Macrothink Institute™

Research in Applied Economics
ISSN 1948-5433
2011, Vol. 3, No. 2: E2

Graduates' Job Quality after a Higher Education Reform: Evidence Regarding Second Level Graduates from a University in Southern Italy

Rosetta Lombardo (Corresponding author)
Department of Economics and Statistics, University of Calabria
Via P. Bucci, Cubo 0/C - 87036 Arcavacata di Rende (CS), Italy
E-.mail: r.lombardo@unical.it

Giovanni Passarelli
Department of Sociology and Political Science, University of Calabria
Via P. Bucci, Cubo 0/B - 87036 Arcavacata di Rende (CS), Italy
E-mail: gpassarelli@unical.it

Received: October 28, 2011 Accepted: November 24, 2011 Published: December 7, 2011
doi:10.5296/rae.v3i2.1074 URL: http://dx.doi.org/10.5296/rae.v3i2.1074

Abstract

Generally graduates have more opportunity of finding a job than undergraduates. However a degree does not always lead to the expected labour market outcomes in terms of job quality. Italian graduates are not an exception in this regard. A University Reform (DM 509/99), implemented in the academic year 2001/2002, introduced a switch from a one-level university education system with just one type of degree to a two-level structure: the first lasting three years and the second another two additional years. 2010 is the first year for which data on labour market outcomes are available for second level graduates at three years after graduation. The aim of this paper is to contribute to the empirical literature by providing evidence of the job quality of graduates from a university located in Southern Italy, an area with structural problems in the labour market. The sample includes all summer session 2007 graduates from the University of Calabria. The quality of jobs at three years after graduation is studied in terms of type of contract, educational match and wage. More specifically, the paper aims to identify determinants of the contract type, educational match and wage. Our findings suggest that field of study is the main determinant of job quality. In particular, graduates in Engineering and in Pharmacy, are more likely to find a stable, well matched, and better paid job, with respect to graduates in other fields.

Keywords: Graduate labour market, Educational match, Wages

1. Introduction

A recurring theme in sociology and economics is the problem of marginalized workers in bad jobs. In the late 1960s and early 1970s, institutional economists drew attention to the issue of bad jobs by proposing that the labour market was divided into a primary segment, made up of "good" jobs, and a secondary segment of "bad" jobs (Doeringer and Piore 1971; Kalleberg and Sørensen 1979 among others).

Evaluating job quality is, at first sight, straightforward. It is a fact that some jobs are seen as being better than others. However, to the best of our knowledge, no comprehensive measure of job quality has been developed. Economists rank jobs according to pay but tend to neglect non-monetary benefits and costs of certain jobs. Thus, it is not surprising that there is no standard job quality scale that transforms various job characteristics into a single numerical measure of job quality. However, as the quality of a job will always remain subjective to a certain extent, a single scale would be of limited use as the same job characteristic may be valued differently by different employees (Foley and Schwartz 2003). The wage level is clearly important, but job characteristics and working conditions are also important and, therefore, an analysis of job quality has to focus on different dimensions of the quality. What makes a job good and what workers expect in their job are important aspects to be considered in trying to identify such dimensions.

The literature on segmented labour market analysis (Edwards et al., 1975) examines differences in job quality across industrial sectors. Other streams of literature compare jobs across employers. Some scholars, for example, suggest that firms with internal labour markets offer better jobs. The determinants of job quality have also been studied by investigating the adoption of "high-performance workplace" practices, focusing on new forms of work organization such as teams and employee involvement structures (Osterman 1994; Appelbaum et al., 2000). According to Kochan and Osterman (1994), workplaces with these transformed practices offer better jobs. Other authors (Mangum, Mayall, and Nelson 1985; Davis-Blake and Uzzi 1993) have addressed the quality of work from a different perspective by analyzing the determinants of temporary work or other contingent arrangements.

In this paper, we investigate the monetary aspect of job quality, i.e. the wage - considered, in particular by economists, to be a good proxy of job quality - as well as non-monetary aspects such as type of contract and educational mismatching.

Analysis might be limited to the aspect of wage because it is considered to reflect different job characteristics (such as type of contract and educational match) and, therefore, might be seen as a synthetic indicator of the quality of work. However, given that the wage, as well as the access to social entitlements (health care and pensions, etc.), depends upon the contract, it is also logical to investigate contract type. Moreover, it also makes sense to analyze educational match separately because job satisfaction and external efficacy of the educational system depend upon this match. The incidence of educational mismatch is, in fact, one of the elements used to estimate the effectiveness of education. It is, therefore, a useful indicator when considering employment policy in the educational system.

Following Ballarino and Bratti (2009), we speculate that some bad jobs are not 'bad' *per se*, i.e. from the point of view of the actual content of the activity (in sociological language, *work situation*; see Breen, 2005), but are 'bad' from the point of view of the economic rewards (e.g. wages, employment stability) that are associated with them (*market situation*). Kalleberg et al. (2000) conceptualized bad jobs as those with low pay and without access to social security, i.e. national health service and pension benefits.

In Italy, atypical forms of employment usually give seriously limited access to welfare entitlements. Furthermore, as is well known, atypical jobs provide less work-related training than open-ended jobs (Booth et al., 2002). Therefore, the diffusion of atypical employment contracts is a matter for concern.

Education yields the highest returns when it is used as required rather than just as supplied. Human capital theory explains that imperfect information often prevents young workers from working in jobs for which they are adequately educated (Sohn, 2010). The lack of coherence (educational mismatch) between education held and education required to carry out a job is potentially costly for the individual, the firm and the economy, considering that resources are wasted on non-productive investments (Ordine and Rose, 2009). Over-education is inefficient for workers in the sense that skills acquired at university are underutilized and become obsolete. Over-education is also inefficient for firms if the productivity of over-educated workers is low due to dissatisfaction, low motivation, or absence. Finally, if education is subsidized by taxes, be it in the form of grants or low-interest loans, over-education can be socially inefficient as well. However, poor employment prospects may induce a number of graduates to accept a job for which a university degree is not required in order to avoid being unemployed (Di Pietro and Cutillo, 2006).

If over-education were due to imperfect information, as the group of overeducated workers grew older, the phenomenon of over-education would disappear. Empirical evidence for the prediction is, however, mixed at best. Over-education seems to persist (Battu et al. 1999; Dolton and Vignoles 2000; Rubb 2003).

The aim of this paper is to provide an examination of the job quality for second level graduates from a university of Southern Italy. The transition from university to work has been studied from different points of view, such as duration of unemployment, time to get a stable job, process of job search, etc. Less attention has been paid to the quality of the job obtained after graduation. We think that the topic is relevant because changes occurring in the labour market can be harmful to younger cohorts of graduates and policy makers are interested in knowing what factors determine job quality among graduates. This knowledge is particularly useful in the case of Calabria because, as is well known, the South of Italy is less developed and less industrialized than the North and Centre, with a large share of public employment and high rates of unemployment (Note 1). Studies at a local level can help to understand the mechanisms which affect graduates labour market outcomes in small areas, especially in those areas characterized by a depressed labour market that offers very few opportunities to young people (Quintano et al., 2008).

The paper is organized as follows. In section 2, we present the data and a descriptive analysis. The determinants of the type of contract are presented in section 3 and the determinant of educational mismatch in section 4. Section 5 presents the analysis of wage determinants. Section 6 concludes.

2. Data and descriptive analysis

2.1 Data sources and data structure

A far-reaching transformation in the Italian university system was brought about by Ministerial Decree n. 509/99 which, by implementing the Bologna Declaration (Note 2), introduced a «3+2» (unitary two-tier) university system. A 3-year First Level degree followed by a 2-year Second Level degree replaced the one-tier system where the duration of the 'old' degree courses varied from between a minimum of four (e.g., Economics) and a maximum of six years (Medicine). The reform was applied in the academic year 2001/2002 (Note 3). The articulation into a «3+2» system does not apply to Medicine, Veterinary Studies, Architecture and Law for which students enrol directly on degree courses of six (Medicine) and five (Veterinary Studies, Architecture, Law) years ("single cycle" degree).

The «3+2» reform was aimed at reducing drop-out rates and age at graduation and increasing the number of students enrolled in Higher Education.

In the analysis we use data from the AlmaLaurea Interuniversity Consortium - founded in 1994 on the initiative of the University of Bologna Statistical Observatory and now supported by the Ministry for Education, Universities and Research. AlmaLaurea interviews students of the universities belonging to the Consortium when they graduate and, then, at one, three and five years intervals after the graduation. The dataset provides retrospective information on students' characteristics, academic performance, high school education, family background, labour market experience and job search activities. In 2011, AlmaLaurea released the data on labour market outcomes for second level graduates at three years after graduation.

Our sample of interest includes all summer session 2007 graduates from the University of Calabria who declared they had found a job after graduation. We look at them three years after their graduation (2010). The full 2007 sample includes 807 individuals (725 second level graduates and 82 single cycle graduates).

We group the fields of study into six categories, namely Engineering, Sciences (including Mathematics, Physics, Biology, Natural Sciences, Chemistry and Geology), Pharmacy, Economics and Business (including Law), Humanities (including Literature, Languages, History and Philosophy), and finally Political Science (Note 4). Graduates in Engineering, Sciences and Pharmacy make up respectively 24.3 percent, 17.2 percent and 9.4 percent of the whole sample, whereas graduates in Economics and Business and in Political Science account respectively for 24.8 and 11.5 percent. Finally, students holding a degree in Humanities constitute 12.8 percent of the whole.

For the present analysis, we drop those who – at three years after graduation – declared themselves to be unemployed (155) or that they had never worked (142) and we end up with

a sub-sample of 431 graduates who found a job after graduation and declared themselves to be employed at the interview (Note 5).

2.2 A descriptive analysis

This subsection provides a descriptive analysis of graduates' socio-economic characteristics, school and academic background and type of contract, educational match and wages.

Most graduates have diplomas from Scientific and Classical (64.1%) and Technical (26.2%) high schools. With regards to family background, as measured by social class and parents' education, about 13 percent of graduates belong to the bourgeoisie and 35 percent belong to the working class, whereas 75 percent belong to a low/middle educated family (compulsory school and secondary upper school).

Table 1 presents the 2007 graduates and those employed at three years after graduation by family, school and academic background.

Table 1. Graduates and employed graduates by socio-economic characteristics and school and academic background

	Graduated 2007	Employed after 3 years of the degree	% employed
Social Class			
Bourgeoisie	105	48	45.7
Petite bourgeoisie and white collar middle class	406	209	51.5
Working class	275	159	57.8
Total	786	416	
Parents' education			
Compulsory School	226	129	57.1
Upper secondary school	366	191	52.2
At least one parent with a degree	123	67	54.5
Both parents with degree	71	29	40.8
Total	786	416	
Upper secondary school track			
Classical and Scientific (*liceo*)	517	271	52.4
Technical	211	117	55.5
Vocational and others	78	43	55.1
Total	806	431	
Upper secondary school final mark (range 60-100) (*mean*)	90.4 *(s.d.10.3)*	90.3 *(s.d.10.4)*	
Field of Studies			
Engineering	196	137	69.9
Sciences	139	54	38.8
Pharmacy	76	47	61.8
Humanities	103	47	45.6
Economics and Business	200	96	48.0
Political Sciences	93	50	53.8
Total	807	431	
University final mark (range 66-110, *Cum Laude + 3*) (*mean*)	108.8 *(s.d.5.2)*	108.5 *(s.d.5.2)*	

About 58 percent of graduates belonging to the working class found a job, while only 46 percent from the bourgeoisie found a job; 57 percent of the graduates with lowly educated parents (compulsory school) found a job, while only 41 percent of graduates whose parents both had a degree found a job. This finding suggests that graduates belonging to an upper/middle class family procrastinate over entry into the labour market, probably, often continuing their studies.

Focusing on school background, we observe that the percentage of employed graduates does not differ significantly between the different upper secondary school tracks.

Finally, as table 1 shows, about 70 percent of graduates in engineering found a job, followed by graduates in pharmacy (61.8%). Just 38.8 percent of graduates in Science found a job.

In order to identify those individuals with a stable or an atypical job, we rely on the AlmaLaurea classification based upon the self-reported current job contract. To be more precise, the former have open-ended contracts or are self-employed, whereas the latter have fixed-term contracts (the so called *co.co.co contracts* - co-ordinated and continual collaboration, ad hoc, and consultancy contracts), apprenticeships, other contracts or no contract. Educational match is, generally, defined as consistence between required and offered educational level for a given job. We will return to these two definitions in more detail in sections 3 and 4.

In Table 2 we show the relation between family background, school and academic background and some proxies of job quality.

Table 2. Employed graduates by type of contract, educational mismatching and average wage

	Type of contracts (%)		Educational match and mismatch (%)			Wage in Euros (mean)
	Atypical job	Stable job	Matched	Over-educated		
Social Class						
Bourgeoisie	22.9	77.1	89.6	10.4	100	1 389
Petite bourgeoisie and white collar middle class	48.8	51.2	87.6	12.4	100	1 079
Working class	39.0	61.0	89.9	10.1	100	1 121
Parents' education						
Compulsory School	42.6	57.4	87.6	12.4	100	1 041
Upper secondary school	41.9	58.1	86.9	13.1	100	1 110
At least one parent with degree	43.3	56.7	92.5	7.5	100	1 289
Both parents with degree	37.9	62.1	96.6	3.4	100	1 275
Upper secondary school track						
Classical and Scientific	42.1	57.9	90.4	9.6	100	1 156
Technical	33.3	66.7	88.9	11.1	100	1 156
Vocational and others	62.8	37.2	76.7	23.3	100	976
Field of Studies						
Engineering	21.2	78.8	96.4	3.6	100	1 336
Sciences	59.3	40.7	83.3	16.7	100	1 003
Pharmacy	34.0	66.0	95.7	4.3	100	1 148
Humanities	83.0	17.0	78.7	21.3	100	890
Economics and Business	45.8	54.2	86.5	13.5	100	1 119
Political Sciences	40.0	60.0	80.0	20.0	100	994

Regarding family background, we observe that graduates belonging to the bourgeoisie or whose parents are both graduates have the highest percentage of stable jobs, jobs consistent with their studies and, usually, declare higher wages. On the lower end of the social scale, graduates belonging to the working class find a stable job (61%) which is well matched (89.9%), but with a lower wage compared to graduates belonging to the bourgeoisie.

The other relevant variable is the field of study. About 79 percent of graduates in Engineering have a stable job, whereas 83 percent of graduates in Humanities have found an atypical job. It should be noted that the high percentage of engineers with a stable job is influenced by the fact that, in line with AlmaLaurea, we define a stable job as an open-ended job and self-employment and, as is well known, a lot of engineers are self-employed. Instead, the high percentage of graduates in Humanities with an atypical job reflects the fact that, in Italy, many of them become temporary teachers.

A very high proportion of graduates in Engineering (96.4%), Pharmacy (95.7%) and Economics and Business (86.5%) declare they have found a job which is very consistent with their studies.

In studying over-education among Italian graduates, Ballarino and Bratti (2006), Di Pietro and Cutillo (2006) and Ordine and Rose (2009) found that the share of the over-educated among graduate workers ranges from between 28 and 39 percent with considerable variations across fields of study.

The lower percentage of over-education we found might, at least in part, be due to the decision of some employers to raise the qualification requirement for jobs even though the nature of the jobs remains unchanged. This means that some graduates are exposed to the risk of over-education even though their current job formally requires a university degree. This might be seen as a sort of hidden over-education. Clearly, one would expect some correlation between the level of education the employee considers to be appropriate to carry out the job and that formally required to obtain the job. However, in Southern Italy, an area with high unemployment and a relatively high percentage of graduates, the hidden over-education phenomenon could well be quite marked. In fact, the possibility exists that employers are attempting to benefit from the increased supply of graduates by re-categorizing jobs as positions requiring a degree, when neither the education required nor the wage scale associated with the job are graduate level (Note 6) (Di Pietro and Urwin, 2006).

According to their declarations, Engineers and graduates in Pharmacy have found better paid jobs compared with other graduates, particularly graduates in Humanities and Political Sciences.

3. Type of contract

As we have seen, non-standard employment relations are often associated with poor quality jobs. According to some scholars (Piore, 1971 among others), bad jobs have a tendency to cluster, indicating a dual labour market with a primary market comprised of good jobs (stable employment with structured career ladders) and a secondary market comprised of bad jobs (fixed-term contracts with lower wages, no training and a higher risk of unemployment).

Over the last two decades, Italy's labour market has undergone a transformation process aimed at increasing flexibility. The most significant reform took place in 1997, but temporary contracts had been introduced as much as 10 years before that date. Law 196/1997 (also called "Pacchetto Treu") represented a key step towards the liberalization of atypical contracts by introducing temporary contracts, providing incentives for part-time work, creating Temporary Work Agencies (staff-leasing) and innovating the regulations governing fixed-term contracts. Law 196/1997 was replaced by Law 30/2003 (also called "Riforma Biagi") which introduced a number of new atypical job arrangements (such as jobs on-call *(lavori intermittenti),* job sharing and occasional work (*lavoro a progetto*)), eliminated contracts of work with on-the-job-training (*Contratti di Formazione Lavoro*), and reformed apprenticeships and temporary contracts.

Deregulation of employment was expected to lower the high (youth) unemployment levels through a reduction in the time spent searching for a first job. This expectation was particularly high for the South of Italy (Barbieri and Scherer, 2009). However, while flexibility has been introduced at the margin, with extensive consequences for 'outsiders', i.e. the unemployed and school leavers, it has left those in open-ended employment largely unaffected. As a consequence of a partial, targeted deregulation, work contracts for new entrants have become less guaranteed, lower paid and less stable (Esping-Andersen and Regini, 2000). The reform process has produced a reduction of the social entitlements of the young (Note 7). The expansion of atypical employment has also raised concerns that, by crowding out stable jobs, the new flexible jobs become an additional source of insecurity for workers and increase labour market dualism between stable and unstable careers, even among graduates (Ichino *et al*. 2003).

In Calabria, the possibilities of young cohorts of graduates finding a good job have been worsened by, beside the issues inherent to these new contractual arrangements, the area's limited growth capacity. In fact, as Ichino et al. (2003) point out, north-south differences are strong, with higher risks of becoming trapped in the secondary, under-protected, labour market in the South of Italy.

Since, as we have seen, atypical jobs are considered bad jobs, we think that it is important to analyse the determinants of this type of job. In order to do this, we ran a binary logistic regression to estimate the probability of finding a stable or an atypical job (Note 8).

In this analysis one of the most common problems might be the self-selection bias. More able students could enrol in the more challenging fields of study and then obtain better labour market outcomes. The self-selection bias could be overcome if students were randomly assigned to field of studies. Generally, the choice of a field of study is not random.

In the literature on economics of education, a number of studies on educational choices point out that family background, individual ability, and gender are key elements in determining which field of study an individual chooses. These factors are also likely to influence future labour market performance (Bonanno and Pozzoli, 2009). The importance of family background in children's educational choices and attainments is emphasized in a number of studies, starting with Haveman and Wolfe (1995). Examples of more recent studies that point

to parents' education as one of the most essential factors to be controlled for in measuring the effect of education on early labour market outcomes are Blundell *et al*. (2003), Checchi and Flabbi (2007) and Dustmann (2004).

We try to overcome the self-selection bias by controlling for variables that are correlated with both study field choice and labour market outcomes. In particular, we assume that family background variables and school background variables are adequate to capture individual innate ability and individual motivation, two components of individual heterogeneity that are likely to affect the choice of study field as well as performance in the labour market.

In Table 3, we present the estimation of the probability of finding an atypical job as a function of family background (proxied by social class) and academic background (Note 9). A number of variables have been not included in the equation because they are not significant: type of upper secondary school, final mark at school, parents' education, length of study (i.e. time to get a degree) and gender (Note 10).

Table 3. The effect of family, school and academic background on the probability of having an atypical contract (binary logistic regression estimate)

	B (S.E.)	Exp(B)	95% CI for EXP(B)	
			Lower	Upper
Social class				
Bourgeoisie (ref)				
Petite bourgeoisie and white collar middle class	.906*(.410)	2.474	1.108	5.525
Working class	.375(.423)	1.455	0.635	3.335
Academic background				
Engineering (ref)				
Sciences	1.713***(.369)	5.548	2.691	11.438
Pharmacy	.732 (.394)	2.08	0.962	4.499
Humanities	2.991***(.464)	19.906	8.016	49.428
Economics and Business	1.210***(.306)	3.354	1.84	6.115
Political Sciences	1.168**(.380)	3.215	1.527	6.765
Final mark at graduation 110 cum laude (ref)				
From 66 to 98	-1,940* (.783)	0,144	0,031	0,667
From 99 to 104	.392 (.330)	1.48	0.775	2.824
From 105 to 109	.074 (.286)	1.076	0.614	1.886
110	.192 (.348)	1.212	0.613	2.397
Constant	-2.001*** (.432)	0.135		

Dependent variable type of contract: stable = 0; atypical = 1

Pseudo-R^2 = 0.15 (Hosmer-Lemeshow); 0.19 (Cox e Snell); 0.25 (Nagelkerke). Model $\chi^2(1) = 86.97$

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

With regards family background, social class significantly affects the probability of acquiring an atypical job. Graduates belonging to the petite bourgeoisie and white collar middle class are more likely to get an atypical job with respect to graduates from the bourgeoisie. Although family and school background are recognized as important from a theoretical point

of view, there are no well established, consistent results in the empirical literature. Some authors (D'Hombres et al, 2008 among others) have shown that family background is not significantly correlated with labour market outcomes. On the other hand, as we have seen, the literature shows that family background significantly affects the choice of field of study, and so, indirectly, it influences labour market outcomes.

Graduates in Humanities, Sciences, Economics and Business and Political Science are more likely to get an atypical job than graduates in Engineering. The probability of getting an atypical job is particularly high for graduates in Humanities. As we said previously, most graduates from this field are temporary teachers. Pharmacy is not statistically significantly different from Engineering.

Graduates who graduated with a low final mark are less likely to get an atypical job. This is a counter-intuitive result of the regression and it is a critical aspect from the perspective of students' effort and preparation. It would be expected that graduates with a low final mark would be more likely to get an atypical job. These low-final-mark graduates probably find a stable job but in occupations that were previously considered to be of a non-graduate level, i.e. they are employed in activities for which a degree is not really necessary in order to perform the job. They accept such a job because, perhaps, they are aware that, in a depressed labour market, a low final mark might negatively affect their probability of finding a better job.

4. Educational mismatching

The lack of consistency between required and offered educational level for a given job can have very important social and economic implications. In differentiating between the education level achieved by an individual and the level of education required for the job the individual performs, the literature derives measures of over- and under-education to study the consequences of educational mismatch (Alba-Ramirez 1993; Manacorda and Petrongolo 1999; Allen and van der Velden 2001, among others).

The issue of over-education has caught the attention of economists partly because it has important implications for labour productivity. In spite of a large number of studies on the issue, there is no uniform definition of over-education (Dolton and Vignoles, 2000; Hartog, 2000) and in many cases the definition used depends on the available data. Each of the several approaches used to measure the degree of mismatch has its own limitations (Note 11).

Merits and limitations of the various subjective and objective measures of over-education have been debated within the literature (Cohn and Kahn, 1995; Chevalier, 2003 among others), however, Groot and van den Brink (2000) demonstrate that subjective measures, are less likely to provide biased estimates of the incidence of over-education.

We use educational mismatching as a proxy of job quality and we are therefore interested in the determinants of the match and over-education among graduates three years after graduation. Following the line adopted by a number of authors, we use the worker's self-assessment regarding the mismatching between his/her level of education and the education level necessary for his/her job. In particular, we use the following question

included in the AlmaLaurea questionnaire: "Is your second level degree necessary to perform your current job?". We consider as over-educated those graduates who say that their degree is neither required by law nor useful in any sense (Note 12).

Although educational mismatch usually refers to both under- and over-education, in our case, as the sample is constituted by graduates, we consider observations to be either mismatches of over-education or perfect matches between the degree obtained and a job requiring a degree.

In Table 4, we present the estimation of the probability of being over-educated as a function of field of study.

Table 4. The effect of family, school and academic background on the probability of being over-educated (Binary logistic regression estimate)

	B (S. E.)	Exp(B)	95% IC for EXP(B)	
			Lower	Upper
Engineering (*ref*)				
Sciences	1.774** (0.586)	5.895	1.868	18.601
Pharmacy	0.152 (0.854)	1.164	0.218	6.213
Humanities	1.879** (0.589)	6.55	2.066	20.764
Economics and Business	1.381* (0.551)	3.98	1.352	11.719
Political Sciences	1.957** (0.578)	7.081	2.279	22.005
Constant	-3.266*** (0.456)	0.038		

Dependent variable educational mismatch: 0 = matched, 1 = over-educated

Pseudo-R^2 = 0.082 (Hosmer-Lemeshow); 0.053 (Cox and Snell); 0.104 (Nagelkerke). Model $\chi^2(1) = 22.426$. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

As for the type of contract, a number of variables have not been included in the equation because they were not significant: type of upper secondary school, final mark at school, final mark at graduation, parents' education, length of studies and gender.

We find that the field of study is the only statistically significant variable for the educational mismatch. Hard fields of study such as Engineering and Pharmacy are well matched, i.e. engineers and pharmacists are more likely to find a job requiring a degree. Sciences is an exception and in fact graduates in this hard field have a higher probability of being over-educated.

However, it is notable that some authors (Quintano et al., 2008) who have studied educational mismatch among Italian graduates have found that other variables - gender and final mark at graduation - are statistically significant whereas other authors have found that the final graduation mark is not significantly related to the probability of being over-educated (Ordine and Rose, 2009). Our findings probably depend on the fact that we refer to graduates from a new, different system of tertiary education. The new system has, for example, simplified the educational track and seems to have reduced variability by pushing final graduation marks upwards.

To summarize, we find that the probability of being over-educated is not significantly associated with individual abilities, but only with fields of study. A puzzling conclusion

seems to emerge; to get a job which is more or less consistent with studies completed does not depend on individual skills, but instead seems random or connected to unobservable heterogeneity of workers, for example the different "reputations" of the faculties from which they graduate. This puzzle might reflect the fact that we are analyzing the first phase of graduates' careers (Note 13).

Table 5. Ordinary Least Squares (OLS) estimate of wage equation

	B	S.E.	β
School Background			
Final Mark at Secondary school(*range* 60-100)	-0.004	0.003	-0.084
Upper secondary school: Technical	-0.052	0.059	-0.045
Upper secondary school: Vocational and others	0.096	0.085	0.056
Family Background			
Parent's Education: Compulsory School	-0.109	0.104	-0.099
Parent's Education: Upper secondary school	-0.048	0.095	-0.047
Parent's Education: At least one parent with degree	-0.014	0.1	-0.01
Social Class: Petite bourgeoisie and white collar middle class	-0.096	0.082	-0.094
Social Class: Working class	-0.002	0.09	-0.002
Academic Background			
Final Mark at Graduation (*range* 66-110, cum laude + 3)	0.005	0.005	0.046
Sciences	-0.197*	0.087	-0.126
Pharmacy	0.427**	0.153	0.258
Humanities	-0.359***	0.102	-0.224
Economics and Business	-0.044	0.074	-0.036
Political Sciences	-0.292**	0.096	-0.182
Length of studies	-0.145**	0.044	-0.299
Job related dummies			
Educational mismatching: Overeducated	-0.156*	0.075	-0.096
Type of contract: atypical	-0.194***	0.051	-0.188
Economic Activity: Agriculture	-0.004	0.24	-0.001
Economic Activity: Industry	0.217**	0.067	0.164
Private sector	-0.263***	0.062	-0.21
Gender	0.114*	0.054	0.111
(Constant)	7.594***	0.562	
Adjusted R-Squared	0.215		
(N)	407		

Dependent variable: Ln *wages*. Reference categories: Upper secondary school: Classical and Scientific; Parent's Education: both with a degree; Social Class: bourgeoisie; Field of study: Engineering; Educational mismatching: matched; Type of contract: Stable, Economic activity: Services; Public Sector; Gender: Male. *p<.05 **p<.01 ***p<.001

5. Wages

Turning to the impact of family background, school background, academic background and job characteristics on graduates' wages, we estimate an OLS model using the logarithm of the average net monthly wage declared by graduates as a dependent variable.

We find no evidence of a direct family and school background effect on graduates' wages. Indeed, as we highlighted in Section 3, family background influences the choice of upper secondary school and field of studies directly, but labour market outcomes are only indirectly influenced.

As far as academic background is concerned, field of study plays a key role in the determination of graduates' wages (see Table 5).

In particular, our findings suggest that a degree in Engineering pays a higher wage with respect to the other degrees, with the exception of Pharmacy. The time students take to obtain their degree negatively affects wages; the more the time they spent in getting their degree the lower the wage they earn is. The final mark at graduation does not affect wages. This finding is not in line with Di Pietro and Urwin (2006) who, in studying a sample of Italian graduates in 1998, three years after graduation, find that those graduates who obtained a poor mark (between 70 and 89.99) at university earned approximately 3% less than their peers whose mark was between 105 and 110. By studying a random sample of economics graduates from the 'Parthenope' University of Naples, Quintano et al. (2008) obtain similar results: graduates with a high mark at graduation (105/110 and more) are more likely to earn a high wage. Our finding might be due to the very low variation among final marks at graduation. Furthermore, as reported by graduates, in Italy criteria such as personality and field of study seem to guide the recruitment of highly skilled workers by employers much more than the final mark at graduation (Rostan, 2006). Employers probably follow the same criteria in paying a wage premium. Wages may also depend on a collective contract for graduates with an open-ended contract.

Over-education and atypical job are found to be predictors of having low wages (these findings are in line with Quintano et al., 2008).

Working in the industry sector is a good predictor of having higher pay, whereas working in the private sector is a strong predictor of lower pay. This is not surprising because atypical, low wage jobs are common in the service sector.

Gender also affects wages: males earn more than females. This finding suggests that there is a gender pay gap.

6. Concluding remarks

In this study we have provided an analysis of the determinants of second level graduates' job quality, focusing on the University of Calabria as a case study.

Graduates' job quality can be considered as one of the most important indicators of the external effectiveness of the tertiary education system. Despite the small statistical sample of the study, our findings provide evidence of the effect of academic background and family background on job quality.

In this paper, the job quality of graduates from the University of Calabria, three years after graduation, has been studied in terms of type of the contract, wages and consistency between required and offered educational level for the job. From our point of view, it is important to

consider non monetary aspects of job quality, given that the ability of finding a steady job which is in line with the level of education obtained is seen as a key indicator of success, particularly within a region with a depressed labour market. However, we admit that usually wages summarize different aspects of job quality.

The results of logistic regression, as we expected, show that the probability of getting an atypical job is higher among graduates in soft fields (in our case Humanities and Political Sciences) and in hard social sciences (Economics and Business in our case). Graduates in Humanities have the highest probability of getting an atypical job, which is not very surprising as most of them work as teachers and are given temporary assignments at the start of their careers. These findings are in line with the literature on the relationship between fields of study and labour market outcomes (Ballarino and Bratti, 2009 among others).

With regards social class, graduates belonging to the petite bourgeoisie and white collar middle class are more likely to get an atypical job than graduates belonging to the bourgeoisie or the working class. This finding suggests that middle class graduates delay their entry into the labour market, probably because they continue their studies, and therefore are more willing to work on a fixed term contract. Moreover, getting an atypical job also depends on final mark at graduation. Graduates who have a low final mark at graduation are less likely to find an atypical job.

With regards over-education, our findings show that it depends on the field of studies. Graduates in hard fields - with the exception of graduates in Sciences - are more likely to find a job in which a degree is useful or required by law. The final graduation mark and other proxies of individual ability or family background do not significantly affect the educational match. It seems that, in the initial phase of a graduate's work career, obtaining more or less advantageous jobs is somewhat independent of individual abilities.

However, we can not ignore the fact that some graduates are exposed to the risk of over-education, even when their current job formally requires a university degree. In fact, some jobs might have been mis-defined as 'graduate' posts due to employers opportunism.

Studies of the graduate labour market tend to focus on wages as the principal measure of employment success. However, only considering wages may be problematic; in the early stage of their work career, graduates may receive a lower wage, but valuable returns in terms of 'training'. This, of course, may not be the case with atypical work.

Our findings show that academic background and job characteristics significantly affect wage level. In particular, graduates in Engineering earn a wage premium with respect to graduates in all other fields of studies with the exception of Pharmacy. Indeed, graduates in Pharmacy seem to earn more than engineers. With regards the length of studies, graduates who have not finished their studies in the prescribed time earn a lower wage. Graduates who are over-educated earn less than adequately matched graduates. Graduates with atypical jobs earn lower wages. Industry pays higher wages to graduates than service sector. This result may be due to the wide distribution of atypical contracts in the service sector. The private sector

affects graduates' returns very significantly, paying higher wages. Finally, gender discrimination is found: males get higher wages.

In conclusion, our findings suggest a necessity to implement policy measures that encourage greater interaction between socio-economic context and the higher education system. There are, in fact, a number of difficulties in Calabria on the demand side of the labour market. The traditional productive system which is characterized by the presence of small firms with a low propensity to innovate offers graduates few opportunities of qualified jobs. The interaction between economic and educational systems might, therefore, help prevent both declared and hidden educational mismatch and increase the value of investment in education.

The findings of this paper can not be generalized as our sample was made up simply of graduates from the University of Calabria. This said, as 2010 is the first year for which data on labour market outcomes are available for second level graduates at three years after graduation, we believe that the analysis of job quality for post-reform graduates is interesting. Further development of this study will aim to extend the dataset.

Moreover, to complete the picture of job quality, an analysis of job satisfaction should be added to this study. This is left for future research.

Acknowledgements

We would like to gratefully acknowledge the two anonymous referees for their helpful comments on a previous draft of this paper. Of course, any remaining error is our own responsibility.

References

Alba-Ramirez, A. (1993). Mismatch in the Spanish labour Market: Over-education? *Journal of Human Resources,* 28(2) 259–78. http://dx.doi.org/10.2307/146203

Allen, J., and van der Velden R. (2001). Educational mismatches versus skill mismatches: Effects on wages, job satisfaction and on the job search. *Oxford Economic Papers,* 53: 434–52. http://dx.doi.org/10.1093/oep/53.3.434

Appelbaum E., T. Bailey, P. Berg and A.L. Kalleberg. (2000). *Manufacturing Advantage. Why High-Performance Work Systems Pay off*, Ithaca: Cornell University Press.

Ballarino G., and M. Bratti (2006). Fields of Study and Graduates' Occupational Outcomes in Italy During the 90s. Who Won and Who Lost?, Department of Economics University of Milan, Working paper #2006-17.

Ballarino, G., and Bratti, M. (2009). Fields of study and university graduates' early employment outcomes in Italy during 1995-2004. *Labour*, 23, 421-457. http://dx.doi.org/10.1111/j.1467-9914.2009.00459.x

Barbieri, P., and Scherer, S. (2009). Labour market flexibilization and its consequences in Italy. *European Sociological Review*, 25, 677-692. http://dx.doi.org/10.1093/esr/jcp009

Battu H., Belfield C.R., and Sloane PJ (1999) Overeducation among graduates: A cohort

view. *Education Economics,* 7 (1):21–38. http://dx.doi.org/10.1080/09645299900000002

Biglan, A. (1973). The characteristics of subject matter in different academic areas, *Journal of Applied Psychology*, 57, 195-203. http://dx.doi.org/10.1037/h0034701

Blundell, R., Dearden, L., and Sianesi, B. (2003). Evaluating the Impact of Education on Earnings in the UK: Models, Methods and Results from the NCDS, IFS Working Papers No. 20.

Bonanno P., and Pozzoli D. (2009). Early labour market returns to college subject. *Labour,* 23 (4) 559–588. http://dx.doi.org/10.1111/j.1467-9914.2009.00466.x

Booth, A.L., Francesconi, M., and Frank J. (2002) Temporary Jobs: Stepping Stones or Dead Ends? *The Economic Journal*, 112 (June), F189-F213. http://dx.doi.org/10.1111/1468-0297.00043

Breen R. (ed.) (2005). *Social mobility in Europe*, Oxford: Oxford University Press.

Checchi, D., and Flabbi, L. (2007). Intergenerational Mobility and Schooling Decisions, IZA Discussion Paper No 2879.

Chevalier, A. (2003). Measuring over-education. *Economica,* 70, no. 279: 509–31. http://dx.doi.org/10.1111/1468-0335.t01-1-00296

Cohn, E., and Khan, S.P. (1995). The Wage effects of over-schooling revisited. *Labour Economics*, 2; pp. 67-76. http://dx.doi.org/10.1016/0927-5371(95)80008-L

Davis-Blake, A., and Uzzi, B. (1993). Determinants of Employment Externalization: A Study of Temporary Workers and Independent Contractors. *Administrative Science Quarterly*, 38: 195-223. http://dx.doi.org/10.2307/2393411

D'Hombres, B., Tarantola S., and Van Nijlen D. (2008). Labour market performance of university graduates: Evidence from Italy, JRC Scientific and technical Reports, CRELL, European Commission, Ispra.

Di Pietro G., and Cutillo A. (2006). University Quality and Labour Market Outcomes in Italy. *Labour,* 20 (1). 37–62. http://dx.doi.org/10.1111/j.1467-9914.2006.00333.x

Di Pietro, G., and P. Urwin. (2006). Education and skills mismatch in the Italian graduate labour market. *Applied Economics,* 38, 79–93. http://dx.doi.org/10.1080/00036840500215303

Doeringer, P.B., and Piore M. J. (1971). *Internal Labor Market and Manpower Analysis*, Lexington, Mass.: D. C. Heath and Co.

Dolton, P.J., and Vignoles, A. (2000). The Incidence and Effects of Overeducation in the Graduate Labour Market. *Economics of Education Review*, Vol. 19, No. 2, pp.179-198. http://dx.doi.org/10.1016/S0272-7757(97)00036-8

Dustmann, C. (2004). Primary to Secondary School Transitions, Parental Characteristics, and Career Patterns. *Oxford Economic Papers,* 56, 209–230.

http://dx.doi.org/10.1093/oep/gpf048

Edwards, R. C., Reich M., and Gordon D. M., (1975) (Eds.). *Labor Market Segmentation*. Lexington, Mass.: D.C. Heath.

Esping-Andersen G., and Regini M. (2000) (Eds.). *Why Deregulate Labor Markets?* Oxford: Oxford University Press.

Foley, K., and Schwartz, S. (2003). Earnings Supplements and Job Quality among Former Welfare Recipients. *Industrial Relations*, 58, 258–286.

Groot, W., & van den Brink H. M. (2000). Overeducation in the labor market: a meta-analysis. *Economics of Education Review*, 19, 149-158. http://dx.doi.org/10.1016/S0272-7757(99)00057-6

Hartog, J. (2000). Overeducation and Earnings: Where are we, where should we go? *Economics of Education Review*, 19, 131-147. http://dx.doi.org/10.1016/S0272-7757(99)00050-3

Haveman R., and Wolfe B. (1995). The Determinants of Children's Attainments: A Review of Methods and Findings. *Journal of Economic Literature,* 33, 1829–1878.

Ichino, A., Mealli F., and Nannicini, T. (2003). Il Lavoro Interinale in Italia. Trappola del Precariato o Trampolino Verso un Impiego Stabile? Research report on the project *Il Lavoro Interinale in Italia*, Italian Ministry of Welfare/EUI.

Kalleberg, A. L., Reskin B. F., and Hudson. K (2000). Bad Jobs in America: Standard and Nonstandard Employment Relations and Job Quality in the United States. *American Sociological Review*, 65 (2). 256-278. http://dx.doi.org/10.2307/2657440

Kalleberg, A.L., and Sørensen A. B. (1979). The Sociology of Labor Markets. *Annual Review of Sociology,* 5, 351-79. http://dx.doi.org/10.1146/annurev.so.05.080179.002031

Kochan, T. A., and Osterman P. (1994). *The Mutual Gains Enterprise: Forging a Winning Partnership among Labor, Management, and Government*, Boston: Harvard Business School Press.

Magnum, G., Mayall D., and Nelson K. (1985). The Temporary Help Supply: A Response to the Dual Internal Labor Market. *Industrial and Labor Relations Review*, 38 (4), 599. http://dx.doi.org/10.2307/2523994

Manacorda, M., and B. Petrongolo (1999). Skill mismatch and unemployment in OECD countries. *Economica,* 66, 181–207. http://dx.doi.org/10.1111/1468-0335.00164

Ordine P., and Rose G. (2009). Higher Education Quality, Opportunity Costs And Labor Market Outcomes. *Rivista Italiana degli Economisti*, 14,(2), 267-291.

Osterman, P. (1994). How common is workplace transformation and who adopts it? *Industrial and Labor Relations Review*, 47, 173-188. http://dx.doi.org/10.2307/2524415

Piore, M. (1971). The Dual Labor Market. In, D. M. Gordon (Ed.), *Problems in Political*

Economy: An Urban Perspective (pp. 43-47). Lexington, MA: D. C. Heath.

Quintano, C., Castellano, R., and D'Agostino, A. (2008). Graduates in economics and educational mismatch: the case study of the University of Naples 'Parthenope'. *Journal of Education and Work*, 21, (3), 249–271. http://dx.doi.org/10.1080/13639080802214118

Rostan, M. (2006). *Laureati italiani ed europei a confronto. Istruzione superiore e lavoro alle soglie di un periodo di riforme*, Milano: LED.

Rubb, S. (2003). Over-education: A short or long run phenomenon for individuals?. *Economics of Education Review,* 22 (4), 389-394. http://dx.doi.org/10.1016/S0272-7757(02)00052-3

Sohn K. (2010). The Role of Cognitive and Noncognitive Skills in Overeducation. *Journal of Labor Research,* 31,124–145. http://dx.doi.org/10.1007/s12122-010-9082-5

Warner, R. M. (2008). *Applied Statistics. From Bivariate trough Multivariate Techniques*, London: Sage Publications.

Notes

Note 1. In 2007 in Southern Italy the unemployment rate among young graduates aged 25-34 was 19.2 percent, in 2010 it was 23.6 percent; for Italy as a whole, it was 9.5 percent and 12.8 percent respectively (Source: Istat, Istituto Nazionale di Statistica).

Note 2. The Bologna Declaration (Bologna, June 19 1999) initiated the Bologna process. This process is designed to create the European Higher Education Area (EHEA) through harmonization of the different European educational systems.

Note 3. A limited number of universities applied the reform in the academic year 2000-2001.

Note 4. The literature generally divides fields of study into "quantitative" (hard fields), considered more occupational specific and "non-quantitative" (soft fields), considered less occupational specific and less challenging (Biglan, 1973). Fields such as Engineering, Pharmacy, Mathematics, Physics and Natural Science are classified as Hard. Business and Economics are often classified as Hard Social Sciences. Humanities and Law are classified as Soft. Political Science is often classified as a Soft Social Science.

Note 5. As regards working status, there are 79 non-responses.

Note 6. In Italy, the number of graduates rose from 152,341 in 1999 to 292,789 in 2009. Post-reform graduates numbered 264,775 in 2009, of whom 74,101 were second-level graduates, and 19,485 single cycle graduates. In particular, the number of graduates from the University of Calabria rose from 1,454 in 1999 to 4,290 in 2009. Source: Ministry for Education, Universities and Research (MIUR). http://statistica.miur.it/normal.aspx?link=pubblicazioni

Note 7. Barbieri, P. (2007), Atypical employment and welfare regimes, Policy Papers, University of Milano Bicocca, No 1.

Note 8. The "target" outcome, the one for which we want to report odds of occurrence, is a

negative outcome. Interpretation of results from a logistic regression depends on how scores are coded on the binary outcome variable and which score value the computer program treats as the target outcome. Results are, usually, easier to interpret if a code of 1 is assigned to the group with the more negative outcome and 0 is assigned to a group with a more positive outcome (Warner, 2008).

Note 9. Due to the relatively limited size of the sample, we do not split the data-set further to estimate separate models for males and females.

Note 10. There are several different methods that can be used to conduct the logistic regression. We used the Forward:LR method in which the current model is compared to the model when a predictor is removed. If the removal of a predictor makes a significant difference to how well the model fits the observed data, then the computer retains that predictor (because the model is better if the predictor is included). If, however, the removal of the predictor makes little difference to the model, then the computer rejects that predictor.

Note 11. There are basically three approaches: job analysis, the statistical approach, and workers self-assessment. For a description of these methods, see Hartog (2000).

Note 12. Our measure of over-education is only partially subjective because, among the possible answers, there is "yes, the degree is requested by law".

Note 13. Franzini and Reitano, in "Pochi e poco utilizzati? L'overeducation dei laureati italiani", presented at the 50th Annual Meeting of the SIE (Società Italiana degli Economisti), Roma, 22-24 Ottober 2009, obtained similar results by analyzing a longitudinal sample of Italian graduates.