Higher educated, lower paid: The fixed-term wage penalty within highly educated workers in Italy

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Motivations

- Many studies have focused on the wage differentials: Are temporary workers paid more or less than permanent ones? (Davia and Hernanz 2002; Booth, Dolado and Frank 2002).

- Worker's education degree has been analysed only studying the wage differentials between education groups ➡ but **focusing only on average differences between groups can miss some of the overall change in inequality**

- Wages can also vary within education categories: much of the overall increase in wage inequality could be due to an increase in this residual inequality within education groups (Katz 1999; Lindley and McIntosh 2015).

Aim of the paper

- To **examine within-group wage differentials** (among recently Italian graduated workers) **emphasizing the role of heterogeneities along the distribution of wages** (high paid jobs and low paid jobs) and **focusing on differentials due to the specific work arrangements.**

- **Italy** is a particularly **interesting country**: there was an improvement of the occupational outcomes of Italian graduates, however graduates' work conditions strongly differ from those experienced in other European countries.

- Why does Italian economy show low employment rates of graduates and promote few high-quality jobs for qualified workers?

- Possible explanations: large population of micro and small firms, low-tech specialization, few investments in technologies and innovation.

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Overview

- Related literature.
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High-skill workers and flexibility

- Several authors have analysed the nature of fixed-term contracts focusing on the possibility to represent for young workers either "stepping stones" or, "dead ends" with poor pay and prospects (Booth et al. 2002; Berton et al. 2011, 2012; Cockx and Picchio 2012; Houseman and Heinrich 2015).

- Flexibility in the labour market hits not only unskilled or low-skill workers, but also the graduate ones.

- Individuals who recently graduated may be willing to accept a fixed-term contract if this allows them to obtain more stable jobs, jobs that best match their skills, or in case of high unemployment rates (Treu 1992; Reyneri 2005).

- Try (2004): graduates consider some flexible jobs as a good investment opportunity to enter labour market. Doeringer and Piore (1971), Rebitzer and Taylor (1991): flexible work might also be associated to "bad jobs".

- Gagliarducci (2005): the longer the time spent in fixed-term jobs, the lower the probability of eventually obtaining a permanent job. Berton et al. (2011) find a "port-of-entry" effect for specific types of temporary contracts

Wage differentials (1)

- ***Theory of compensating wage differentials***: a competitive labour market should reward any "adverse conditions" the workers face ➡ workers with the same level of competences should receive different wages if their working conditions are different (Rosen, 1974; Smith, 1979) ➡ Wage premium for temporary-workers.

- However, a **wage penalty for temporary workers** has been detected in most of empirical exercises (Stancanelli 2002; Picchio 2006; Brown and Session 2005; Picchio 2006, 2008; Kahn 2012; Dias da Silva and Turrini 2015).

- ***Insider* and *outsider* theory**: coexistence of two (or more) regimes of work: the *insider* group, including those workers employed under permanent contracts, receive higher wages than the *outsider* one that includes workers with fixed-term contracts (Lindbeck and Snower, 2001; Dolado et al. 2002).

- ***Heterogeneity of firms and sectors*** characterized by different contractual powers of workers in appropriating the extra-rents deriving from positions of temporary monopoly on the market (Pianta and Tancioni, 2008).

Wage differentials (2)

Wage differentials between types of workers are usually analysed in terms of the average wage of the two categories of workers.

- However, the temporary wage penalty might vary within the same type of workers (e.g. the graduates). If it is greater in the lower tiers of the wage distribution, a sticky floor effect is at work. Reversely, a glass ceiling effect means that the wage gap widens in the upper tail of the wage distribution.

- Mertens et al. (2007): the wage gap decreases as higher quantiles are considered, and fixed-term contract penalizes low-skilled workers more than high-skilled ones.

- Bosio (2009): a wider wage gap at the bottom of the distribution which slowly decreases at the top of the wage distribution.

- Gaeta et al. (2018) the gap is highly heterogeneous along the wage distribution confirming a glass ceiling hypothesis and that the over-education wage gap varies both according to the field of specialization of PhD holders and to the sector of employment.

The empirical strategy (1)

Mincer equation: $ln(W_i) = \alpha + \beta C_i + X'_i \gamma + \varepsilon_i$

Three methods:

- **One wage OLS equation** including the type of contract as a dummy variable in the equation.
- **Two wage OLS** equations, one for temporary and another for permanent employees.
- First a **probit selection equation**, second a **linear regression** including the derived correcting factor, or the **Heckman procedure** at two stages (Heckman, 1979; Davia and Hernanz, 2004) → only possible at the mean

OAXACA-BLINDER Decomposition

- To disentangle the endowments and coefficients effects in the explanation of wage differentials and to evaluate the presence of *discrimination* in the rate of return for temporary contracts (Oaxaca 1973; Blinder 1973).

$$\ln(\bar{W}_P) - \ln(\bar{W}_{FT}) = (\bar{X}_P - \bar{X}_{FT})\hat{\beta}^* + \{\bar{X}_P(\hat{\beta}_P - \hat{\beta}^*) + \bar{X}_{FT}(\hat{\beta}^* - \hat{\beta}_{FT})\}$$

where the first term on the right-hand side of equation is the "**explained component**", the second term is the "**unexplained component**" (i.e. the wage *discrimination*).

- This approach assumes **linearity**, can only be applied to the **mean of distribution**, and it is **sensitive to the choice of the base group.**
- To overcome the first and second limits → Alternative approach: **RIF decomposition** (Firpo *et al*., 2007).

The empirical strategy (2)

RIF-regression (Unconditional quantile regression)

$$RIF(Y_i;\ \hat{Q}_\tau) = Q_\tau + \frac{\tau - \mathbb{I}\{Y \leq \hat{Q}_\tau\}}{\hat{f}(Q_\tau)}$$

- $\hat{f}(Q_\tau)$ is the marginal density function of the dependent variable, Y, estimated by a kernel function,
- $\mathbb{I}\{Y \leq Q_\tau\}$ is a dummy variable that specifies whether the value of the dependent variable is greater or less than the quantile Q_τ.

$$RIF(Y_i;\ Q_\tau) = \alpha_\tau + \sum_j^J \beta_{j\tau}\, C_{ji} + \sum_{k=1}^n \gamma_{k\tau}\, X_{ki} + \varepsilon_i$$

- To show the results at different quantiles of the wage distribution
- Given the independence from the covariates, to compare among them the achieved results.

The empirical strategy (3)
RIF-decomposition

$$\Delta_\theta = E[RIF(W_P; Q_\theta)|X_P] - E[RIF(W_{FT}; Q_\theta)|X_{FT}] = \bar{X}_P\hat{\beta}_{P;\theta} - \bar{X}_{FT}\hat{\beta}_{FT;\theta}$$

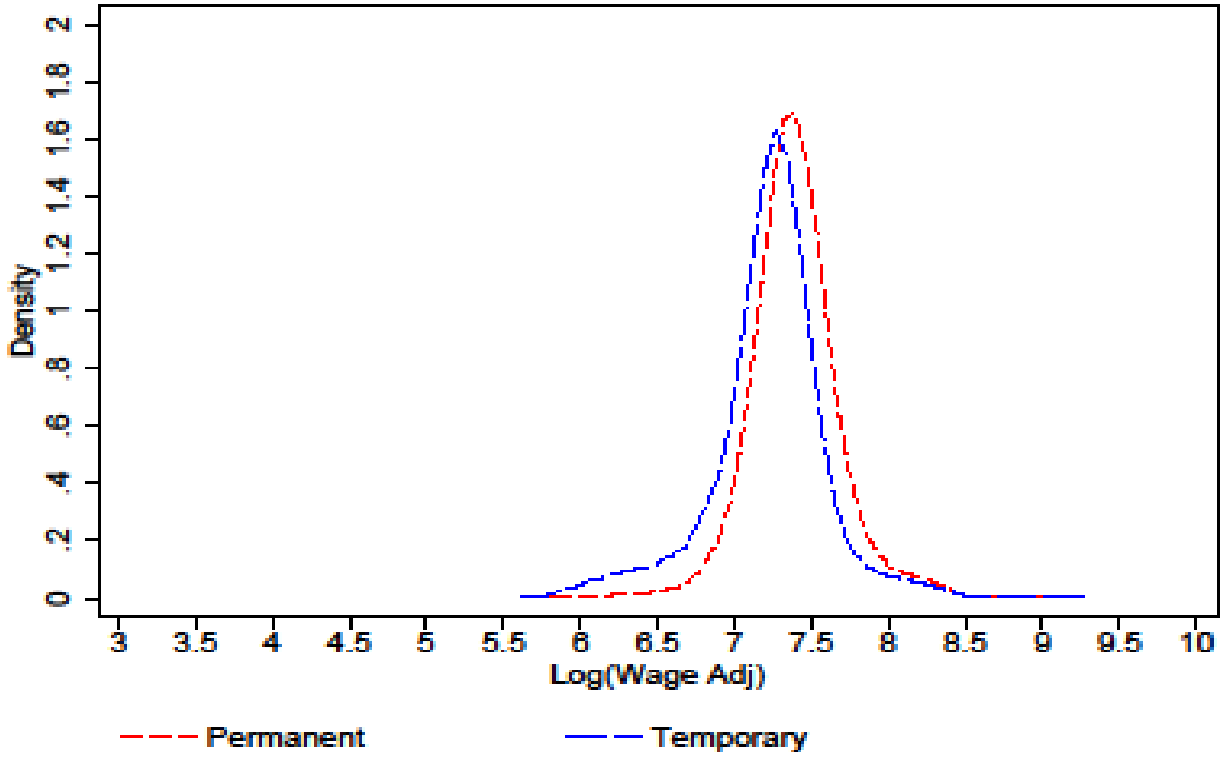
$$\widehat{\Delta}_\theta = (\bar{X}_P - \bar{X}_{FT})\hat{\beta}_{FT;\theta} + (\hat{\beta}_{P;\theta} - \hat{\beta}_{FT;\theta})\bar{X}_P$$

- **A positive value of the second term** indicates that the returns to temporary characteristics are lower than those of permanent workers and this obviously points out at "**discrimination".** A negative value implies the reverse.

The data

- **Source:** *" Inserimento Professionale dei Laureati "* (Istat).
- **Year:** 2015.
- **Sample:** 28.000 graduates employees (17.296 with permanent contract and 11.048 with a temporary contract).
- **Outcome Variable:** monthly net wage.
- **Main explanatory variable**: the dummy for the type of contract
- **Control variables (individual and occupational charcteristics)**: gender, type of degree, fields of degree, location of the University, part time/full time, sector of activity, occupation (ISCO08).

Descriptive statistics



	Percentiles of the wage distribution					
	10th		**50th**		**90th**	
	Mean	Sd	Mean	Sd	Mean	Sd
Permanent workers	634.38	140.63	1425.66	20.99	2737.23	681.95
Temporary workers	621.08	140.56	1425.75	21.51	2872.64	780.12

OLS and Unconditional Quantile Regression of log monthly wage

	(1)	(2)	(3)	(4)
	OLS	UQR 10	UQR 50	UQR 90
Temporary	-0.108***	-0.119***	-0.081***	-0.115***
	(0.008)	(0.018)	(0.008)	(0.013)
Engineering, Architecture, Agriculture	-0.0132	-0.095***	0.0223	0.055**
	(0.014)	(0.027)	(0.014)	(0.025)
Mathematics, Physics, Chemicals, Chemistry, Biology	-0.022*	-0.061**	0.021	-0.047**
	(0.013)	(0.025)	(0.014)	(0.02)
Economics, Statistics and Law	-0.0236*	-0.110***	0.003	0.0510***
	(0.012)	(0.026)	(0.013)	(0.019)
Letters, philosophy, languages, psychology	-0.126***	-0.202***	-0.088***	-0.047**
	(0.015)	(0.038)	(0.015)	(0.021)
Macro region of the University (Central Italy)	-0.043**	-0.063*	-0.009	-0.076***
	(0.019)	(0.035)	(0.015)	(0.029)
Macro region of the University (Southern Italy)	-0.053***	-0.009	-0.040**	-0.108***
	(0.018)	(0.033)	(0.017)	(0.032)
Work in South or Islands	-0.157***	-0.221***	-0.120***	-0.069***
	(0.016)	(0.039)	(0.015)	(0.021)
Individual Characteristics	YES	YES	YES	YES
Job Characteristics	YES	YES	YES	YES
Sectoral Dummies	YES	YES	YES	YES
ISCO Dummies	YES	YES	YES	YES
Constant	7.517***	7.243***	7.360***	8.090***
	(0.084)	(0.139)	(0.114)	(0.217)
R-sqr	0.25	0.126	0.195	0.121
Number of observations	15,719	15,719	15,719	15,719

RIF detailed decomposition at different quintile (1)

	10th Percentile	50th Percentile	90th Percentile
Overall			
Wage Gap (Unadjusted)	0.359***	0.130***	0.173***
	(0.018)	(0.006)	(0.011)
Total Explained	0.108***	0.065***	0.055***
	(0.013)	(0.005)	(0.008)
Total Unexplained	0.251***	0.065***	0.117***
	(0.023)	(0.007)	(0.013)

- More than half of the wage gap is due to unexplained characteristics;
- The gap is higher among low-paid jobs than high-paid jobs.
- Such discrimination may be linked to wage policies pursued by Italian firms and aimed to set different wages for temporary and permanent workers – although they have very similar occupational profiles (Pianta and Vaona 2007).

RIF detailed decomposition at different quintiles (2)

	10th Percentile	50th Percentile	90th Percentile
Explained			
Female	0.006***	0.006***	0.009***
	(0.002)	(0.001)	(0.002)
Field of study (Engineering, Architecture, Agriculture)	-0.001	0.001	0.005**
	(0.002)	(0.001)	(0.002)
Field of study (Mathematics, Physics, Chemicals Chemistry, Biology)	0.001	0	-0.001
	(0.001)	(0)	(0.001)
Field of study (Economics, Statistics and Law)	0.001	0	-0.003***
	(0.001)	(0)	(0.001)
Field of study (Letters, philosophy, languages, psychology)	0.016***	0.010***	0.004
	(0.004)	(0.002)	(0.002)
Macro region of the University (Central Italy)	0.001	0.002**	0.003*
	(0.001)	(0.001)	(0.002)
Macro region of the University (Southern Italy)	-0.001	-0.001**	-0.004***
	(0.001)	(0.001)	(0.002)
Work in South or Islands	-0.005***	-0.003***	0
	(0.002)	(0.001)	(0.001)

RIF detailed decomposition at different quintiles (3)

	10th Percentile	50th Percentile	90th Percentile
Unexplained			
Female	0.021	-0.004	-0.027*
	(0.02)	(0.007)	(0.014)
Field of study (Engineering, Architecture, Agriculture)	0.037***	0.004	0.018*
	(0.013)	(0.005)	(0.009)
Field of study (Mathematics, Physics, Chemicals, Chemistry, Biology)	0.019***	0.003	0
	(0.005)	(0.002)	(0.004)
Field of study (Economics, Statistics and Law)	0.058***	0.01	0.054***
	(0.02)	(0.008)	(0.013)
Field of study (Letters, philosophy, languages, psychology)	0.029	-0.004	0.012
	(0.018)	(0.006)	(0.009)
Macro region of the University (Central Italy)	0.022	-0.010*	-0.02
	(0.022)	(0.006)	(0.012)
Macro region of the University (Southern Italy)	-0.003	-0.004	-0.020*
	(0.015)	(0.005)	(0.011)
Work in South or Islands	0.019*	-0.005	0.001
	(0.011)	(0.003)	(0.006)
Number of observations	15,759	15,759	15,759

OLS decomposition adjusted for sample selection bias

	OLS
Wage Gap (Adjusted)	0,132***
	(0,007)
Total Explained	0,054***
	(0,004)
Total Unexplained	0,139***
	(0,006)
Mills Ratio	0,015***
	(0,002)
Num. Obs.	28.345

- When we perform the RIF-regression approach we can not account for sample selection leading to a potential overestimate of the wage gap and of the discrimination effect → however correcting for sample selection through the Heckman procedure, at the mean the wage gap remains and accounts for 13%.

Conclusions and future research

- A high level of education has usually played an important role in protecting individuals against unemployment and increases the probability to find a "good job".
- However, over the past decades the increasing flexibilization of European labour markets has eroded the protection effect of higher education against precarious work and unemployment
- A growing share of young graduates are increasingly employed in temporary and low-qualified positions
- Temporary graduate workers are paid less, and this is due to a sort of discrimination effect. No observables characteristics can explain the wage differential. A pure discrimination effect emerges
- For workers graduated in Economics, Statistics and Law, discrimination increases at the bottom and at the top of distribution.

Conclusions and future research

- The analysis indicates that steps should be taken to ensure that the discrimination caused by the type of contract does not exacerbate problems already exist in Southern Italy for graduates in the labor market

- The approach used in this analysis is not able to isolate contributions in wage dispersion due to the place of work nor we are able to control for unobservable features of workers not varying over time and leading to an upward bias of our estimates.

- A future line of research could be to implement the same approach to an employer-employee database that helps to overcome these drawbacks.

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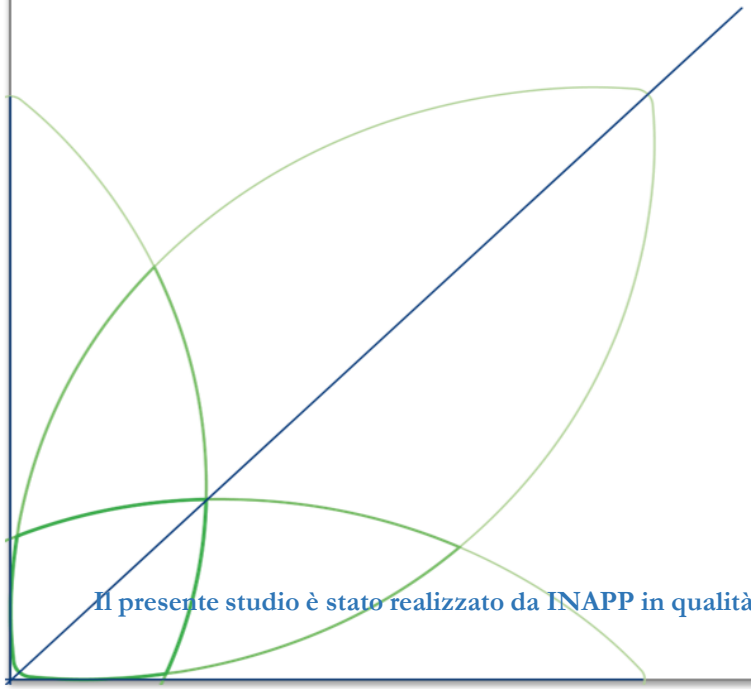

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