Graduates' employment and employability after the "Bologna Process" reform. Evidence from the Italian experience and methodological issues

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Contents

In our paper (to which you may refer for more details) 3 main points are considered.

- *Results of the 2008 survey on employment condition in tracing the transition path of graduates from the time they enrolled at the university until a few years (1, 3, 5) after earning the degree.*
- *Revision in AL survey method in order to face the need to monitor a much higher number of post-reform graduates (more than 140 thousand overall) and the call of the Ministry and the universities to assess the employment outcomes for each single degree course, without losing feasibility in terms of costs and data collection time.*
- *Results of some preliminary experiments carried out in order to deepen data quality control, allowing for comparisons between the results achieved with the AL model and other similar models dealing with the employment conditions of Italian graduates.*

AlmaLaurea mission

AlmaLaurea (AL) in Italy has the delicate tasks:

- to provide the national/local governments and universities with the most reliable and up-to-date information on the evolution of graduates' study career

- to foster graduates' employability tracing ***they living and working achievements*** *and promoting their access to the work career and lifelong learning in a knowledge-based society and economy*

Our current main challenges are:

- the Italian higher education reform process (started in 2001) following the "Bologna Process" guidelines
- the ongoing unpredictable economic downturn as it affects human capital utilization

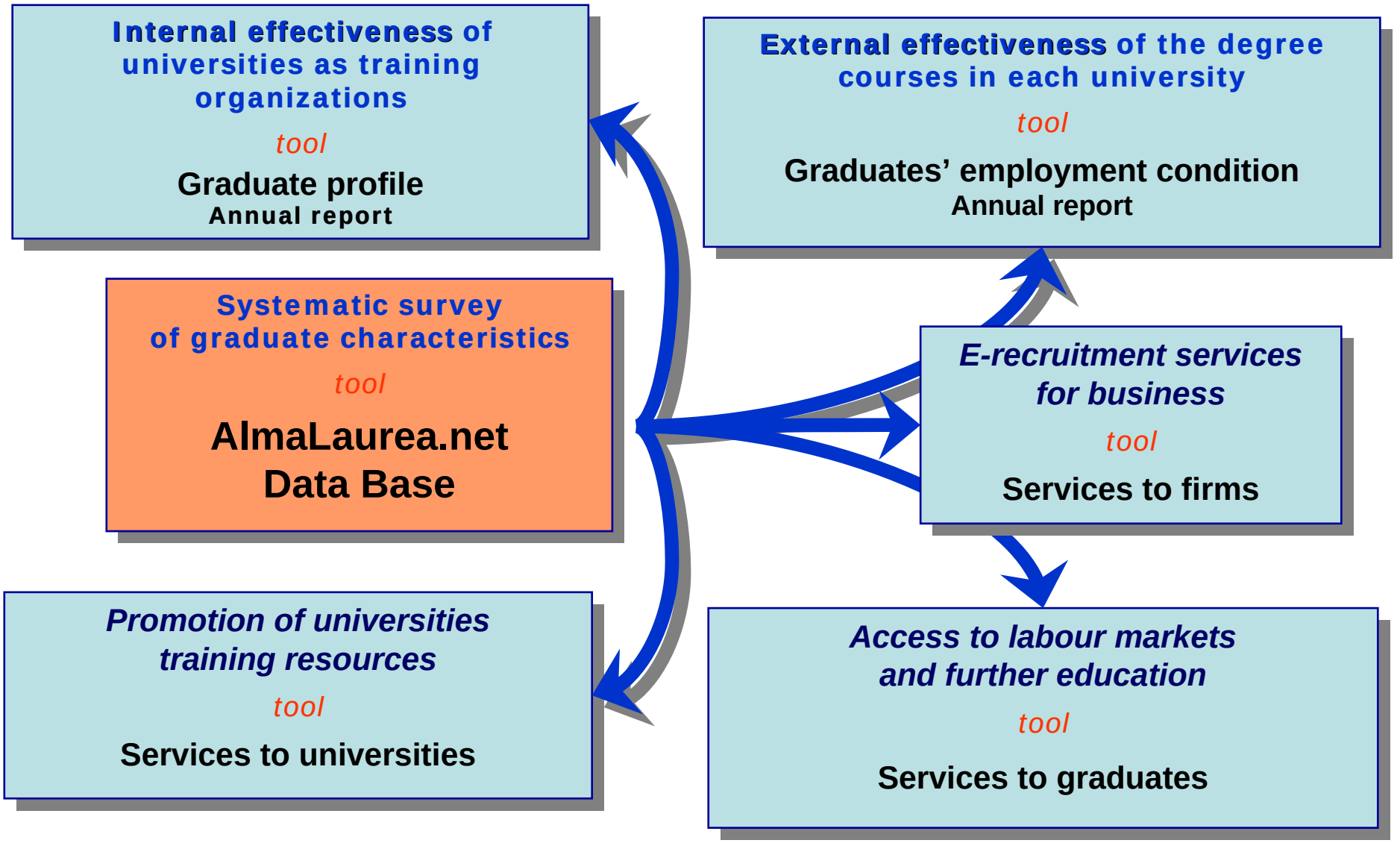
Foundation and evolution of AlmaLaurea

At least in the Italian scenario, AL has been a real institutional innovation. The main steps of its *subsidiarity-based* experience are the following.

- 1988 foreign graduates survey in the occasion of the IX Centenary of the Bologna University
- 1993 establishment of the Statistical Observatory at the Bologna University
- 1995 crossing of the regional borders and mission assigned by the Italian Ministry of University and Research to coordinate a national information system
- 1997 availability of AL services on the Internet
- 2001 establishment of the AL Consortium among Italian universities
- 2009 54 member universities, 70% of Italian graduates each year, 1,250,000 graduates cvs, all services translated in English, 450,000 cvs sold to firms in the last year

AL is today a *fully integrated information system* in which the graduates data-base represents the core of a large compact set of research activities and services supply.

AlmaLaurea model



XI Survey on graduates' employment condition

The aim is to assess:

- universities capability to correspond to society and firms requirements
- capability of the labour demand by firms to take advantages of the human resources formed by the universities

What's new:

- Monitoring the reform accomplishments and providing tools for its tuning and design of new courses (DM n. 270/2004)
- Extension to all post-reform 2007 graduates (I and II level degrees, single cycle degrees).
  - doubling of the graduates population to be surveyed.

Graduates interviewed in April-December 2008 have been 287,000

- Pre-reform: 13,000 at 1 year; 30,000 at 3 years; 24,000 at 5 years from graduation
- Post-reform: 105,000 at 1 year (I level); 38,000 at 1 year (II level and single cycle); 77,000 at 3 years from graduation (I level)

Survey design

- Adoption of a mixed methodology CAWI/CATI
  - I STEP: graduates interviewed via web (due to wide availability of e-mail addresses stored in the AL data-base); response rate: 41.0%
  - II STEP: other graduates interviewed by phone (do not complete the web survey, missing e-mail address); response rate: 81.5%
  - Overall final response rate (CAWI+CATI survey): 88.2%
- In order to ensure the same time-frame for all, interviews are scheduled in two different dates along the year (12 months on average between degree award and the time of interview)
- In order to guarantee a representative estimate of the entire population of Italian graduates, findings reported in the AL surveys were subjected to a "weighting" statistics procedure

- We refer to the paper for a more detailed presentation of survey main findings

Data quality control

Aim: to improve as much as possible the reliability of data through the implementation of quality control techniques

Two methodological issues:

1. does the use of the two kinds of treatment (CAWI+CATI) generate distortion?

2. does the registration in the AL data-base generate a sort of long-lasting affiliation effect ("membership") biasing graduates answers?

Methodological issue 1

Does the joint use of the two kinds of different treatments (CAWI+CATI) generate DISTORSION?

Our aim is to estimate if the likely differences in answers are determined by a

self-selection of the sample

(e.g. those who are mostly inclined to answer to CAWI interviews are the same who decide to continue their studies)

or just by the treatment.

The relevant model

X

pre-treatment

Information on socio-demographic situation, academic career, skills and experiences at university, expectations on the future

T

treatment

CAWI
CATI

Y

post-treatment

Job search, employment condition, employment contract , job competencies, earnings

Propensity score methodology

Rosenbaum and Rubin (1983)

$$\ln\left[\frac{e(x)}{\quad}\right] = \alpha + \beta T f(x)$$

Propensity score is defined as the probability the units get a treatment (vs another one) given the covariates

e(x) [illegible] treatment (z=1)

x is a set of covariates

f(x) is some function of the covariates.

Groups of graduates

- Homogeneous groups of graduates have been formed on the basis of this logistic regression.
- The probability of balancing in these group has been tested, according to the Dehejia and Wahba (2002) strategy. This feature has been tested for each variable in the regression, using a Chi-squared test.
- Within these sub-groups of population (5 groups for I level graduates, 4 groups for II level graduates) it is possible to evaluate discrepancies in the responses given by graduates, related to the different type of treatment.

Results and exceptions

- **The effects of the type of treatment (CAWI-CATI) on the outcomes are small: never more than 2%**
- **But we have to consider 2 important exceptions:**

  a. the question referring the type of contract is perceived in different ways**:**

     - **using CATI the respondent hear an oral, long list of categories**
     - **using CAWI the respondent read and compare each category**

  b. the question relating to the job search: the absence, in the CAWI version, of some consistency checks led to a certain discrepancy.

- **AL adopted in the usual public reports the adjustment proposed by Sunghee Lee (2006), using CATI-sample as reference-sample**

The “weighted” results

	Employment status	
	Weighted values	Weighted and adjusted values
First-level graduates		
In work	29.2	31.5
In work and enrolled on the second-level degree course	16.1	16.0
Enrolled on the second-level degree course (and not in work)	44.6	42.0
Not looking for work	2.8	2.9
Looking for work	7.3	7.6
Second-level graduates		
In work	61.7	62.1
Not looking for work	17.7	17.4
Looking for work	20.6	20.5

The actual bias is not very relevant, in relation to the usual sampling error rate results in large sample surveys

Methodological issue 2

Does the registration in AL data-base generate a sort of LONG-LASTING AFFILIATION effect ("membership") BIASING graduates answers?

Our aim is to estimate if questions related to "subjective" outcome appraisal can be biased by the graduates propensity to "propping up" their image for self-promoting in the labour markets

i) Comparing different data sources

Possible comparative data sources: ISTAT, REFLEX

... but ...

the survey methodologies are too different
(e.g. observed populations characteristics, sampling design, definitions adopted, questions wording, etc.)

ii) Looking at independent studies

Bagues and Sylos Labini (2008)

- **the authors analyze the effect of the intermediation activity carried on by AL on graduates' labour market outcomes**
- **they employ ISTAT data: independent statistical source and therefore not affected by potential distortion**

The results:

- **the affiliation significantly improves graduates' achievements in "objective" outcomes (rate of employment, earnings and mobility)**
- **the affiliation improves also graduates' achievements in "subjective" outcomes (satisfaction)**

The evidence shows that the advantages felt are coherent with a transparent and rational behavior on the side of graduates when they answer the questionnaire.

iii.a) First experiment

The analysis refers to two different categories of graduates which are both registered into AL data-base:

- **those who choose to publish the personal cv on the AL website**
- **those who prefer not to make public their cv**

OLS regression:

the dependent variable corresponds to the overall satisfaction for the job performed;

The regressors consist of a vector of control variables (including the "membership" category to which each graduate belong to)

Results: the variable *published/not published cv* turns out to be not significant (in fact, it is one of the parameters with less significance)

iii.b) Second experiment

- Performed in the framework of the multivariate propensity score approach, in which the decision to publish or not the cv give rise again to a treatment variable T.
- Our experiment refers to graduates in 2003 at 5 years from graduation:87% of them decided to publish their cv, while 13% did not. The classic propensity score procedure is not feasible because the balancing property is not verified.
- We tried a multivariate propensity score analysis using the only 3 X variables possibly influencing the decision to publish or not their cv (disciplinary group, gender, geographic university location), fixing for each graduate the factor scores of a multiple correspondence analysis identified in such a way. Then we performed a cluster analysis on the first 4 factorial axes, identifying 15 clusters.

iii) Second experiment results

Results of the second experiment

	R-square	p-value for the "membership" variable
cluster2	0.426	0.568
cluster3	0.654	0.521
cluster4	0.517	0.823
cluster5	0.366	0.243
cluster6	0.316	0.401
cluster8	0.330	0.371
cluster9	0.303	0.757
cluster11	0.202	0.770
cluster12	0.418	0.070
cluster13	0.258	0.155
cluster14	0.342	0.617

Conclusions

- The novelty and effectiveness of the AL model rely on the interaction of two cumulative drivers:
  - joint use of administrative data and surveys
  - offer of placement services to graduates
- Reliability of data is thoroughly controlled with reference to those methodological issues should eventually arise:
  - mixed CAWI/CATI survey method
  - long-lasting affiliation effects
- The actual observed biases do not seem to be relevant in comparison with usual sampling error rate results in large sample surveys