

# Higher educated, lower paid: The fixed-term wage penalty among graduates

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## Motivation

- European countries experienced a higher increase of **temporary employment**.
- In 2018, in EU, temporary employees account for 16% of total employment; in Italy, 15,5%.

**% of Temporary Employment 2000-2017**  
(wage and salary workers)



## Motivation

- **Different working conditions** for workers with the same level of competence should result in a **wage premium** for temporary workers to off set the disadvantages (Rosen 1986; Amuedo-Dorantes and Serrano-Padial 2007).
- The empirical evidence shows a **wage penalty for temporary jobs** (Stancanelli 2002; Brown and Session 2003; Picchio et al. 2006; Kahn 2012; Comi and Grasseni 2012; da Silva et al. 2015; Kahn 2016).
- The increase in temporary contracts for graduates is especially pronounced for early career researchers and can be observed across many sectors and countries (Schuster and Finkelstein 2006; Waaijer 2015).

## Two main contributions of our paper

- We provide an analysis of the **wage gap between permanent and fixed-term workers** emphasizing the differences **along the entire wage distribution**.
- We focus on **graduate workers** taking advantage of an ad-hoc survey run by the Italian National Institute of Statistics (Istat)  
→ *Indagine campionaria sull'Inserimento Professionale dei Laureati*

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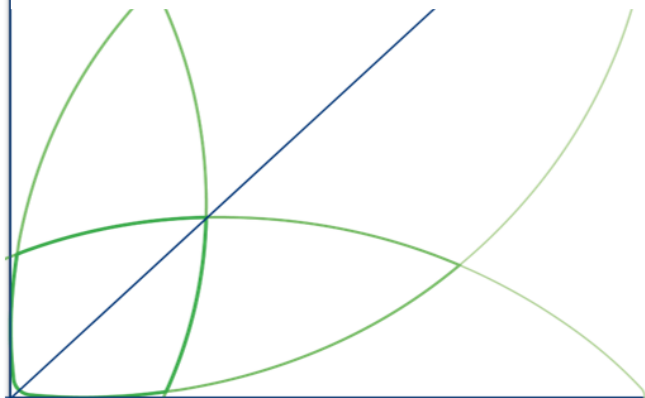
- Related literature
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## Related Theoretical Literature

- ***Insider and outsider theory***: coexistence of two (or more) regimes of work: the *insider* group including those workers employed under permanent contract and receiving higher wages; *outsider* group including workers with fixed-term contracts and receiving lower wages (Lindbeck and Snower, 2001; Dolado et al. 2002)
- ***Theory of compensating wage differentials***: a competitive labour market should reward any “adverse conditions” the workers face → workers with the same level of competence should receive different wages if their working conditions are different (Rosen, 1974; Smith, 1979).
- Fixed-term contract as ***screening device***: for a profit-maximising firm can be useful to hire both temporary and permanent workers paying a lower wages to temporary workers in case of high monitoring costs and uncertainty of product demand (Rebitzer and Taylor, 1991; Portugal and Varejão, 2010; Faccini, 2014).
- ***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).

## Related Empirical Literature

- A **positive wage differential in favor of permanent workers** (Jimeno and Toharia, 1993; Bentolila and Dolado, 1994; Booth and Francesconi, 2002; Blanchard and Landier, 2002; Picchio, 2008; Bosio, 2014; Dias da Silva and Turrini, 2015).
- The **contract discrimination is higher at the bottom** of the wage distribution and tend to decrease as considering higher quantiles (Mertens e McGinnity, 2005; Barbieri e Cutuli, 2009; Bosio, 2009; Comi and Grasseni, 2012).



## The empirical strategy (1)

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

### 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  $Q_\tau$ .

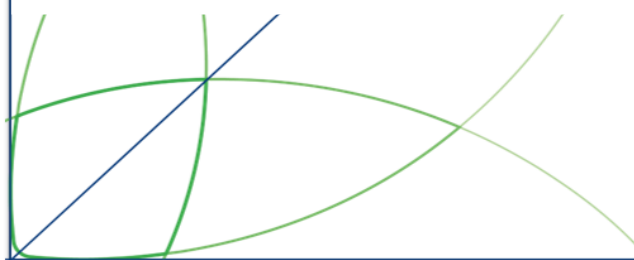
$$\Delta_\theta = E[RIF(W_P; Q_\theta)|X_P] - E[RIF(W_{FT}; Q_\theta)|X_{FT}] = \bar{X}_P \hat{\beta}_{P;\theta} - \bar{X}_{FT} \hat{\beta}_{FT;\theta}$$

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

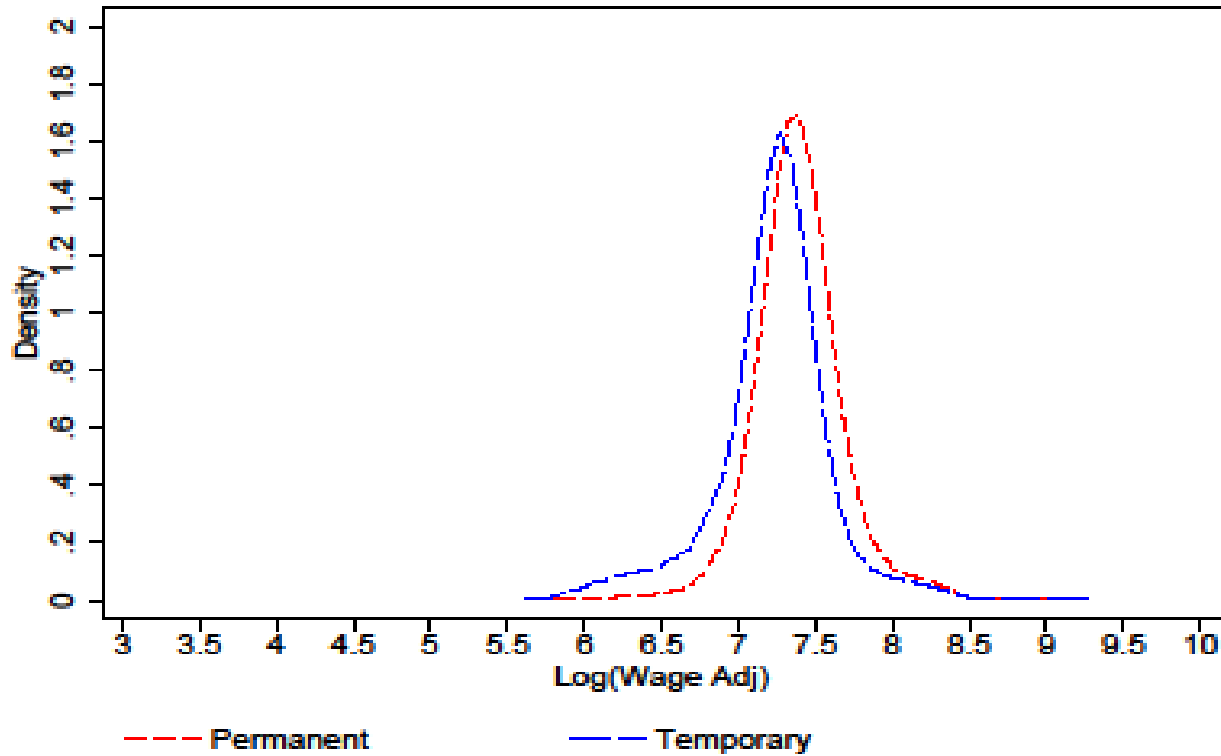
- **A positive value of the second term** indicates that the returns to temporary characteristics are lower than those of permanent and this obviously points out at “**discrimination**”. A negative value implies the reverse.

## 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).
- **Variable of interest:** monthly net wage.
- **Control variables (individual and occupational characteristics):** gender, type of degree, fields of degree, 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
<b>Permanent workers</b>	634.38	140.63	1425.66	20.99	2737.23	681.95
<b>Temporary workers</b>	621.08	140.56	1425.75	21.51	2872.64	780.12

## Main results: OLS and Unconditional Quantile Regression of log monthly wage Contract wage penalty

		10th Percentile	50th Percentile	90th Percentile
	OLS	UQR	UQR	UQR
Temporary	-0.143*** (0.007)	-0.161*** (0.048)	-0.118*** (0.007)	-0.113*** (0.012)
Individual characteristics	Yes	Yes	Yes	Yes
Job characteristics	Yes	Yes	Yes	Yes
Sectoral Dummies	Yes	Yes	Yes	Yes
Isco Dummies	Yes	Yes	Yes	Yes
Obs.	25,171	25,171	25,171	25,171

## RIF Detailed Decomposition at different quantile

	10th Percentile	50th Percentile	90th Percentile
Wage Gap (Unadjusted)	0.370*** (0.014)	0.132*** (0.004)	0.167*** (0.011)
Total Explained	0.086*** (0.008)	0.026*** (0.003)	0.035*** (0.007)
Total Unexplained	0.284*** (0.019)	0.106*** (0.005)	0.132*** (0.013)
<b>Endowment Effect</b>			
Female	0.011*** (0.002)	0.010*** (0.001)	0.017*** (0.002)
Tenure	0.147*** (0.035)	0.003 (0.011)	-0.046 (0.03)
Tenure2	-0.108*** (0.028)	0.005 (0.009)	0.053** (0.025)
Master's degree	0.005** (0.002)	0.006*** (0.001)	0.010*** (0.003)
Part-time	0.013*** (0.003)	-0.003*** (0.001)	-0.007*** (0.002)
Work in the South	-0.009*** (0.002)	-0.004*** (0.001)	-0.005*** (0.001)
Age Class dummies	Yes	Yes	Yes
Sectoral dummies	Yes	Yes	Yes
<b>Coefficient Effect</b>			
Female	-0.019 (0.022)	-0.001 (0.007)	-0.01 (0.017)
Tenure	-0.216** (0.095)	-0.105*** (0.026)	-0.106* (0.064)
Tenure2	0.156*** (0.06)	0.070*** (0.017)	0.075* (0.042)
Master's degree	-0.033** (0.014)	0.002 (0.005)	-0.006 (0.011)
Part-time	-0.017 (0.012)	0 (0.003)	-0.056*** (0.008)
Work in the South	-0.004 (0.012)	-0.001 (0.003)	-0.004 (0.007)
Age Class dummies	Yes	Yes	Yes
Sectoral dummies	Yes	Yes	Yes
Constant	0.264 (0.182)	0.240*** (0.038)	0.483*** (0.084)

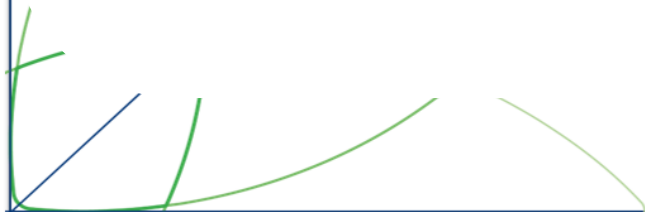
## OLS decomposition adjusted for sample selection bias

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

- When we perform 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%.
- The unexplained component of the wage gap still remains as the main driver of the pay penalty.
- The sticky floor pattern is evident.

## Conclusions

- Different factors contribute to the contract-wage gap along the wage distribution.
- By splitting the various categories in an **endowments** and a **coefficients** part, differences in the contribution to the gap at different quantiles are found.
- We detect a **sticky floor pattern**, i.e. significant differences between the wage gap at the bottom of the distribution. In line with this, the wage penalty of being a temporary workers is highest at the bottom.
- Still the selection bias remains implying an overestimate of the unexplained part of the wage differential both at the bottom and the top of the wage distribution, while it might be underestimated at the median of the wage distribution.
- It is important to consider contract-wage gap throughout the wage distribution and hence to go beyond the mean. This may be particularly relevant, when it comes to policy implications.





# THANK YOU FOR YOUR ATTENTION!

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