Determinants of Student Salaries in Professional Training Year

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Motivation

- **Increasing costs** in HE for many undergraduate students.
  - In the UK: ↑ tuition fee cap (£3,375 to £9,000/9,250 in 2012/2017); and maintenance grants → loans in 2016.
  - In Ireland: annual fees of up to €3,000; ↑ living costs.

- The **work placement year** can help with the financial burden on students:
  - work placements are often **remunerated**.
  - placement students might receive **graduate job offers**.

- This study focuses on placements offered to students of economics in a UK university, the University of Surrey.

- **Aim: identify key determinants of placement salaries utilising a diverse set of sources.**

Related literature

- Previous studies have found:

  1. Positive effects of placement experience on employability outcomes (e.g. Knouse and Fontenot, 2008; Nunley et al., 2016; Silva et al., 2018) and skills (e.g. Knight and Yorke, 2004; Reddy and Moores, 2012).

  2. Positive effects of degree performance on labour market outcomes (e.g. Di Pietro, 2017; Feng and Graetz, 2017).

- Gap: academic performance and placement market outcomes.

- Wang and Crawford (2018) $\rightarrow$ academic performance is the *only* significant factor in securing a highly-paid placement.

  - Our study differs in focus, data, sample and methodology.

  - We present new and additional evidence on this topic.

Methodology

❶ Linear regression model (OLS): $\ln(y_i) = \beta_0 + \mathbf{x'_i}\boldsymbol{\beta} + \epsilon_i$,

where y_i is individual i's salary, $\mathbf{x'_i}$ is a set of control variables and ϵ_i is an individual-level error term.

**❷ Quantile regression model (QR):** $\tau = \Pr(y_i < q_i(\tau)|\mathbf{x'_i})$,

where τ is the quantile and $q_i(\tau)$ is the model-based quantile. We follow Machado and Santos Silva (2013). [Standard errors and t-statistics are asymptotically valid under heteroskedasticity and misspecification of the quantile regression function.]

Data: Sampling

- Three cohorts of placement students: 15/16; 16/17; 17/18.
  - 15/16: 104; 16/17: 119; 17/18: 64 → total of 287 students.

- University admin records: demographic characteristics; enrolment and academic information.

- Employability and career department: placement characteristics (e.g. employer, salary).

- CV data: job experience, accomplishments, language.

- Due to some missing information (e.g. missing CVs or salaries) our final sample includes **274** placement students.

Data: Response variable (annual real salary)
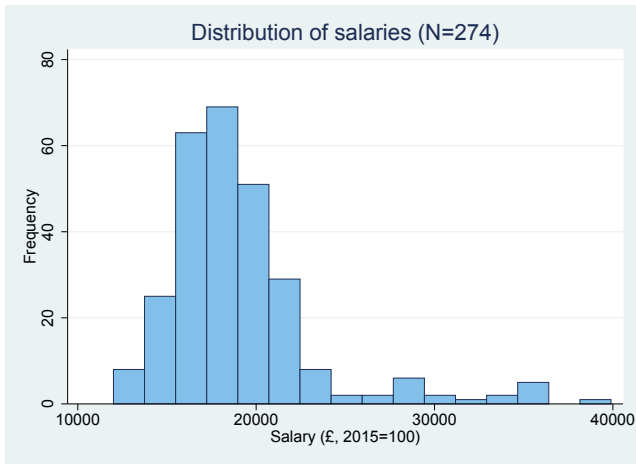
Data: Explanatory variables

- Average first-year mark;
- Job experience: number of different jobs before placement;
- Job location (London = 1);
- Gender (= 1 if male), age;
- Fee status (= 1 if UK, = 0 if EU or overseas);
- Ethnicity (dummies for 'Asian' and 'Other');
- Programme (Business Economics BSc, Economics and Finance BSc, and Economics and Mathematics BSc);
- Accomplishments (= 1 if made 'notable' achievement);
- Language (= 1 if more than one language is spoken);
- Industry type (dummies for 'Economic' and 'Technology').

Table with descriptive statistics ▸ here

Results: OLS ▸ here

- Consistent and positive relationship between salaries and first-year academic performance.

- Likewise for job location (the 'London effect').

- Placement students in the 'economic' sector earn more.

- Weaker results include enrolment in the Econ. and Finance programme, job experience and language.

- No evidence of gender wage gap.

- Very weak or non-existent associations with: accomplishments, age, nationality and ethnicity.

- Lastly, interactions exhibit limited statistical significance and introduced collinearity problems.

$\hookrightarrow$ Model 10 is more suitable for our data set.

Results: QR ▸ here

- OLS tends to overestimate the effect of the covariates in comparison with Q(0.5).

- The effects of first-year academic performance and job location are the highest at the top quantile.

- Strong association of economic sector and placement earnings at the top quantile.

- Job experience appears to be relevant at top quantiles.

- The accomplishments' coefficient is large and statistically significant at the top quantile.

- Enrolments in different programmes show non-existent or weak associations with placement earnings.

- Gender, age, nationality and ethnicity show non-existent or weak associations with placement earnings.

Concluding remarks

- This study is a one of the first attempts to explore *placement* labour market outcomes.

Key empirical findings:

❶ The average first-year mark is a strong predictor of placement earnings.

❷ In addition, job location and type of industry are important determinants of placement salaries.

❸ Highly-paid placements are also associated with job experience.

❹ Demographic factors (e.g. gender and nationality) do not appear to determine placement salaries.

Finally . . .

Any questions?

Thank you for your attention!

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Table 1: Sample descriptive statistics.

Variable	Full sample				Quantiles (mean values)		
	Mean	S.D.	Min.	Max.	<Q10	Q25-Q75	>Q90
Salary (real)	19,027	4,222	12,000	39,894	14,315	18,927	29,165
First-year mark	70.58	7.25	51	88	66.51	70.97	73.01
Age	18.29	0.81	17	27	18.29	18.32	18.48
Gender (male)	0.69	0.46	0	1	0.61	0.73	0.7
Fee status (UK)	0.86	0.35	0	1	0.79	0.86	0.85
Ethnicity							
Asian	0.22	0.42	0	1	0.32	0.24	0.26
Other	0.15	0.36	0	1	0.18	0.13	0.19
Programme							
Business Economics BSc	0.1	0.3	0	1	0.25	0.07	0.11
Economics and Finance BSc	0.41	0.49	0	1	0.39	0.43	0.59
Economics and Mathematics BSc	0.05	0.21	0	1	0.04	0.05	0
Job location (London)	0.58	0.5	0	1	0.32	0.59	1
Job experience	2.78	1.36	0	8	2.71	2.82	3.37
Accomplishments	0.3	0.46	0	1	0.32	0.33	0.26
Language	0.39	0.49	0	1	0.21	0.46	0.41
Industry							
Economic sector	0.35	0.48	0	1	0.07	0.38	0.7
Technology sector	0.17	0.38	0	1	0.5	0.16	0.04
Observations			$N = 274$		28	141	27

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Model comparison: M1 to M12. Dependent variable: ln(salary)

	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
First-year mark	0.0068*** (0.0017)	0.0052*** (0.0016)	0.0052*** (0.0016)	0.0053*** (0.0016)	0.0053*** (0.0016)	0.0053*** (0.0016)	0.0058*** (0.0017)	0.0059*** (0.0017)	0.0047*** (0.0017)	0.0046*** (0.0017)	0.0064*** (0.0018)	0.0123*** (0.0039)
Job experience	0.0248*** (0.0091)	0.0159* (0.0085)	0.0161* (0.0086)	0.0161* (0.0086)	0.0162* (0.0087)	0.0161* (0.0088)	0.0140 (0.0088)	0.0144 (0.0088)	0.0147* (0.0085)	0.0153* (0.0086)	0.0151* (0.0085)	0.1683** (0.0845)
Job location (London)		0.1498*** (0.0191)	0.1498*** (0.0192)	0.1496*** (0.0192)	0.1496*** (0.0192)	0.1495*** (0.0193)	0.1441*** (0.0191)	0.1421*** (0.0190)	0.1124*** (0.0186)	0.1073*** (0.0194)	0.1067*** (0.0194)	0.1051*** (0.0190)
Gender (Male)			0.0037 (0.0220)	0.0035 (0.0220)	0.0035 (0.0220)	0.0044 (0.0222)	-0.0022 (0.0234)	0.0048 (0.0232)	-0.0009 (0.0226)	0.0016 (0.0227)	-0.0018 (0.0221)	-0.0058 (0.0220)
Age				0.0128 (0.0128)	0.0127 (0.0128)	0.0126 (0.0130)	0.0142 (0.0119)	0.0133 (0.0125)	0.0137 (0.0111)	0.0135 (0.0111)	0.0153 (0.0104)	0.0177* (0.0103)
Fee_status (UK)					-0.0012 (0.0351)	0.0020 (0.0379)	0.0131 (0.0370)	0.0320 (0.0381)	0.0324 (0.0371)	0.0328 (0.0370)	0.0306 (0.0372)	0.0307 (0.0369)
Ethnicity (Asian)						0.0032 (0.0273)	-0.0069 (0.0283)	-0.0215 (0.0300)	-0.0151 (0.0290)	-0.0131 (0.0292)	-0.0144 (0.0290)	-0.0158 (0.0288)
Ethnicity (Other)						0.0085 (0.0335)	0.0068 (0.0335)	-0.0089 (0.0364)	-0.0038 (0.0349)	-0.0013 (0.0349)	-0.0014 (0.0348)	-0.0037 (0.0352)
Programme (BE)							-0.0105 (0.0452)	-0.0134 (0.0457)	-0.0052 (0.0436)	-0.0031 (0.0436)	-0.0065 (0.0425)	-0.0074 (0.0428)
Programme (EF)							0.0428* (0.0240)	0.0426* (0.0244)	0.0456* (0.0242)	0.0460* (0.0243)	0.0426* (0.0239)	0.0414* (0.0235)
Programme (EM)							-0.0372 (0.0304)	-0.0354 (0.0321)	-0.0273 (0.0335)	-0.0256 (0.0326)	-0.0280 (0.0329)	-0.0299 (0.0322)
Accomplishments								-0.0023 (0.0218)	-0.0113 (0.0211)	-0.0125 (0.0212)	0.3848* (0.2311)	0.3264 (0.2214)
Language								0.0454 (0.0276)	0.0443* (0.0262)	0.0455* (0.0261)	0.0420 (0.0256)	0.0442* (0.0253)
Industry (Econ)									0.0864*** (0.0259)	0.0828*** (0.0262)	0.0794*** (0.0256)	0.0755*** (0.0251)
Industry (Tech)										-0.0252 (0.0229)	-0.0291 (0.0232)	-0.0364 (0.0231)
First-year mark.Accomplishments											-0.0057* (0.0033)	-0.0049 (0.0031)
First-year mark.Job Experience												-0.0022* (0.0012)
Constant	9.2852***	9.3385***	9.3347***	9.0945***	9.0963***	9.0889***	9.0160***	8.9959***	9.0629***	9.0786***	8.9231***	8.4647***

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Model comparison: OLS vs QR. Dependent variable: ln(salary)

	OLS	Q(0.1)	Q(0.25)	Q(0.5)	Q(0.75)	Q(0.9)
First-year mark	0.0046***	0.0034	0.0028*	0.0027**	0.0051***	0.0055**
	(0.0017)	(0.0023)	(0.0016)	(0.0013)	(0.0016)	(0.0024)
Job experience	0.0153*	0.0043	0.0089	0.0089	0.0273**	0.0282**
	(0.0086)	(0.0145)	(0.0072)	(0.0101)	(0.0107)	(0.0132)
Job location (London)	0.1073***	0.0691**	0.0672***	0.1036***	0.1536***	0.1795***
	(0.0194)	(0.0345)	(0.0207)	(0.0237)	(0.0263)	(0.0311)
Gender (Male)	0.0016	-0.0059	-0.0124	-0.0053	0.0214	0.0485
	(0.0227)	(0.0369)	(0.0210)	(0.0234)	(0.0276)	(0.0363)
Age	0.0135	0.0193	0.0236	0.0151	0.0174**	0.0032
	(0.0111)	(0.0349)	(0.0158)	(0.0220)	(0.0074)	(0.0201)
Fee_status (UK)	0.0328	0.1140	0.0230	0.0246	-0.0005	-0.0864**
	(0.0370)	(0.0857)	(0.0311)	(0.0317)	(0.0426)	(0.0426)
Ethnicity (Asian)	-0.0131	-0.0629	-0.0228	-0.0118	0.0083	0.0344
	(0.0292)	(0.1063)	(0.0273)	(0.0304)	(0.0346)	(0.0449)
Ethnicity (Other)	-0.0013	-0.0294	-0.0182	-0.0081	0.0562	0.0282
	(0.0349)	(0.0468)	(0.0347)	(0.0327)	(0.0503)	(0.0397)
Programme (BE)	-0.0031	-0.0363	-0.0316	-0.0405	-0.0500	-0.0347
	(0.0436)	(0.0424)	(0.0339)	(0.0382)	(0.0459)	(0.0570)
Programme (EF)	0.0460*	0.0480	0.0477*	0.0350	0.0275	0.0670
	(0.0243)	(0.0372)	(0.0254)	(0.0254)	(0.0329)	(0.0408)
Programme (EM)	-0.0256	0.0149	-0.0139	-0.0313	-0.0851**	-0.0495
	(0.0326)	(0.0616)	(0.0345)	(0.0376)	(0.0349)	(0.0371)
Accomplishments	-0.0125	0.0054	0.0020	-0.0093	-0.0024	-0.0576**
	(0.0212)	(0.0314)	(0.0240)	(0.0240)	(0.0298)	(0.0271)
Language	0.0455*	0.0620	0.0589**	0.0233	0.0037	0.0335
	(0.0261)	(0.0573)	(0.0251)	(0.0248)	(0.0311)	(0.0525)
Industry (Econ)	0.0828***	0.0637**	0.0325	0.0274	0.0203	0.2351***
	(0.0262)	(0.0332)	(0.0228)	(0.0266)	(0.0415)	(0.0832)
Industry (Tech)	-0.0252	0.0118	-0.0305	-0.0388	-0.0073	-0.0514*
	(0.0229)	(0.0416)	(0.0283)	(0.0316)	(0.0357)	(0.0287)
Constant	9.0786***	8.8814***	8.9945***	9.2290***	9.0303***	9.3725***