Pay dynamics of work placements: The case of economics graduates

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Motivation

- Increasingly competitive graduate labour market.
- HE institutions are under pressure to better prepare students for the labour market $\rightarrow$ work placements.
- Many employers use internships and placements as a mechanism to recruit graduates.
  - $\hookrightarrow$ 50% of interns and placement students being recruited into graduate jobs by the same employer (ISE, 2022).
- Study's main objective: Provide evidence of the potential monetary benefits for graduates who continue working for their placement employer.

Foot-in-the-door effect

Hypothesis (H1)

Students undertaking a placement and continuing to work for the same employer after leaving university earn higher salaries than those who work for a different employer.

Background:

- Development of human, social and identity capital during work placement facilitates the transition to graduate employment with the same employer.
  Adapted from Tomlinson (2017) and Inceoglu et al. (2019).
- To the best of our knowledge, there is *no empirical evidence*.

Persistence effect of low-pay work experience

Hypothesis (H2)

Students on low-pay placements have high probability of remaining in low-pay graduate employment.

Background:

- Weak human capital development during a low-quality (low-pay) placement may lead to low-pay persistence.
- Also, low-pay placement as a signal of low worker productivity.
- Low-pay persistence can increase life-time earnings inequality.
- Empirical evidence that being in low-pay employment increases the chances of future low-pay employment in Germany (Uhlendorff, 2006), Australia (Fok et al., 2015), and the UK (Cai et al., 2018).

Stepping-stone effect of low-pay work experience

Hypothesis (H3)

Students on low-pay placements transition to high-pay graduate employment.

Background:

- Low-pay work experience → strong human capital growth → a more employable graduate.
- Also, identity change while on placement → a more focused graduate.
- Empirical evidence that current low pay can influence the probability of moving to higher pay in the future in Germany (Uhlendorff, 2006), Australia (Fok et al., 2015), and the UK (Cai et al., 2018).

Data: overview

- University's student records: demographic characteristics, educational background, academic achievement, programme enrolments, work placement participation, students' CVs.
- DLHE and GO surveys: earnings and job characteristics.
- Three cohorts of graduates in economics who did a work placement: 2016/17, 2017/18, 2018/19.

  Total of 557 graduates; 265 did a work placement (47.6%).
- Also, sample size depends on the response rates of survey participants.

  58.9% (156/265) responded to the earnings question.

  64.5% (171/265) responded to the employer's name question.

Data: variables

- Real earnings: annual inflation-adjusted graduate salary.
- Same employer: whether graduate employer is the placement employer or not.
- Demographics: gender; age; fee status; ethnicity.
- Academic achievement: average mark in first, second and final year; degree mark.
- Graduate job characteristics: job location; industrial sectors (economic/finance/banking; professional services/accounting; technology/government; other) – dummy variables.
- Job experience: number of different job experiences before placement.
- Accomplishments: whether a student reported a notable achievement (e.g. an award or a high score Bloomberg Aptitude test) in the CV.

Methodology

Effect of **employer persistence** (same employer) on earnings:

1. Linear regression model:
   $ln(w_i) = \alpha + \beta\, same\ employer_i + \mathbf{x_i'}\gamma + \mu_i$,

   where w_i is graduate i's real salary, $same\ employer_i$ is a dummy for placement-graduate employer, $\mathbf{x_i'}$ is a set of covariates, and μ_i is the error term.

2. Quantile regression model: $\text{Quant}_\theta(\ln(w_i)|\mathbf{x_i}) = \mathbf{x_i'}\beta_\theta$,

   where $\text{Quant}_\theta(\ln(w_i)|\mathbf{x_i})$ denotes the conditional quantile of $\ln(w_i)$, conditional on the covariates $\mathbf{x_i}$ including $same\ employer_i$.

Methodology

Low-pay persistence and **stepping-stone** effects:

1. Using quartiles, we create three levels of graduate salary (w^G): *Low* ($w^G = 1$), *Medium* ($w^G = 2$), and *High* ($w^G = 3$).
2. Ordered logit model:

   $Pr(w_i^G = j) = F(\alpha_j - \mathbf{x_i'}\beta) - F(\alpha_{j-1} - \mathbf{x_i'}\beta)$, where $\mathbf{x_i'}$ includes demographics, job characteristics and placement salary.

   Placement salary: $w^P \in \{Low, Medium, High\}$.

3. Predicted probabilities for each of the three outcomes.

Main result: Employer persistence has a positive effect on earnings (10.2% salary gap).

Table: Effect of employer persistence on earnings.

Controls	M1	M2	M3	M4	M5
same employer	0.1236***	0.1242***	0.1246***	0.1025***	0.1023***
	(0.0385)	(0.0370)	(0.0368)	(0.0356)	(0.0363)
	0.002	0.001	0.001	0.005	0.006
Demographics	No	Yes	Yes	Yes	Yes
Academic achievement	No	No	Yes	Yes	Yes
Graduate job characteristics	No	No	No	Yes	Yes
Job experience	No	No	No	No	Yes
Accomplishments	No	No	No	No	Yes
Observations	127	127	127	124	122
F	10.2924	3.1968	3.1678	3.7234	3.0694
p-value	0.0017	0.0096	0.0064	0.0002	0.0009
R^2	0.0772	0.1390	0.1465	0.2224	0.2380

Note: The table shows the OLS regression coefficients of the *same employer* variable, and their robust standard errors in parentheses. The response variable is the natural logarithm of real salaries. *** denotes significance at the 1% level.

Robustness checks and extensions

We performed a series of robustness checks and the results from M5 still hold. For instance:

- Also controlling for school background or degree programme.
- Alternative definitions of job experience and industry sectors.

We uncovered the following results from the quantile regression analysis at the top 90th percentile:

- *employer persistence* effect is stronger: 12.4% salary gap.
- *male* graduates earn 8.4% more than female graduates.
- *accomplishments* effect is stronger: 10.7%.

Main results:

Low-pay persistence effect: 28.9%;

Stepping-stone effect of low-pay placement: 20.3%.

Table: Transition probabilities (%).

Placement Salary (status at $t-1$)	Graduate Salary (status at t)		
	Low	Medium	High
Overall (N=125)			
Low	28.9	50.7	20.3
Medium	27.9	50.3	21.8
High	19.8	49.9	30.4

Note: The table shows the ordered logit model estimated probabilities of transitioning from a placement salary $s \in \{Low, Medium, High\}$ to a graduate salary $S \in \{Low, Medium, High\}$. The model conditions on the placement salary. Other covariates included in the model: age, gender, fee status, graduate job location, graduate industries (professional and accounting, technology and government, other).

Main results: Low-pay persistence and stepping stone effect favour the same-employer group.

Table: Transition probabilities (%).

Placement Salary (status at $t-1$)	Graduate Salary (status at t)		
	Low	Medium	High
Same employer (N=31)			
Low	18.0	52.3	29.8
Medium	16.8	49.7	33.6
High	11.0	42.2	46.7
Different employer (N=94)			
Low	30.8	50.5	18.7
Medium	31.8	50.5	17.8
High	24.1	53.7	22.2

Note: The table shows the ordered logit model estimated probabilities of transitioning from a placement salary $s \in \{Low, Medium, High\}$ to a graduate salary $S \in \{Low, Medium, High\}$. The model conditions on the placement salary. Other covariates included in the model: age, gender, fee status, graduate job location, graduate industries (professional and accounting, technology and government, other), same employer.

Concluding remarks

This study attempts to provide evidence on the potential benefits for economics graduates recruited by their placement employers.

Main findings:

1. Placement students being recruited into graduate jobs by the same employer earn on average 10.2% more than those recruited by a different employer.
2. Students on low-pay placements have 28.9% chances of remaining in low-pay graduate employment.
3. Students on low-pay placements have 20.3% chances of moving into high-pay graduate employment.
4. Heterogeneity of low-pay persistence and stepping stone effects: favour the same-employer group.

As usual, there are some limitations/scope for further research...

- Limited *sample* from a specific department/discipline.
- We focused on *short-term* effects (upon graduation) rather than medium/long-term effects (five or ten years after graduation).
- We do not have information on graduate *job applications and offers*. For example, even if a student is offered a graduate job with the placement employer, the student can decide to take another employment.

Finally...

Thank you for your attention!

Any questions?

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