

# The Transition from University to the Job Market. An Emigration Analysis of the University of Cagliari Graduates

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**Summary.** In this work, we analyze data provided by official records on graduates of Sardinian universities in the period 1991-2001 with the aim of obtaining contextually relevant information for the realisation of a survey on the transition from university to the job market. Examining data from the survey, we looked in particular at certain aspects of the conditions of graduates in search of employment, their postgraduate education and the opportunities for entering the labour market. We also present some initial results regarding the emigration of graduates and the evaluation of human capital.

**Keywords:** Graduates, Emigration, Survey, CATI, Human Capital.

## 1. Introduction

In the years immediately before the “3+2” Italian university reform, the percentage of high school graduates enrolling at Sardinian universities was about 65% for males, and as high as 75% for females. At the beginning of the 80s this rate actually decreased, coming more or less into line with national averages.

In this work, we analyse administrative data in order to carry out a survey on University of Cagliari graduates and their transition from university to the job market. The goal is to build up a general framework for analysing a local context characterized by the low input-output dynamics of university students.

Taking a sample of graduates of University of Cagliari in the years 1999 and 2000, we analyse their positions “vis-à-vis” the employment market,

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<sup>1</sup> This paper is the result of the joint ideas and efforts of the three authors. M. Porcu was responsible for the final editing of Sections 2.1, 3 and 5, G. Puggioni for Sections 1 and 6, whereas N. Tedesco was responsible for the other Sections.

their postgraduate education and their opportunities for entering the labour market.

In addition, we present some initial results on the emigration of graduates and the evaluation of human capital. With regard to this latter aspect, we should underline that this analysis is preliminary. In fact, according to some recent definitions of human capital, recent theories have recognised that studies on human capital must take into account the concepts of social capital and training. These theories (Morgan, 2000) have begun to define the concept of social capital in terms of “resource capital” development and how this can be related to the resources that an organised society is prepared to make available for the cultural and social development of its members.

We should also note what all sectors of the economy have for some time been stressing, i.e. the need to have a workforce educated and trained in strict view of the new skills required by technological innovation. A region such as Sardinia, which is characterised by a slow economic development and a new phenomenon of emigration, is an interesting context in which to study which aspects determine the emigration of graduates.

## 2. Time series dynamics for graduates and higher education programmes at Sardinian universities

In the period 1991-2001 in Sardinia we had 27,599 graduates: 0.64% not resident in the region, 67.8% graduates at the University of Cagliari, 62.1% female (61.1% in Cagliari and 64.1% in Sassari).

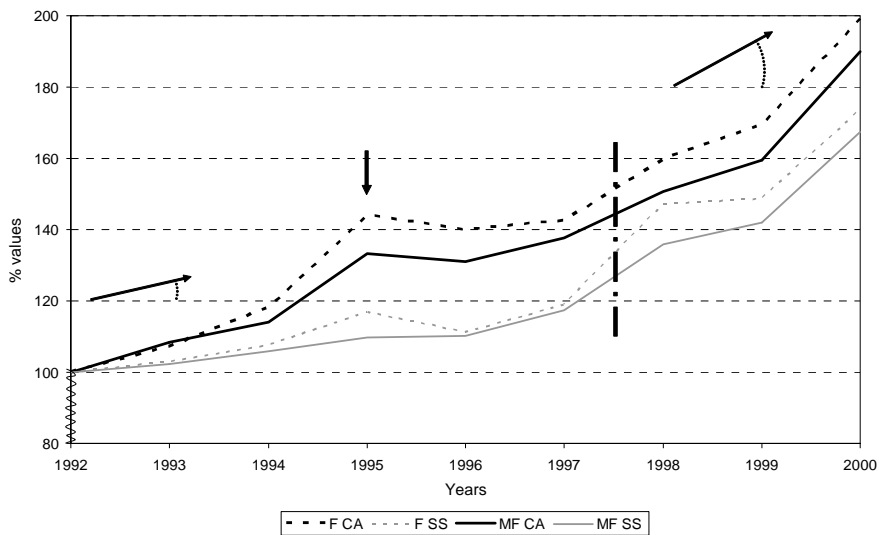
Time series of indexes (base year 1992=100) of graduates in the period 1992-2000 in Sardinia, as pointed out by the high value of the correlation coefficient ( $r=+0.97$ ), show a similar increasing trend for the two universities. This trend, as shown in Figure 1, has become more evident in the last three years (1998-2000); for the University of Cagliari the index goes from 151 to 190. In the same period for the University of Sassari it goes from 136 to 167. If we examine the time series for female graduates, we see that the trend is the same as it is for graduates as a whole (MF vs F  $r=+0.98$ ).

The number and typology of university courses in Sardinia is less varied than it is on the Italian mainland, though not greatly so (Figure 2). The two Sardinian universities differ in the courses they offer because some courses are run in one university, but not in the other. What we can derive from this situation is a non-negligible dissimilarity ( $z=0.34$ ) between distributions of graduates according to type of degree in the two universities.

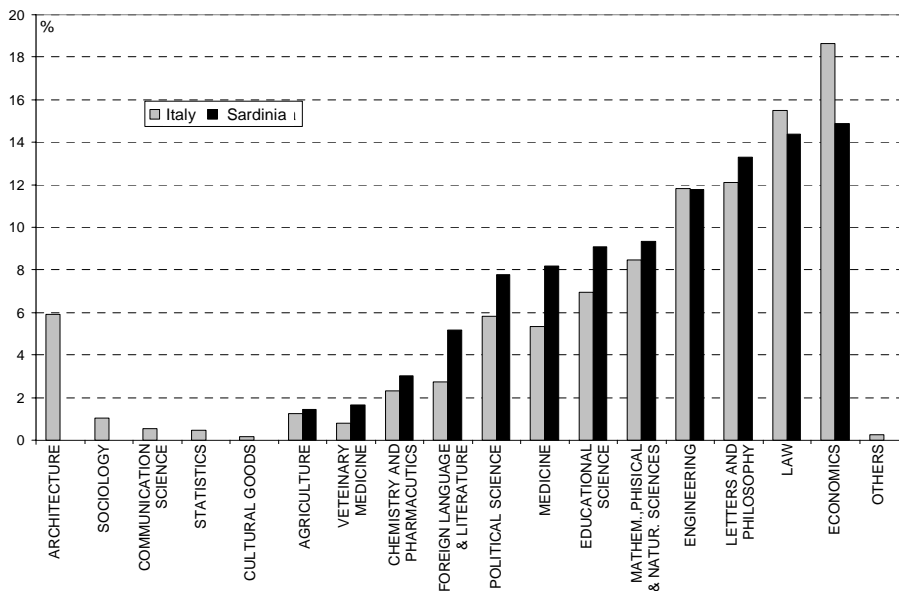
The comparison between Cagliari and Sassari according to type of degree show a slightly higher concentration<sup>2</sup> for Cagliari (Cagliari  $g=0.42$ ; Sassari

<sup>2</sup> Concentration was measured with Gini's index of concentration  $g$  (Leti, 1983).

$g=0.39$ ). For the purpose of this work, the different degrees have been classified into four groups: a) Economic-Legal-Social (ELS); b) Scientific - Technical (SCT); c) Sciences of Health and Life (SHL); d) Humanities and Behavioural Sciences (HBS).



**Figure 1.** Graduates in Sardinia from 1992 to 2000 (Index: base year 1992=100)



**Figure 2.** Percentage of graduates in 1999-2000 in Italy and Sardinia, by faculty

## 2.1 *Input-output dynamic of graduates in Sardinia*

The factors that influence social and economic life in Sardinia relate to the labour market (Bottazzi, 1999). Data on this aspect is common knowledge: during the 1950s and 1960s, with a trend evident in regions at a similar stage of development, there was the apparently strange phenomenon of a simultaneous decrease in the number of employed and of workforces. This decrease resulted, for that period, in a low unemployment rate with values of approximately 5%.

The reduction in workforce rate in the transition from an agricultural to a modern industrial society is a well-known phenomenon; emigration from Sardinia (in those years there was an average annual negative balance of about 10,000 units) reduced the number of the working population. From the mid-seventies, the situation drastically altered when the unemployment rate began to grow constantly until it reached peaks of up to 20% in the 1980s, values that remained, with some oscillations, for most of the 1990s.

The main causes of this situation (Bottazzi, 1998) were the extraordinary increase in the numbers of those in search of work<sup>3</sup> due principally to the effects of the sixties' *baby boom*<sup>4</sup>, by the slowdown of migratory dynamics and, moreover, by the increasing number of women entering the labour market.

In this context of high unemployment, what reduces the risk of exclusion from the labour market is an educational qualification (Bottazzi, 1999). This is particularly true for those who have obtained a diploma at a vocational type high school. Graduates also have a greater probability of entering the labour market and show a greater inclination to seek employment outside Sardinia.

With regard to this latter phenomenon, from an analysis of changes of residence from and to Sardinia between the two last censuses, we have made an initial evaluation of the graduates' emigration. Considering that almost all graduates in Sardinia are resident in the region, according to public registry records for graduates up to 35 years of age on completion of a degree (94.8% of graduates of decade), the emigration rate is about 10% and the proportional migration index is -8.3. This result is just approximate evaluation because the registry office counts emigrations only from changes of residence and those who emigrate from Sardinia usually maintain their official residence for a not necessarily short period.

This information will be of particular interest because if it is true that the social capital of graduates represents a fundamental condition to guarantee constant scientific and technological progress, it is ever more a key requirement to activate development policies in Sardinia that are coherent to present

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<sup>3</sup> In the period under consideration, the number of jobs available increased more than employment levels (+1.4% against +0.4% annual average) but the workforce numbers increased by 2.1% per year.

<sup>4</sup> By *baby-boom* we refer to the rapid increase in births in Italy during the 60s.

economic wisdom. Furthermore, as is well known, we can add that the emigration of graduates is usually a selective process: younger and more qualified graduates choose to emigrate to develop themselves professionally.

If we look at figures for the year 2003 in an international context in which Western countries are trying to reduce immigration, the USA issued almost 200.000 green cards for highly qualified foreign professionals. The United States have effectively enriched their human capital, while the 'donor' countries of origin of new immigrants have lost "highly valuable resources". These countries have of course incurred the heavy costs of their education.

Gini (1953) examined the effects of this process as early as 1940. He quantified (based on conservative estimates and not ignoring relative advantages for countries of origin owing to a decrease in the labour supply) what was a great accumulation of wealth (notwithstanding money remittances and re-emigrations to homelands) for the USA economy<sup>5</sup>.

### 3. A survey on University of Cagliari graduates

In an initial step aimed at studying graduates' transition from university to the job market, the survey was carried out on a sample of graduates from the University of Cagliari aged 35 years or less at the moment of graduation, over a two-year period (1999 and 2000). The decision to consider graduates from these two years was justified for two reasons. Firstly, it was possible to select a sample from a large population and secondly, because of the need to observe a fairly long retrospective period ( $\geq 34$  months) for each of the graduates in order to study their transition for three years. We chose the cut-off age of 35 because older graduates probably come from the category of students that were already working before their graduation<sup>6</sup>.

Thus, total population consisted of 4,363 units, classified by sex, age, groups of faculties (Table 1). Subsequently, using a stratified sample design by faculty, with selection proportional to the number of each stratum, a sample of 26% was selected from the total population.

Estimating emigration trends of Sardinian graduates with administrative data will only provide an approximate evaluation of the phenomenon because of the limitations of these sources. In fact, the registration or cancellation of resident status will not necessarily coincide with physical transfer to another town.

In November 2003 a CATI survey was carried out on a sample of graduates from the University of Cagliari (Porcu & Puggioni, 2003). This sample of

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<sup>5</sup> For an evaluation of this kind of migration, see also Todisco (2000) and Fondazione ISMU (2002).

<sup>6</sup> We should note that graduates over 35 numbered 216 (4.7% of population). From this group we eliminated 16 graduates non-resident in Sardinia at graduation.

**Table 1.** Graduates of the University of Cagliari in the years 1999 and 2000 by sex, class of age and faculty group

Groups	Female				Male				Total			Total for Groups	
	< 26	27-29	30-35	Total	< 26	27-29	30-35	Total	< 26	27-29	30-35	N	%
ELS	326	396	215	937	204	225	155	584	530	621	370	1521	38.8
SCT	105	150	46	301	157	327	213	697	262	477	259	998	22.9
SHL	195	170	87	452	63	90	71	224	258	260	158	676	15.5
HBS	429	352	215	996	64	57	51	172	493	409	266	1168	26.8
Tot	1055	1068	563	2686	488	699	490	1677	1543	1765	1053	4363	100.0
%				61.6				38.4	35.4	40.5	24.1		100.0

**Table 2.** Age at graduation by faculty: some statistics for sample and population

Faculty groups	Mean	Sd	$M_e$	$Q_3 - Q_1$	$\mu$ (pop.)
ELS	27.78	2.64	28.00	3.00	27.78
SCT	28.37	2.74	28.00	4.00	28.11
SHL	27.52	2.47	27.00	3.00	27.75
HBS	27.72	2.94	27.00	4.00	27.52

1,112 units represented almost a quarter of all graduates aged below 36, who graduated in either 1999 or 2000 according to official administrative records<sup>7</sup>.

With respect to age at interview, sex and high school attended, the sample showed good overlap with the overall population. Considering those interviewed with regard to their faculty grouping, even the mean age at graduation seemed to overlap with the population (Table 2). A total number of 697 female and 415 male graduates were interviewed. 62% of those interviewed had attended "Lyceum"<sup>8</sup> and 17.5% had a Technical school background.

#### 4. Occupational placement of the graduates

Of the 1,112 graduates interviewed, a proportion of 74.0% were working at the time of survey; 13.7% graduates were still looking for a job. All the graduates had had at least 34 months in which to get a job; 12.3% were still involved in postgraduate studies.

As regards gender, male graduates that were in work comprised 78.3% of their total; the corresponding figure for female graduates was 71.4%. The un-

<sup>7</sup> Only the 5% of graduates were aged over 35 at graduation in 1999-2000.

<sup>8</sup> The "Lyceum" provides a classical education such as the one offered by the old British "Grammar Schools".

employment rate among males was 7.5% and 11.0% among females. Both males and females have the same percentage of graduates choosing to continue their studies (11.6% males, 12.8% females). As a benchmark for comparisons, we can note that in Sardinia in 2003 the total unemployment rate was 18.5%; the total unemployment rate in Italy for graduates aged 25 to 34 was 13.6% (ISTAT, 2004).

If we look at the categories ordered by degree type, we note that the highest rates of employment are among graduates from the faculties of Engineering (88.7%), Educational Sciences (84.9%), Pharmacy (81.3%), Economics (77.3%) and Sciences (77.1%). The lowest rate of employment was registered for graduates from the faculty of Medicine, but there is a high percentage (76.8%) of graduates in medicine who are still enrolled in postgraduate courses.

The majority (72.1%) of graduates find work as company/state employees. Only for Law faculty graduates do we note the opposite: employee workers comprise 32.3% vs. freelance workers (67.7%). More than half (56%) of those in employment are not working in the same city in which they hold official resident status.

After Medicine, the faculty of Law registers the highest percentage of graduates that have continued their studies in a postgraduate programme. The percentage of Philosophy graduates in work totals 65.8% (19.2% are unemployed, against an overall unemployment rate of 9.7%). Next we find the faculty of Political Science: 70.0% of graduates are in work and 18.0% are unemployed.

A high proportion (59.1%) of the employees is working for private companies; 34.7% are working in the public sector (the 2001 census revealed that 25% of the total number of workers is engaged in the public sector).

If we classify employees according to the type of employment contract held, we find that 49.1% of employees have permanent contracts and 26.6% have fixed term contracts, with 20% of the latter being termed atypical. The majority of those working for private firms (59.3%) have permanent contracts. 44.7% of those working in the public sector have fixed term contracts. The percentage of atypical contracts is the same in both the private and public sector (20%).

The highest number of graduates in employment with a permanent contract is from the faculties of Economics (74.5%), Pharmacy (68.0%), Engineering (65.7%) and Law (51.6%). On the contrary, graduates from the faculties of Philosophy (50.8%) and Sciences (40.5%) tend to be working in precarious conditions or on fixed term contracts. Graduates from the faculties of Humanities and Languages are among those working with the highest number of atypical contracts, with percentage values of 45.6% and 36.0% respectively.

We can note that for the public sector the majority of workers (72.8%) are winners of job competitions (the normal procedure in Italy for assigning candidates for public sector jobs); the most common means of obtaining a job in the private sector is by job interview (65.2%) or through direct hiring (15.2%).

91.9% of the 823 graduates who were working at the time of the survey started their job after graduation; 59.8% of them had obtained a postgraduate qualification and of these 74.7% stated that they had completed such studies.

71.8% of the workers that started their job after graduation found employment as regular employees. It is only for the Law faculty that we see the opposite trend, with 70.7% of graduates starting their careers as freelance workers. The overall percentage figure for private sector employees is 66.1%. The faculty with the highest amount of graduates in the private sector is Engineering (79.8%). More than a half (55.8%) the employees are working in the service sector (28.6%) and education (27.3%). For all the groups of faculties considered, the majority of employees are working in these sectors. The exception is the prevalence of engineering graduates finding work in the building sector (29.8%); only 12.5% of engineers are employed in the education sector.

### 5. Graduates that migrate

Of the 756 interviewed who started their working career after graduation (Table 3), 10.6% said that they were working outside Sardinia. One in five of these were working abroad. Almost all (94%) are employees.

More than 2/3 of the 80 emigrant graduates came from the faculties of Engineering, Sciences and Economics (graduates from these faculties make up 44.3% of the total). Therefore, the faculty of Engineering produces graduates that, in comparison with other faculties, have greater success in job placement not only in the local labour market but also outside Sardinia.

It is particularly interesting to highlight some characteristics of graduates that emigrated compared with those of graduates that are working in Sardinia.

**Table 3.** Comparison between some distributions for graduates that are working in Sardinia and those who have emigrated

Faculty	Graduates that work:	
	in Sardinia	out of Sardinia
	<i>F / M x 100</i>	
Engineering	24.5	16.0
Economics	127.3	140.0
Sciences	213.1	140.0
	<i>Average mark at graduation</i>	
Engineering	104.0	105.8
Economics	102.9	106.2
Sciences	106.0	106.7
	<i>Average age at graduation</i>	
Engineering	28.4	27.8
Economics	27.7	27.3
Sciences	27.5	27.2



We only consider graduates from the three faculties that produce the majority of emigrant graduates (i.e. Engineering, Economics and Sciences).

As expected, the female/male percent rate for graduates who have emigrated is lower than that of those who work in Sardinia: Engineering 16% (25% in Sardinia), Economics and Sciences 140% (156% in Sardinia).

On examining the graduate population as a whole, we see that the average mark at graduation for emigrant graduates is significantly higher ( $\alpha=0.05$ ) compared to those that are working in Sardinia. On the other hand, the average age at graduation does not seem to be significantly different ( $p=0.408$ ).

It is important to note that when we ask graduates that have emigrated and graduates that work in Sardinia their opinion on the relevance of their degree to their job, only 11% of the engineers that are working in Sardinia think that it is not relevant; the same opinion is expressed by 29% of emigrant engineers. Graduates in Economics or Sciences say the exact opposite; 23% of those who work in Sardinia said that the degree is not relevant. For graduates who have emigrated the percentage saying their degree is not relevant, is 17%.

With regard to using competencies acquired during their university studies, almost all graduates (93% for Engineering, 91% for Economics and Sciences) working in Sardinia use them at work. Among those who have emigrated, the percentage is considerably lower, especially among engineers (74%).

Such a result seems to be in contrast with the opinions expressed on the relevance of the competence acquired. Indeed, almost 40% of emigrant graduates say that the skills acquired are relevant. Regarding graduates that work in Sardinia, such an opinion was expressed only by 23% of graduates in Engineering and by 26% of graduates in Economics or Sciences. Such issues raise two points:

**Table 4.** Comparison between some distributions of opinions expressed by graduates working in Sardinia and by those who have emigrated

<i>Faculty</i>	<i>Graduates that work</i>	
	<i>in Sardinia</i>	<i>out of Sardinia</i>
	<i>% degree and work not relevant</i>	
<i>Engineering</i>	11.1	28.6
<i>Economics</i>	18.2	27.3
<i>Sciences</i>	29.8	8.3
	<i>% use competences</i>	
<i>Engineering</i>	93.4	74.1
<i>Economics</i>	95.9	83.3
<i>Sciences</i>	84.6	80.0
	<i>% relevance of competence acquired</i>	
<i>Engineering</i>	23.0	39.3
<i>Economics</i>	21.2	36.4
<i>Sciences</i>	32.8	41.7

- Is the local job market looking for competences different from those provided by the degree courses at the University of Cagliari?
- Given the competences required by the job market, do the graduates that have emigrated consider they have adequate skills, as compared with those of other workers with the same skills?

Finally, it is also important to note that a greater percentage of emigrant engineers are looking for a new job compared to those who are working in Sardinia (37% vs 31%). For those that have a degree in Economics or Sciences we can note that 37% of emigrant graduates are looking for a new job but this percentage increases notably among those working in Sardinia. For all the three kinds of degrees, the reason for wanting to change job is dictated by financial motives. If only emigrant workers are considered, the percentage of Science or Economics graduates that want to change their occupation for financial reasons is close to 90%; among engineers, it is only 50%.

## 6. Final remarks

The evaluation of graduate emigration obtained analysing administrative data seems to give results that underestimate the real importance of the phenomenon. The exploratory analysis of the data collected with the sample survey carried out on graduates of the University of Cagliari enabled us to obtain an initial evaluation of the phenomenon of graduate emigration. First, the total unemployment rate for Sardinian graduates aged 25-34 is 13.5%, which is very close to the national average. This is an important statistic, considering that Sardinian has a much higher unemployment rate than the rest of Italy; so it seems quite clear that a university degree does positively influence the probability of getting a job. Yet, this does not mean that all working graduates in Sardinia are doing a job that is relevant to their degree course.

Another important factor concerns those graduates that emigrated to find a job. The data are particularly worrying not in strictly quantitative terms, but qualitatively. Emigrant graduates tend to obtain good grades in a technical-scientific degree. In a context such as the Sardinian labour market, that needs well-designed policies to support local development, it will be crucial to be able to exploit qualitative human capital, in other words the very skills possessed in particular by those that emigrate to find work.

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