

DEVELOPING SYNERGIES BETWEEN THE ACADEMIC AND PROFESSIONAL WORLDS
ITALIAN “STATE OF THE ART REPORT

According to the recommendations of WGH, the Italian Report will try to develop the following items:

- MANPOWER SUPPLY FOR INDUSTRY
- QUALITY AND COMPETENCIES OF CURRENT GRADUATE OUTPUT
- DIFFICULTY OR OTHERWISE OF FINDING AND RETURNING SUITABLY QUALIFIED PERSONNEL
- FUTURE TRAINING NEEDS
- RECEIVED/REQUIRED CHANGES IN ENGINEERING EDUCATION
- IMPACT OF THE CURRENT ECONOMIC CRISIS

In order to accomplish such a task the documents listed in the reference list have been consulted. The papers produced by the “Consiglio Nazionale degli Ingegneri” concern the Italian labour market for Engineers. The paper of the Consortium Almalaurea concerns the actual and potential occupation of graduates in Italy. The present economical crisis and its effects in the near future are also considered in this last document.

THE ITALIAN LABOUR MARKET FOR ENGINEERS

As a general premise (see Table 1) it is relevant to stress that Italy invests a very small percentages of the GNP for Higher Education and Research. In addition the number of graduates over 100 people with an age in between 25-34 years is very small compared to other countries.

Table 1 Resources invested in different countries for higher education/research and number of graduates (Almalaurea)

Country	% of GNP spent for Education	% of graduates (*)
Italy	0.78	17
Scandinavian	2.00	NA
Germany	1.16	22
USA	1.32	39
France	1.21	41
UK	1.02	37
Japan	NA	54

(*) Number of graduates over the population with an age between 25-34 years.

The total number of engineers (in Italy) in 2006 was 478000. In the following the main statistics, concerning the population of Italian engineers, are summarised (year 2006).

- Employed: 371.000 Unemployed (looking for a job): 15000
- Men: 401000 (80% employed) Women: 77000 (70% employed)
- Employed in companies and Public administration: 70%
- Employed as practising engineers: 30%
- Net monthly salary after one year: 1041 euros (1st level degree)
- Net monthly salary after one year: 1230 euros (Master degree)
- Net monthly salary after 5 years: 1630 euros (Master degree)
- Net monthly salary of women is 14% less than that of men.

One year after graduation a quite large percentage of graduates is employed (76.1% in 2006). A percentage of 43.8% has a permanent position, whilst 43.5 % has a temporary contract. The percentage of temporary contracts increases to 53% in the case of women. It is worthwhile to remark that there is a trend for women with children to leave the labour market or to accept part-time job.

Most of the graduates (97%) is employed three and five years after graduation. A quite large percentage (about 70 % from 2000 to 2007) has a permanent position without any difference among men and women. It is worthwhile to remark that for civil and environmental engineers the percentage of permanent positions (year 2007) is only 55%.

Generally, the time required to find the first employment is three months.

It is possible to draw a first conclusion: Italian Engineers easily and quickly find a job which is not well remunerated.

In 2006 the labour market has requested 19000 new engineers (practising engineers, companies, public administration) in front of 24000 new graduates in Engineering. Anyway, since 2006 the number of new positions offered by the Public administration started to decrease: only 436 new positions against 900 new positions in 2005. In 2007 while the request of Engineers was more or less stable (-0.2%), that of Civil Engineers sharply decreased of about 12% because of the Italian crisis of the construction sector.

It is worthwhile to remember that Almalaurea database contains 1.200.000 curricula of new engineers. To have an idea of the impact of the actual economical crisis, it is interesting to remark that in the first bimester of 2009 the request of curricula from the Almalaurea database had a reduction of 23%.

More generally, the Italian labour market consists of small and very small companies. Such a type of companies has tremendous difficulties to support the cost of very qualified engineers and to compete at an international level.

The situation is even worse for civil engineers. It is worthwhile to remember that, as far as the Engineering Services are concerned, different competitors are present in the market. More specifically:

- technical staff of Public Administration or Public Bodies;
- engineering societies
- individual practising engineers
- international operators.

Statistics referred to year 2000 indicated that totally there were 77000 practising engineers, societies with more than 6 employed people were less than 650 whilst 13000 societies had between 2 and 5 employed people. Individual practising engineers had more than 40% of the market whilst the technical staff of PA and Engineering Societies (more than 6 employed people) had about 30% each.

In addition, referring to the same statistics of year 2000, 81% of practising civil engineers had their activity within the residential district, another 14% had their activity within the residential region. Only 5% had activities over the Italian territory and less than 0.8% outside Italy.

Eventually 90% of the job was obtained without participating to any public competition.

As a second conclusion, it is possible to state that the Italian labour market for engineers (especially civil engineers) is not competitive, nonetheless it consists of many individual subjects.

BASIC REQUIREMENTS FROM INDUSTRY

Companies, employing engineers, essentially ask for the following requirements:

- previous experience in the same job or at least in the same type of economic activity (65.5%);
- robust knowledge of computer science (99.4%);
- knowledge of a foreign language at least (73.2%);
- courses organised by the companies for engineer-training.

On the other hand, post-graduate courses of specialization (i.e. masters, doctorates, etc.) are required, on average, only in very few cases (9%).

Table 2 summarizes the basic requirements for different type of Engineers as emerged from statistics elaborated in 2007. In addition to the information reported in table 1, it is worthwhile to point out that the knowledge of “Computer Science” (as users or as experts) is required, for any type of Engineering, in more than 99% of cases.

It is also important to point out that the percentage of Civil Engineers that are employed as manager is lower in comparison to other types of Engineers.

Table 2 Requirements from Companies

Engineering	(1) %	(2) %	(3) %	(4) %
Civil & Environmental	13.2	30.9	62.9	45.0
Electronic and Computer Science	8.3	49.6	67.2	77.3
Industrial	7.3	49.5	65.0	76.0
Others	10.5	42.2	62.2	67.5

- (1) Post-graduate courses
- (2) Training organised by the companies
- (3) Previous experience
- (4) Knowledge of foreign languages

UNIVERSITY OUTCOME

As a general premise it is worthwhile to stress that since 2002 the number of pupils entering University Studies has continuously decreasing from about 75% to 69%. Anyway, the number of students of Engineering Faculties is more or less stable in the last ten years. Yearly, about 35000 new students are enrolled by the Engineering Faculties.

Statistics provide by Almalaurea indicated that graduates in civil and environmental engineering (2008 – first level degree – 2300 answers) graduated after an average period of about 5 years at an average age of 24.5 years. A large percentage of those graduates entered the second (Master) level (85%). A very small percentage of those graduates attended a (post-graduation) practical placement or stage or training course in the Industry (totally 15%). About 44% of those graduates became employed after graduation but only 70% of those employed declared their own graduation useful for their job.

The same statistics by Almalaurea (2008 – second level degree -374 answers) indicated that the Master degree in Civil and Environmental Engineering was obtained after an average duration of about 2.5 years at an average age of about 26 years. A quite large percentage of those Master graduates has attended post-graduation courses (9% practical placements in Industries; 11 % doctorate; 17% stages in Industries; 11% others).

As already indicated, a very large percentage of graduates is employed few months after graduation and for Master graduates only 5% declared that their own graduation was not useful for their job.

In conclusion, the student career is slow and does not have too many contacts with the professional world, especially as far as the first level degree is concerned. Student qualification, which in general is quite good, is not recognized and appreciated by the labour market. More specifically, even though a quite large percentage enters doctoral studies, the labour market completely ignores this type of qualification.

REFERENCE LIST

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XI Rapporto AlmaLaurea Occupazione e Occupabilità dei Laureati a 10 Anni dalla Dichiarazione di Bologna – Università di Bari 12 Marzo 2009. www.almalaurea.it (a cura di Andrea Cammelli)