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# The wage return to graduate in a regional university: evidence from Italy\*

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**Abstract:** In this paper we use a representative sample drawn from the 'Indagine Statistica sull' Inserimento Professionale dei Laureati' by the Italian National Statistical Institute and data by the Italian Ministry of Education to look at the wage returns from attendance to a regional university (i.e. not located in a metropolitan area) three years after graduation. Our results show that, after accounting for observed characteristics of individuals and colleges, a wage premium is associated to graduating in a regional university. This finding may be interpreted as regional universities enhancing the local human capital stock or creating specific skills needed by the local economic environment.

*J.E.L. codes:* J31, I21

**Keywords:** University graduates' labour market, regional university, wage differentials.

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## 1. Introduction

In the last 30 years, the tendency to decentralize undergraduate education and to increase competition in tertiary education systems by creating (or granting some financial autonomy to) regional universities has been increasingly common in many European countries (Agasisti and Catalano, 2006). Generally, universities located in peripheral areas respond to local needs such as enhancing the overall human capital stock, create specific skills which are related with the economic environment. The economics of education literature has recently started to investigate the effects of regional education on the prospects of university access for students from disadvantaged backgrounds (Corak et al., 2003, Frenette 2005) or that grew up in peripheral areas (Andres and Looker, 2001; Schiller, 2006) and, at the macroeconomic level, its externalities on the creation of local human capital, particularly for youth (Frenette, 2009). Another strand of the education literature investigates the relation between education and labour market transitions and analyzes the labour market returns to different dimensions of college quality, e.g. being a 'private' or a 'new' university (see Brunello and Cappellari, 2008; Bagues and Sylos-Labini, 2007; Bratti et al., 2008), or a decentralised institution (see Eskeland and Filmer, 2007; Gunasekara, 2006).

This paper aims to contribute to these two strands of the literature building on the idea that 'regionality' provides a distinct dimension of education quality (Black and Smith, 2004) which improves the employment and earnings prospects of students; regional universities may provide services which better respond to the students' needs or simply tailor their curricula to the characteristics of the labour demand by exploiting somehow closer relationships with entrepreneurship. We use the 2004 wave of survey on the transition from college to work (Indagine Statistica sull'Inserimento Professionale dei Laureati) carried by the Italian National Statistical Institute (ISTAT) to investigate the impact of graduating in a regional university on individual (log)wages. We call 'regional' the universities located in non - metropolitan areas (compare the Italian law 142/90 and D. lgs 267/2000).

Our results suggest that, after accounting for individuals' and colleges' observed and unobserved characteristics, a degree in a regional university is associated to higher average wages; such a wage premium is evenly distributed across faculties while being relatively stronger for the humanistic fields of study.

The paper is organized as follows: in the next section we review the existing literature on education and employment outcomes; in section 3 we introduce our data and present some descriptive statistics; in section 4 we present our empirical analysis; section 5 concludes.

## **2. Existing Literature**

A recent literature analyses the relation between undergraduate education and transition in the labour market. Brunello and Cappellari (2008) use a representative sample from ISTAT Microdata to check whether university education matters for earnings and employment three years after graduation. They find that the attended college matters and that substantial college related differences exist between regions. They also show that going to a private university increases returns (in terms of earnings and employment probability) during the first part of the career. Bagues and Sylos-Labini (2007) assess the impact of electronic labour markets (Alma Laurea) on university to work transition in Italy. By using a difference-in-difference estimator on a repeated cross-section, they find that Alma Laurea reduces the individual unemployment probability and improves matching quality.

Another strand of the economics of education literature investigates the externalities associated with an expansion of tertiary education; Moretti (2004) finds evidence that the supply of college graduates has positive spillover effects on the wages of other workers; Frenette (2009) shows that the creation of a regional university is associated with an increase in university attendance among local youth and higher employment rates where gains are asymmetrically distributed among men and women. Brunello and Gambarotto (2007) address the complementary issue of the relationship between spatial agglomeration of firms and employer-provided training.

Up to our knowledge, the literature on the effects of recent reforms of the education systems on university-to-work transition, economic performance and employment outcomes is still limited. Anderson et al. (2001) and Persson and Regnèr (2004) analyse the economic effects of the spatial decentralisation of post-secondary education on productivity and output in Sweden. Persson and Regnèr (2004) use four different outcome measures for economic performance (survival rate of firms, employment growth at the establishment level, employment growth of high tech industries, growth of the share of highly educated) but do not find any significant effect of new colleges/universities on economic performance. The analysis of Anderson et al. differs (2001) from the one from Persson and Regnèr (2004) in

that they identify a 10 years lag (1977-1987) for the education reform to be effective implemented. They estimate separate models for the impact of students and researchers in new vs. old universities on regional productivity using different specifications with and without time, country, and community fixed effects and find significant effects of education reforms on regional economic performance. Bratti et al. (2008) study the effect of the expansion of higher education supply on the equality of tertiary education opportunities in Italy during the nineties. They do not find significant positive effects on equality in access to higher education. This is mainly due to the fact that increased availability of courses has a positive effect on university enrolment but not on the probability of getting a degree. Theodora (2007), finally, carries a descriptive analysis on the effects of decentralisation on economic performance in Greece and concludes that the gradual reform of the education system started in the late 60's did not contribute significantly to regional development in Greece.

### **3. Data and descriptive statistics**

We use a representative sample drawn from the survey on the transition from college to work (Indagine Statistica sull'Inserimento Professionale dei Laureati) carried by the Italian National Statistical Institute (ISTAT). We use the last wave of the survey which includes people who graduated in 2001 and were interviewed in 2004. We also use data on students and teachers by college and faculty drawn by the Italian ministry of Education, University and Research (MIUR).

Our focus is on the early labour market effects of graduating from a regional university versus a metropolitan one, in terms of monthly wages three years after graduation. About employment, in the survey it refers to all paid jobs, including training programs and excluding seasonal ones. Individuals in the latter scheme are classified as not employed. Since we are interested in the effects of university types on wages after graduation, we also exclude from the estimating sample all the youths whose job started before the graduation. Monthly wages are net of taxes and social security contributions. The survey provides them topcoded at 3000 euros. The final sample from the ISTAT survey is made of about 10,600 wage earners.

Our main regressor is the dummy *REGIO* which takes value one if the individual graduated in one of the 34 colleges located in an area classified as a non-metropolitan one.

This dummy is meant to capture any difference in college quality, organizational skills, reputation or any other supply factor between regional/metropolitan universities. To improve comparability along the different dimensions of our analysis, we exclude from our sample both private universities, as well as students of the faculty of Physical Education (which offered only short term university degrees, not directly comparable to other tertiary education degrees)<sup>1</sup>.

Table 1 reports the ensuing classification of the Italian colleges in our final sample. We have a first group of 24 colleges located into one of the 14 metropolitan areas identified by the Italian law<sup>2</sup>.

The vast majority of these universities, all except the last five, were actually founded before the 1950 and in many cases in the 19th century and before. More recent metropolitan Universities were established during the 1980s or 1990s with the objective of relieving the education burden of central universities in metropolitan areas. In the second group, we find colleges situated in non metropolitan areas. About half of them are traditional colleges opened before 1960. About fifteen were established during the 1980s or 1990s to increase access to higher education in relatively peripheral areas in Italian regions. There are less metropolitan universities than regional ones, but graduates from the former are almost the 55 percent of the sample, suggesting that metropolitan universities are in general of higher dimension.

Average earnings in the sample are 1,324 euros (nominal 2004 values), with a standard deviation of 447. Table 2 shows mean pay by college types. On average, graduates from metropolitan universities earn an higher wage than from regional ones. Obviously, these values are influenced by individual attributes, the attended university and field of study.

We also have information on individual characteristics (age, gender), education, (type of high school, high school grade and their interactions, faculty, university graduating marks, dummies for graduation after legal duration of studies), work characteristics (part-time job, type of contract, occupation, sector, region of work) and parental background (siblings, interacted parental education and occupation). Table 2 also summarizes the distribution of individual characteristics by college type.

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<sup>1</sup> The included fields of study are: scientific, chemistry, geo-biology, architecture, engineering, agriculture, economics-statistics, law, political science, humanities, psychology, foreign languages, teachers college.

<sup>2</sup> These are Torino, Genova, Milano, Venezia, Bologna, Firenze, Roma, Bari, Napoli, Trieste, Cagliari, Catania, Messina and Palermo (Law no. 142/90 and D. lgs 267/2000).

At a first sight, universities located in metropolitan cities seem to attract better students i.e. a higher share of students with a 'liceo' diploma, a high final grade at the secondary school, a good parental background. The outcome is that in metropolitan universities a higher share of students gets a high grade at the end of their university studies. In the end, regional universities attract a significantly lower share of 'good' students relative to old regional ones.

## 4. Empirical Analysis

### 4.1. Empirical Strategy

We use the two-stages estimation procedure adopted by Brunello and Cappellari \cite{BC}. In the first stage we express (log) wages of individual  $i$  as a function of the attended college-faculty cluster  $q^{cf}$  and a vector of observable attributes  $X_i$  i.e.:

$$\ln wage_i = \sum_c \sum_f q_i^{cf} + X_i' \beta + \varepsilon_i \quad (1)$$

$X_i$  includes, age, gender, type of high school, high school grade and their interactions, faculty, university graduating marks, dummies for graduation after legal duration of studies, work characteristics such as having a part-time job, type of contract, labour experience, region of work and whether such region is different from that of where the college is located; parental background indicators such as siblings, interacted parental education and occupation. Parental background and school performance before college capture unmeasured individual ability and self-selection effects. We also allow some of the regressors related to personal attributes to enter the model non-linearly by including on both the interactions between parental education and occupations, and marks and school types. As Brunello and Cappellari (2008) notice, allowing for non linear combination of personal attributes attenuates the risks of misspecifying the functional form. We also include 19 regional dummies to capture local labor and product market effects.

The presence of the regional effects implies that the identification of the college by field of study fixed effect relies on the existence of a sufficient number of "movers", i.e. individuals who studied in a region and work in another one<sup>3</sup>. This would be the unique source of variation if there was only one college with one field of study in each region. When

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<sup>3</sup> In our case, they amount to more than 45 % of the sample.

there is enough college variation within each region (more than one university and/or more than one field of study in each college), also the stayers contribute to the identification of college dummies.

The underlying assumption to identify these coefficients is then that the relevant local labour market is the regional one, i.e. that there is not substantial variation in economic conditions within regions. Otherwise, the university fixed effects may not reflect differences in college quality but in local (intra-regional) labour market returns. This would happen especially when the region of study and of work coincides, i.e. for stayers<sup>4</sup>.

Regression (1) is the first step in our procedure and allows us to predict logmonthly earnings for the 452 college/faculty clusters. In the second step we analyze the determinants of college by faculty wage i.e. we aggregate the data at the college by faculty level and exploit the ensuing variation to estimate the wage impact of our dimension of interest of college quality (Card and Krueger, 1990). As noticed by Brunello and Cappellari (2008) the main advantage from this approach is that, due to the rich set of controls included in the first step regression, aggregated measures of economic outcomes will not reflect individual level heterogeneity i.e. average out individual-level unobserved heterogeneity within clusters.

Let  $\alpha_{cf}$  be the estimate of  $\ln wage_i$  within each college by faculty cluster. In the second step of our procedure, we express the average wage in each college-faculty cluster as a function of attendance to a regional universities (*REGIO*), a set of faculty dummies ( $F_f$ ), and a vector of college characteristics ( $Z_{cf}$ ):

$$\alpha_{cf} = \theta REGIO_c + F_f' \gamma + Z_{cf}' \delta + u_{cf} \quad (2)$$

$Z_{cf}$  includes variables meant to capture some dimensions of college quality. These indicators of the quality of the supply of tertiary education and of college attractiveness are made available by the Italian Ministry of Education. They are the log of the number of students, such as the log students-teachers ratio, the share of external (i.e. not faculty) teachers, the graduated-student ratio. We stress that the variables in  $Z_{cf}$  are expressed at the Area of study level, which includes five categories (Humanities, Law, Scientific, Social Sciences, Medicine, Engineering and Architecture) instead of the fourteen fields of study.

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<sup>4</sup> If the propensity to move correlates with the college type, we may expect the graduates from regional universities being perhaps intrinsically less likely to move for both study and work reasons. We manage to attenuate the bias by controlling in the first step for working in the same region where the university is located and for working in a different region than that of residence.

Table 3 reports averages of some quality indicators by college type. In several dimensions, regional universities are different to traditional ones: they have a lower average number of students within areas of study (to ease the interpretation of coefficients in the estimates, the former is divided by 1,000); they in general present lower students-to-teachers ratios and a higher share of external (i.e. non faculty) teachers.

The former may suggest that they may better tailor the supply of tertiary education to students while the latter may signal relatively less skilled teachers or lack of organizational skills. Finally, the interpretation of the higher graduated-to-students ratio of regional universities is a priori ambiguous. On the one hand this could signal a 'higher productivity' in terms of number of graduated. On the other hand the higher ratio may also hide a quality-quantity trade off of graduated or simply falling enrollements rates in the face of a stable number of graduated. Overall, the above considerations suggest that part of the heterogeneous labour market outcomes by college type could be due to observable differences in the way education is produced, and that it is important to account for that in the empirical analysis.

The final sample for the second stage is made by 452 university-by-field-of-study fixed effects. Under the assumption that  $Z_{cf}$  effectively captures college-by-faculty characteristics, *REGIO* is uncorrelated with the error term and the OLS estimates of  $\theta$  capture the true effect of graduating from regional colleges on wages. To meet the objection that the returns from the creation of local skills may differ by field of study, we also estimate alternative specifications that flexibly capture non-linearities in returns from education in regional colleges. We therefore, investigate for the existence of faculty specific wage premia of regional universities.

#### **4.2. Results**

A summary of first stage estimates is in the Appendix, Table A1. Results are standard and in line with the existing evidence: females are paid less than males; the time needed to get the degree matters, and graduating later than expected has a negative wage payoff. As we may expect, working in a region different from that of the college is associated with a net wage gain, as well as working in region different to the one of residence. Table 4 for each group of universities compares the effective average log wages to the average coefficients of the college by faculty clusters in the first stage regression, i.e. the estimated log monthly average wages which are only motivated by college and faculty characteristics.

Looking at the effective average wages, metropolitan colleges pay higher wages than regional ones while this difference is much lower when we look at the estimated  $\alpha_{cf}$ . While being purely descriptive, these estimates suggest that, once we control for selection of 'bad students', the regional universities pay wages that are less different to those paid by the metropolitan ones.

Table 5 presents the 2nd stage estimates for equation (2). In column (1) we include only the dummy *REGIO*. In column (2) we add the faculty dummies; in column (3) we add controls for the quality of the (college by faculty) supply of education and attractiveness together. The coefficient of *REGIO* always takes a positive sign and its size and significance increases as we add indicators for college quality. After we account for the full set of indicators, our estimates show that graduating in a regional college entails a 4 percent wage premium which is significant at the 1 percent level (column (3)).

If we compare results in Table 4 and 5, we can argue that, on average, regional universities offer a menu of curricula characterised by lower returns, and that, if we remove this asymmetry, the returns are for them higher. However, the addition of the quality controls does not significantly changes the returns to new universities. Quality controls only increase the positive impact of *REGIO* on wages by a small amount.

This suggests that metropolitan and regional universities differ for a number of quality and reputation dimensions other than the included ones and and that these characteristics favour graduates from the former in the labour market. The payoff in regional universities may be motivated for example by the quality of teaching, and closer relationships between students and teachers.

All our indicators for college quality take the expected sign and are significant at the 1-5 percent level: a bigger college size is associated to higher average wages. Conversely, a higher log students-to-teachers ratio, graduates-to-students ratio and a higher share of non faculty teachers capture poor unobserved quality of education and are associated to lower average wages.

About the impact of single indicators, an increase of 10 point in the share of students over teachers (say, from 20 to 30 students per teacher) would decrease the wage by 1.5 percent. Similarly to Brunello and Cappellari (2008), the number of students in the field exerts a positive effect on actual and expected wages, capturing mostly reputation and attractiveness

effects by universities which offer a good education, but the magnitude is small: an increase of 5 thousands students is associated with a 3 percent increase in wages.

Finally, in Table 6 we report the coefficients for the faculty specific wage premia of regional universities. The distribution of coefficients goes from positive to negative values, suggesting the existence of wage premia of regional education in some specific fields of study, such as agricultural studies, medicine and some humanistic disciplines (e.g. humanities, political sciences). This may be probably due to the fact that job competition is higher in metropolitan areas, and students with a humanistic background may find more difficult to get good jobs than graduates in regional universities in similar disciplines<sup>5</sup>. About other fields of study, the premium is 16 percent for graduates in agricultural studies, which may again be due to the higher demand for this kind of competencies or better (i.e. higher productivity) job matches for these graduates in non-metropolitan areas.

By converse, the pay-off of graduating from regional universities is negative especially for scientific disciplines, although the coefficient is only borderline significant. Overall, the t-test rejects the null hypothesis that all the coefficients are equal to zero thus confirming that regional education has a positive global effect on average wages.

## **5. Concluding Remarks**

In the last 30 years, the tendency to decentralise undergraduate education by creating or granting financial autonomy to universities has been increasingly common in many European countries. Generally, universities located in peripheral areas respond to precise policies such as enhancing the overall human capital stock, create specific skills needed by the local economic environment, improving knowledge and innovation and R&D activities through strong relationships with local firms. The present paper looks at the impact of regional universities i.e. universitie which are not located in metropolitan area (compare 142/90 and D. lgs 267/2000) on wages of graduates three years after the completion of their studies.

Our results confirm that, after accounting for individuals' and colleges' observed and unobserved characteristics, a degree in a regional university is associated to higher average wages; such a wage premium is mostly concentrated in the humanistic fields of study (political sciences, humanities and teachers' colleges) and in the agricultural fields of study i.e. areas of study which allow graduates to gain a relative advantage in the regional labour

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<sup>5</sup> Please note that these coefficients are net of the effects of working in a region different from the one where the college is located since this control was added to the list of first step regressors).

market. This last consideration acquires a special importance in a socio economic context such as the italian one characterized by high local social capital and relatively low geographical mobility.

## Bibliography

- Agasisti T., Catalano G. (2006), Governance models of university systems-towards quasi-markets? Tendencies and perspectives: A European comparison, *Journal of Higher Education Policy and Management*, 28, 3: 245-262.
- Anderson R., Quigley J. and Wilhelmsson M. (2001), University Decentralisation as Regional Policy: The Swedish Experiment, Institute of Business and Economic Research (Iberi), *Program on Housing and Urban Policy Working Paper* n. W01-003.
- Andres L., Looker E.D. (2001), Rurality and Capital: education expectations and attainment of rural, urban/rural and metropolitan youth, *The Canadian Journal of Higher Education*, 31, 2: 1-45.
- Bagues M., Sylos-Labini M. (2007), Do on-line Labour Market Intermediaries Matter? The impact of Almalaurea on the University-To-Work Transition, NBER, *Working paper*, n. 13621.
- Black D., Smith J. (2004), How robust is the evidence on the effects of college quality? evidence from matching, *Journal of Econometrics*, 121, 1-2: 99–124.
- Bratti M., Checchi, D. and De Blasio G. (2008), Does the expansion of higher education increase the equality of educational opportunities? Evidence from Italy, *Labour*, 22, s1: 53-88.
- Brunello G., Cappellari L. (2008), The Labour Market Effects of Alma Mater: Evidence from Italy, *Economics of Education Review*, 27, 5: 564-574.
- Brunello G., Gambarotto F. (2007), Do spatial agglomeration and local labor market competition affect employer-provided training? Evidence from the UK, *Regional Science and Urban Economics*, 37, 1-21.
- Corak M., Lipps G., and Zhao J. (2003), Family Income and Participation in Post-Secondary Education, Ottawa: Statistics Canada, *Analytical Studies Branch Research Paper Series*, Catalogue n. 11F==19MIE2003210.
- Card, D., Krueger A. (1990), Does school quality matter? Returns to education and the characteristics of public schools in the United States, *Journal of Political Economy*, 100, 1: 1-39.

- Di Pietro G. (2006), Regional Labour Market Conditions and University Dropout Rates: Evidence from Italy, *Regional Studies*, 40, 6: 617-630.
- Eskeland G., Filmer D. (2007), Autonomy, Participation and Learning: Findings from Argentine Schools, and Implications for Decentralization, *Education Economics*, 15, 1: 103-127.
- Frenette M. (2005), Is post-secondary access more equitable in Canada or the United States?, Ottawa: Statistics Canada, *Analytical Studies Research Paper Series*, Catalogue no. 11F0019MIE2005244.
- Frenette M. (2009) "Do universities benefit local youth? Evidence from the creation of new universities, *Economics of Education Review*, 28, 3: 318-328.
- Gunasekara C. (2006), Universities and Associative Regional Governance: Australian Evidence in Non-core Metropolitan Regions, *Regional Studies*, 40, 7: 727-741.
- Moretti E. (2004), Estimating the social returns to higher education: evidence from longitudinal and repeated cross-sectional data, *Journal of Econometrics*, 121, 1-2: 175-212.
- Persson H., Regnér H. (2004), Universities In The Regional Economy. Evidence From Swedish Employer-Employee Linked Data, Stockholm University: Swedish Institute for Social Research (SOFI), *Working Paper*, n. 7/2004.
- Schiller D. (2006), Nascent Innovation Systems in Developing Countries: University Responses to Regional Needs in Thailand, *Industry and Innovation*, 13, 4: 481-504.
- Theodora Y. (2007), Approach to the Effects of Greek Regional Universities on Development of the Country Regions, *mimeo*.

## Tables

Table 1. Classification of the Italian universities according to their location

<u>Metropolitan</u>	<u>Regional</u>
Bari, Politecnico	Benevento, Univ. del Sannio
Bari, Univ. degli studi	Campobasso, Univ. degli studi
Bologna, Univ. degli studi	Cassino, Univ. degli studi
Cagliari, Univ. degli studi	Catanzaro, Univ. degli studi
Catania, Univ. degli studi	Foggia, Univ. degli studi
Firenze, Univ. degli studi	Potenza, Univ. degli studi
Genova, Univ. degli studi	Reggio Calabria, Univ. degli studi
Messina, Univ. degli studi	Teramo, Univ. degli studi
Milano Bicocca, Università degli studi	Udine, Univ. degli studi
Milano, Politecnico	Verona, Univ. degli studi
Milano, Univ. degli studi	Salerno, Univ. degli studi
Napoli, II Univ. degli studi	Ancona, Univ. degli studi
Napoli, Istit. Univ. Orientale	Cosenza, Univ. della Calabria
Napoli, Univ. degli studi	Lecce, Univ. degli studi
Napoli, Univ. Parthenope	Macerata, Univ. degli studi
Palermo, Univ. degli studi	Trento, Univ. degli studi
Roma, III Univ. degli studi	Chieti, Univ. Gabriele D'Annunzio
Roma, Univ. la Sapienza	Sassari, Univ. degli studi
Roma, Univ. Tor Vergata	Parma, Univ. degli studi
Torino, Politecnico	Padova, Univ. degli studi
Torino, Univ. degli studi	Brescia, Univ. degli studi
Trieste, Univ. degli studi	Perugia, Univ. degli studi
Venezia, Istit. Univ. di Architettura	Pisa, Univ. degli studi
Venezia, Università degli studi	Siena, Univ. degli studi
	L'Aquila, Univ. degli studi
	Varese, Univ. dell'Insubria
	Camerino, Univ. degli studi
	Vercelli, Univ. del Piemonte Orientale
	Pavia, Univ. degli studi
	Bergamo, Univ. degli studi
	Urbino, Univ. degli studi
	Ferrara, Univ. degli studi
	Modena e Reggio E., Univ. degli studi
	Viterbo, Univ. della Tuscia
Obs.: 5,793	Obs: 4,818
#: 54,59	#: 45.41

Table 2. Earnings and students' characteristics by college type

	<u>Metropolitan</u>	<u>Regional</u>
Earnings (2004, €)	1,339	1,305
Comprehensive high school	0.65	0.57
Grade uni>105/110	0.45	0.38
Grade high school>56/60	0.26	0.23
High family background	0.27	0.23

Note: High family backgr.: at least one parent with university degree or both with high secondary. Comprehensive high schools are the "licei": "classico", specialised in humanities, "scientifico", in scientific subjects, "artistico" in Arts and "linguistico" in foreign languages.

Table 3. Indicators of college quality by type of college (means)

	<u>Metropolitan</u>	<u>Regional</u>
Students (thousands)	10.02	4.06
Students/teachers	28.39	24.61
Graduated/students (%)	9.43	9.7
Share of not faculty teachers (%)	20.37	27.37
N. clusters	210	242

Note: Quality indicators available at the Area of study level. Areas are: Humanistic, Social Sciences, Scientific, Medicine, Law, Engineering and architecture.

Table 4. Average wages by college type- first and second step wages

	<u>lnwage</u>	<u><math>\alpha_{cf}</math></u>
Metropolitan universities	7.13	7.43
Regional universities	7.10	7.42
Obs.	10,611	452

Table 5. The impact of graduation in regional colleges on wages.

WLS results.

	Log wages		
	(1)	(2)	(3)
<i>REGIO</i>	0.0366**	0.0250*	0.0390***
	(0.017)	(0.013)	(0.015)
000's students			0.0032**
			(0.001)
students/teachers			-0.0024***
			(0.001)
% graduated over students			-0.0094***
			(0.002)
% external teach.			-0.0010**
			(0.001)
Faculty dummies	no	yes	yes
R sq.	0.01	0.47	0.5
N	452	452	452

Note: statistical significance: \*: 10%; \*\*: 5%; \*\*\*: 1%. Standard errors in brackets.

Table 5. The impact of graduation in regional colleges on wages by field of study.

Weighted Least Square results.

REGIO*faculty:	
Scientific	-0.0651 (0.042)
Chemistry	-0.0042 (0.065)
Geo-biological	0.0049 (0.047)
Agricultural studies	0.1615*** (0.036)
Medicine	0.0704* (0.036)
Engeneering	0.007 (0.07)
Architecture	-0.1129 (0.092)
Economics-statistics	-0.0394 (0.06)
Political science	0.1521*** (0.05)
Law	-0.0093 (0.042)
Humanities	0.0987** (0.039)
Foreign languages	-0.0461 (0.042)
Psychology	-0.0281 (0.052)
Teachers college	0.2096** (0.085)
Faculty dummies	Yes
University quality indicators	Yes
N. obs.	452

## Appendix

Table A1: First step results for the full sample: log wages

	Log wage
female	-0.095*** (0.01)
Have siblings	0.004 (0.01)
Graduation age: over30	0.039** (0.02)
Graduated 1 year later than expected	-0.038*** (0.01)
Graduated 2 years later than expected	-0.048*** (0.01)
Graduated 3 years later than expected	-0.056*** (0.01)
Graduated 4 years later than expected	-0.064*** (0.01)
Final university grade	0.009** (0.00)
Work partime	-0.578*** (0.02)
Atypical contract	-0.080*** (0.01)
Fixed term contract	-0.061*** (0.01)
Experience	0.017 (0.02)
Experience squared	0.001 (0.00)
Work in the same region of the college	-0.035*** (0.01)
Province of work different to province of residence	0.038*** (0.01)
Area dummies	Yes
Interaction of parents' education and occupation	Yes
Interactions of secondary school type and final mark	Yes
University by field of study dummies (452)	yes
Observations:	10,611

Note: Statistical significance: \*: 10%; \*\*: 5%; \*\*\*: 1%. Censored regression for log of net monthly wages. Robust standard errors.