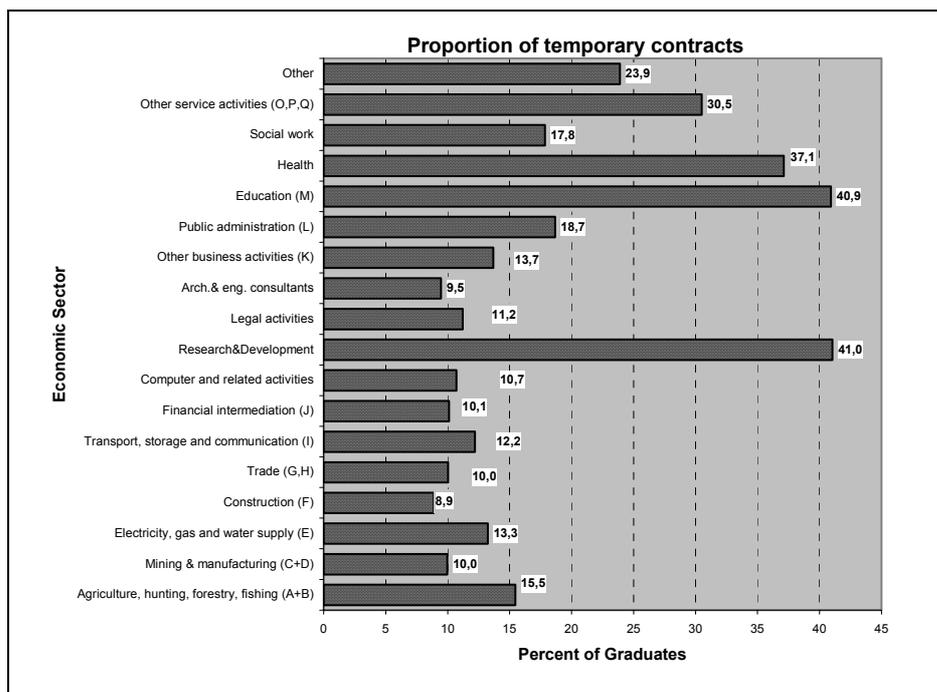
Over 30 percent of graduates from medical fields, natural sciences and education hold a temporary contract about four years after graduation while, in contrast, graduates from engineering and mathematics hold the lowest proportion of temporary contracts (below 15%). The high proportion in the former fields of study is largely a career stage phenomenon: many graduates from natural sciences embark on a regular position with permanent contract only various years after graduation, notably because many of them turn to advanced academic studies and professional training after graduation, and medical doctors have to undergo various years of professional training along professional practice before they are fully qualified and professionally settled.

As regards occupational group we note that the proportion of those on temporary contracts among professionals is above average (26%). In contrast, most of those active as legislators, senior officials and managers seem to be well settled, as the low proportion of permanent contracts (11%) suggests.

The above made explanations about the causes of large proportions of temporary employment are most visibly confirmed by distribution of the proportion of temporary contracts by economic sector. Temporary contracts are most frequent (41%) among graduates working in the research and development sector –notably among those working in higher education and public research institutions, as other studies have

shown. Other sectors with a high level of temporary jobs (see Chart 5.12) are education (also 41%) and the health sector (37%). This does explains in part not completely the higher proportion of temporary contracts on the part of women (27%) than on the part of the men surveyed (18%).

**Chart 5.13 Temporary-Contract Employment of Graduates by Economic Sector (percent of graduates employed/self-employed about four years after graduation)**



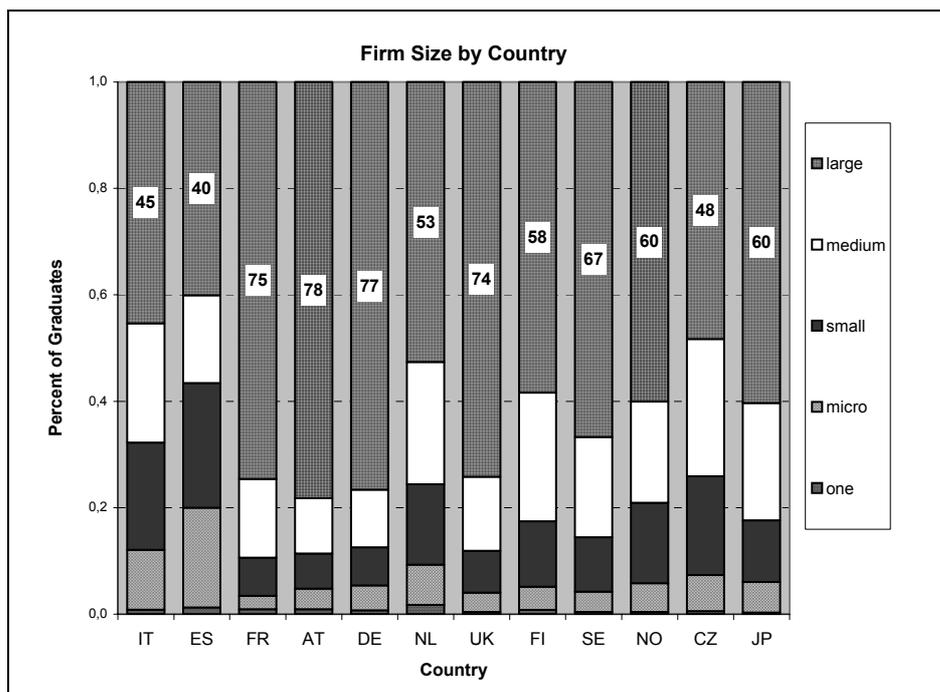
## 5.8 Firm Size and Graduate Employment

Another important characteristic of graduates’ jobs is the size of the firm in which they work. This indicator has two important determinants. On the one hand, the productive structure of a country determines the average size of the firms in each of them and, therefore, influences the results. On the other hand, being a graduate from an institution of higher education may also determine the size of the typical firm that hires her or him. We should notice at this point that public administration is always included as a large “firm” and this is one of the favourite areas of employment for graduates from institutions of higher education.

Chart 5.14 underscores the general fact that graduates tend to work in large firms in a much higher proportion than workers in general. Nevertheless, the proportion of graduates that work in large firms is only between 40 percent and 45 percent in Spain and Italy. Still, having into account that small and micro firms account for 90 percent of the production in Spain, the percent of graduates working in large firms is very impressive.

As regards fields of study it comes as a surprise that graduates from mathematics tend to work in large firms in very high proportions (71%). This might be due to the fact that a substantial proportion work in the public sector, which – as mentioned above – tends to be counted as large size of firm, and that most of those in the new technology sector tend to be hired by large firms.

**Chart 5.14 Graduates’ Firm Size by Country (percent of graduates employed about four years after graduation)**



## 5.9 Conclusions

The CHEERS survey addressed the situation of graduates from institutions of higher education about four years after graduation at the end of the 1990s. The career stage analysed turned out in most cases to be the moment when initial search, trial and error activities as well as the initial preparatory training within the firm or the profession is over on the one hand and when major steps of career progression have not yet begun. The data show, however, that a substantial proportion of graduates from natural sciences and medicine are four years after graduation still in a provisional situation due to the frequency of advanced academic education in the natural sciences and the long periods of training and provisional professional practice in medical careers.

Most graduates in the 12 countries surveyed are four years after graduation in a regular employment situation. More than 80 percent of the respondents are professionally active, among them 6 percent are self-employed. 4 percent are unemployed. Thus, the labour force participation rate clearly surpasses the average and the unemployment rate is clearly below the average of the total population at the age typical for employment. 70 percent get employed in the occupational groups of managers and professionals, and about two-thirds of graduates in the majority of groups of field of study end up in one or

two economic sectors which are most closely linked to the respective fields. On average, the graduates professionally active four years after graduation have an annual gross income of more than 28,000 euros.

The situation, however, is not altogether without problems. About 18 percent of those professionally are employed as technicians or associate professionals, i.e. occupational groups not consistently viewed by experts as appropriate, and about 11 percent as clerks, service and sales officers and in other occupations, i.e. in occupations generally viewed as predominantly not appropriate for graduates. Altogether, 11 percent of those professionally active are employed part-time, and (including those calling themselves part-timers) more than 20 percent hold job with a lesser volume than 35 hours weekly. Some of the altogether 6 percent of those self-employed are in a shaky, lowly remunerated situation. Last not least, for a substantial of proportion of the more than 20 percent of those employed on a temporary contract, this indicates a problematic employment situation.

Women are also predominantly in a regular employment situation about four year after graduation. Disparities between men and women, as the chapter dealing specifically with gender issues in this volume shows, are predominantly linked to child-rearing activities (about one quarter of women surveyed have children in the household) and to the unequal distribution of women across fields of study. This chapter shows that 9 percent less women than men are professionally active, while 2 percent more women than men are unemployed about four years after graduation. 10 percent more of the professionally active women than men are employed part-time. In addition, 6 percent more women than men report a weekly work load of less than 35 hours even though they do not call themselves part-timers. 9 percent more women professionally active than men are on a temporary contract, and women's income is over 20 percent lower on average than that of men whereby less than one quarter of the difference seems to be due to less full-time employment and fewer working hours of women.

In analysing the links between field of study, economic sector and occupational group we note altogether smaller differences by field than by country. On average across the countries analyzed, graduates from engineering and mathematics are more or less consistently, according the various indicators employed, in the relatively most favourable employment situation. Thereby, graduates from mathematics are obviously the winner of the spread of new technologies. In contrast, the highest proportion of graduates in less favoured employment situations can be found in the natural sciences and humanities and partly as well as in education and health fields.

There are notably four reasons, however, for relativizing the plain data four years after graduation to some extent. First, as already stated, many natural scientists and medical doctors are about four years after graduation in a provisional employment situation and are likely rise more visibly than others at a later stage of career. Second, the category of social science employed in our analysis is heterogenous: graduates from business studies also are in a very favourable employment situation on average. Third, the difference between fields and economic sector were less impressive, if the larger indirect income components and the higher job security in the public sectors could be demonstrated. Fourth, the low-income sectors of education, social work and para-professional health occupations and the respective fields of study are frequently chosen

by women as the best opportunity of combining employment and the upbringing of children, notably by means of reduction of the weekly work-load on the job..

This study contributes more to the comparison of graduate employment and work across industrialized countries than to the themes discussed hitherto. Obviously, the most striking differences according to country in the speed of transition from higher education to employment and in the employment situation over the first two years, as discussed in previous chapters, have levelled off to some extent about four years after graduation. Still, differences by country in the employment situation about four years after graduation are substantial: The proportion of graduates professionally active varies among the 12 countries analysed from more than 90 percent to about two-thirds, and the unemployment rate between 1 percent and 12 percent. In one extreme, the proportion of men and women professionally active is equal, in the other about 20 percent fewer women are employed. In two countries, the unemployment rate of women is lower than that of men, while in two other countries, the unemployment rate of women is threetimes as high as that of men. Employment in managerial or professional positions varies by country between 94 percent and 45 percent. Graduate income differs on average by a ratio of about 1:2 in Western European countries even if different price levels are taken into consideration. Part-time employment quotas range from 4 percent and 19 percent and quotas of temporary employment from 9 percent to 50 percent.

In various respects of regular employment, but not consistently across all indicators, graduates in the Nordic countries are the most favourable situation. In addition, they have the highest income in Germany, the most stable employment situation in Japan, the highest chance of being in a managerial and professional position in Austria and a low risk of being unemployed in the Netherlands. In reverse, the employment situation looks consistently less fortunate in Spain and in various respects as well in Italy, France and the Czech Republic.

Obviously, economic wealth, the national unemployment rate as well as the public welfare system are factors explaining some of those differences by country. But other factors come into play as well. Graduates tend to be relatively privileged in countries with a low ratio of new entrant students. In the Nordic countries, an elaborate welfare system seems to be linked with a large number of employment opportunities in the public sector with specific opportunities for graduates notably from those fields where women are strongly presented. In Japan, the employers are the guarantors of stable employment. In some countries, notably in the Netherlands and Norway, specific policies of encouraging part-time employment, and possibly thereby reducing unemployment, seem to affect graduate employment significantly. In Spain, a general policy of granting temporary work contracts was implemented. In Italy, petit self-employment of graduates seems to be more acceptable than in other countries. Thus, the study both suggests to be aware of the diversity of graduate employment across countries and the multitude of factors in play.

## CONTENT

5	The Employment Situation About Four Years After Graduation .....	1
5.1	The Economic, Labour Market and Educational Context .....	1
5.2	Labour Force Participation and Unemployment Rates.....	2
5.3	Economic Sector and Occupational Group .....	7
5.4	Full-time/Part-time Employment and Working Hours.....	9
5.5	Self-employment or Dependent Employment .....	12
5.6	Income.....	14
5.7	Permanent or Temporary Contract.....	15
5.8	Firm Size and Graduate Employment .....	17
5.9	Conclusions .....	18

## CHARTS

Chart 5.1	Graduates' Labour Force Participation by Country (percent of graduates about four years after graduation).....	3
Chart 5.2	Unemployment Rates of Graduates by Country (percent of graduates in the labour force about four years after graduation).....	4
Chart 5.3	Labour Force Participation Rate of Graduates by Field of Study (percent of graduates about four years after graduation).....	6
Chart 5.4	Unemployment Rate of Graduates by Field of Study (percent of graduates in the labour force about four years after graduation).....	6
Chart 5.5	Part-time Work of Graduates by Country (percent of graduates employed about four years after graduation).....	10
Chart 5.6	Weekly Working Hours of Graduates by Country (percent of graduates employed about four years after graduation) .....	11
Chart 5.7	Weekly Working Hours of Graduates by Economic Sector (percent of graduates employed about four years after graduation) .....	12
Chart 5.8	Self-Employment among Graduates by Country (percent of graduates employed/self-employed about four years after graduation) .....	13
Chart 5.9	Self-Employment among Graduates by Field of Study (percent of graduates employed/self-employed about four years after graduation) .....	13
Chart 5.10	Annual Gross Income of Graduates by Country (in thousands of euros, graduates employed about four years after graduation) .....	14
Chart 5.11	Annual Gross Income by Economic Sector (in Thousands of Euros).....	15
Chart 5.12	Temporary-Contract Employment of Graduates by Country (percent of graduates employed/self-employed about four years after graduation) .....	16
Chart 5.13	Temporary-Contract Employment of Graduates by Economic Sector (percent of graduates employed/self-employed about four years after graduation) .....	17
Chart 5.14	Graduates' Firm Size by Country (percent of graduates employed about four years after graduation) .....	18

## TABLES

Table 5.1	Statistics of Economic Development, Unemployment, Educational Expenditures and Enrolment in Europe and Japan, 1997.....	2
Table 5.2	Gender-Specific Labor Force Participation Rates and Unemployment Rates of Graduates by Country (percent and ratio of graduates/graduates in the labour force about four years after graduation).....	5
Table 5.3	Economic Sector of Graduates by Country (percent of graduates employed about four years after graduation).....	7
Table 5.4	Economic Sector of Graduates by Field of Study (percent of graduates employed four years after graduation).....	8
Table 5.5	Occupational Group of Graduates by Country (percent of graduates employed about four years after graduation).....	8
Table 5.6	Occupational Group of Graduates by Field of Study (percent of graduates employed about four years after graduation) .....	9