

For Some, Luck Matters More: The impact of the
Great Recession on Early Careers of Graduates from
Different Socio-Economic Backgrounds

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The paper in a slide

Research question

Whether graduating during a recession affects graduates from different socio-economic backgrounds in diverse ways.

Data

A HESA survey of UK graduates across the period 2003/2012.

Identification strategy

We compare the LM outcomes of graduates from different socio-economic backgrounds across different degrees and cohorts. We exploit the heterogeneous variation in unemployment across different fields of study due to the Great Recession.

Main findings

Low socio-economic status (SES) graduates suffer more than *high SES* graduates.

- (+) unemployed, (-) in education
- (+) part-time, non-professional and non-graduate jobs, (-) salary

Why? Some evidence of the importance of the quality of previous employment.

Why is it relevant?

- Higher Education (HE) seen as a leveler to guarantee better opportunities, but is it really?

"Formal equality in access does not guarantee equality of opportunity"
Prof. James Heckman

- The Great Recession offers a nice natural experiment to investigate whether the labour market outcomes of graduates of different SES are impacted differently by a tighter labour market.
- Why might we expect a different impact of graduating during the recession across SES? Differences in human capital, social network, financial resources, work experience.

This paper in the existing literature

Main contribution: we study the effect of graduating in a recession across different SES groups.

What we knew already:

- Graduating in a recession has long-lasting negative consequences (e.g. Kahn 2010, Oreopoulos et al. 2012)
- Low SES graduates fare worse in the labour market compared to their more advantaged peers (Crawford et al., 2016)

Data and sample

- Destination of Leavers from Higher Education (DLHE) survey graduation years 2002/3-2011/2
- British undergraduate (non-mature) students in all English universities
- Info on several socio-economic and demographic characteristics of graduates
- Info on degree studied, university attended, degree classification
- We know the activity status, the type of job and salary of graduates at 6 months (and 3.5 years) after graduation.

Empirical strategy

$$y_{ijdt} = \alpha + \beta U_{j,t-1} + \gamma SES_i + \delta U_{j,t-1} \times SES_i + \theta X_i + \mu_j \times t + \epsilon_j \times t + \nu_t + \rho_h + \tau_d + \zeta_{ijdt}. \quad (1)$$

i : graduate

j : field of study

d : local authority

t : graduation year

$U_{j,t-1}$: unemployment rate by field of study Fig.

- older graduates (Labour Force Survey)
- 6m before and 6m after graduation (12 months before the survey)
- innovative compared to other papers (they use regional U)

SES_i : SES index

Empirical strategy

$$y_{ijdt} = \alpha + \beta U_{j,t-1} + \gamma SES_i + \delta U_{j,t-1} \times SES_i + \theta X_i + \mu_j \times t + \epsilon_j \times t + \nu_t + \rho_h + \tau_d + \zeta_{ijdt}. \quad (2)$$

i : graduate

j : field of study

d : local authority

t : graduation year

θX_i : gender, ethnicity, disability, degree classification, distance between initial residence and university, unemployment rate at time of enrollment (in the local authority of residence of origin) and its interaction with SES.

Empirical strategy

$$y_{ijdt} = \alpha + \beta U_{j,t-1} + \gamma SES_i + \delta U_{j,t-1} \times SES_i + \theta X_i + \mu_j + \mu_j \times t + \nu_t + \rho_h + \tau_d + \zeta_{ijdt}. \quad (3)$$

i : graduate

j : field of study

d : local authority

t : graduation year

μ_j : field of study FE

$\mu_j \times t$: field of study specific time trends

ν_t : cohort FE

ρ_h : university FE

τ_d : local authority of residence of origin FE (we control for unemployment at enrollment).

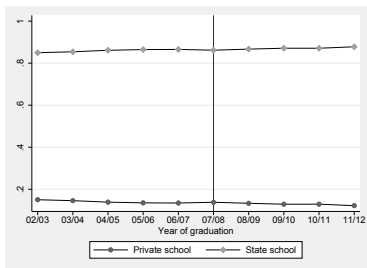
The SES index

- 1 Whether went to a private secondary school
- 2 Low Participation Neighborhood (LPN) in residence of origin (quintiles)
- 3 Index of Multiple Deprivation (IMD) in residence of origin (quintiles)

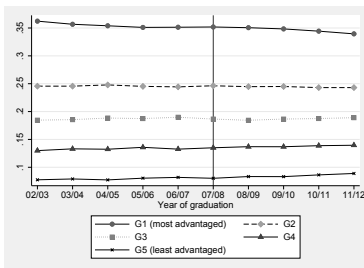
We combine 1-3 through PCA to obtain an SES index. Correlation Output PCA

This reflects the decrease in the SES-gap in HE participation over time.

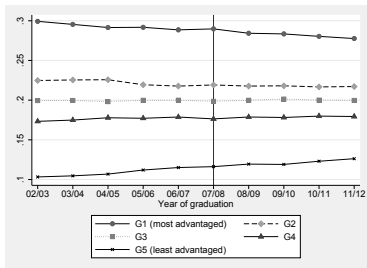
SES indicators and SES index



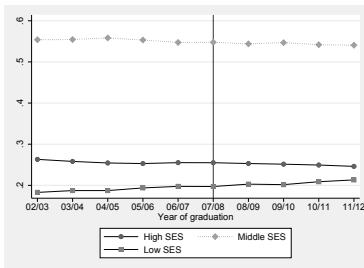
(a) School type



(b) LPN

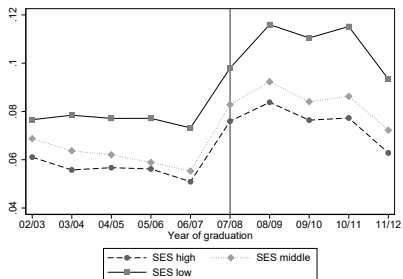


(c) IMD

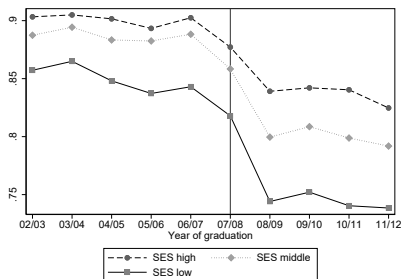


(d) SES Index

Outcomes



(a) Unemployed



(b) Full-time vs. part-time job

Unemployment: in the period pre-2008 low SES 7%, high SES 5.7%. In 2011 low SES >11%, high SES 7.8%. High-low SES gap before recession is 1ppt, it doubles after.

Activity status

	Academic programme	Professional programme	Full-time employment
MiddleSES \times U_{field}	-0.002 (0.001)	0.002 (0.002)	-0.005* (0.003)
LowSES \times U_{field}	-0.004* (0.002)	0.005 (0.005)	-0.011+ (0.006)
U_{field}	0.003* (0.001)	-0.002 (0.003)	0.000 (0.000)
Mean Y	0.078	0.073	0.527
N	1054865	1054865	1054865
	Part-time employment	Unemployed	Other activity
MiddleSES \times U_{field}	0.005** (0.001)	0.001 (0.001)	-0.001 (0.002)
LowSES \times U_{field}	0.009** (0.002)	0.006** (0.001)	-0.003 (0.003)
U_{field}	-0.002 (0.002)	-0.000 (0.001)	0.002 (0.002)
Mean Y	0.101	0.076	0.144
N	1054865	1054865	1054865

Notes: Standard errors are clustered by field of study in brackets (wild cluster bootstrap 999 reps).
 $+p < 0.10$ $*p < 0.05$ $**p < 0.001$.

Considering that the avg increase in graduate unemployment for older cohorts between 2007 and 2011 is 1.4pp (and the mean value for low SES is 0.065 and 0.094) \Rightarrow low SES -8.6% academic prog and +7.4% unemployment

Job attributes (subsample of employed only)

	Full-time vs. Part-time job	Professional occupation	Graduate job
MiddleSES \times U_{field}	-0.008** (0.002)	-0.009** (0.002)	-0.005** (0.002)
LowSES \times U_{field}	-0.016** (0.004)	-0.016** (0.005)	-0.007+ (0.004)
U_{field}	0.003 (0.003)	-0.000 (0.001)	-0.004 (0.003)
Mean Y	0.840	0.611	0.394
N	662085	661210	555265
	Permanent contract	Log Salary	
MiddleSES \times U_{field}	-0.001 (0.001)	-0.003+ (0.001)	
LowSES \times U_{field}	-0.001 (0.003)	-0.007** (0.003)	
U_{field}	0.001 (0.001)	-0.005 (0.004)	
Mean Y	0.899	9.889	
N	579815	291990	

Notes: Standard errors are clustered by field of study in brackets (wild cluster bootstrap 999 reps).
 $+p < 0.10$ $*p < 0.05$ $**p < 0.001$.

Low SES +2.8% part-time, -4% prof. occ.

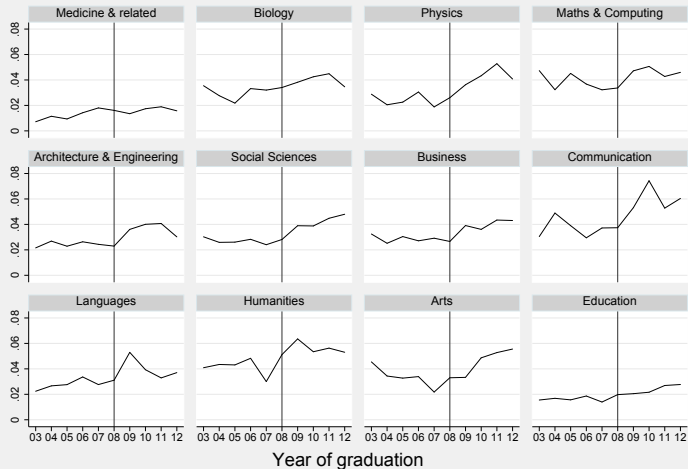
Mechanisms

- Whether staying in education:
 - ▶ Financial resources: low SES less likely to stay in education
- How and where found job:
 - ▶ Geographical mobility: low SES grad. found job further away from home but closer to uni
 - ▶ Social network: low SES less likely to have found a job through social network (caution)
 - ▶ Previous employer: low SES more likely to go back to previous employer when this was not a placement job.

Additional analysis

- Heterogeneity [Table](#)
- 3.5 years after graduation [Table](#)
- Different specifications I [Table](#)
- Different specifications II [Table](#)
- Controlling for tariff score [Table](#)

Unemployment by field of study



Graphs by field_ifs

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Correlation SES measures

	School	SEC of parents	LPN	IMD
School	1			
SEC parents	.286	1		
LPN	.350	.244	1	
IMD	.201	.253	.549	1

Notes: polychoric correlation matrix. Cohort of graduates from 2006 to 2012.

A Polychoric correlation matrix			
	IMD	School	LPN
IMD	1		
School	.242	1	
LPN	.560	.380	1

B Principal components			
PC	Eigenvalues	Proportion explained	Cum. Explained
1	1.803	0.601	0.601
2	0.780	0.260	0.861
3	0.417	0.139	1.000

C Scoring coefficients of PC1		
IMD	1	-0.740
	2	-0.210
	3	0.094
	4	0.398
	5	0.893
School	0	-0.812
	1	0.107
LPN	1	-0.716
	2	-0.103
	3	0.242
	4	0.560
	5	1.056

Notes: Cohort of graduates in 2012. Panel A shows the correlation between the three variables of interest. Panel B shows the three principal components obtained by the principal component analysis. Panel C shows the scoring coefficient of the first principal component for each variable and value.

Mechanisms

	(1) (log)Distance domicile-workplace	(2) Social network	(3) Employer website	(4) Agency
MiddleSES \times U_{field}	0.004 (0.003)	-0.005** (0.001)	-0.000 (0.004)	0.001 (0.002)
LowSES \times U_{field}	0.020* (0.008)	-0.014** (0.002)	0.004 (0.003)	0.004 (0.004)
U_{field}	-0.025* (0.011)	0.005** (0.002)	0.007 (0.007)	-0.003 (0.002)
N	621685	536925	536925	536925
	(5) (log)Distance HEI-workplace	(6) New employer	(7) Previous employer non-placement	(8) Previous employer placement
MiddleSES \times U_{field}	-0.027* (0.013)	-0.003** (0.001)	0.008** (0.002)	-0.005** (0.001)
LowSES \times U_{field}	-0.051* (0.022)	-0.005+ (0.003)	0.013** (0.004)	-0.008** (0.003)
U_{field}	0.027+ (0.015)	0.000 (0.001)	-0.005** (0.002)	0.005+ (0.002)
N	621750	527890	527890	527890

Notes: Standard errors are clustered by field of study in brackets (wild cluster bootstrap 999 reps). + $\rho < 0.10$ * $\rho < 0.05$ ** $\rho < 0.001$.

Heterogeneity

<i>Activity status:</i>	Academic prog.	Prof. prog.	Full-time emp.	Part-time emp.	Unemployed	Other
	I=STEM vs. non-STEM					
MiddleSES \times U _{field} \times I	-0.001 (0.002)	0.008* (0.003)	-0.001 (0.006)	0.001 (0.002)	0.001 (0.001)	-0.008** (0.002)
LowSES \times U _{field} \times I	0.001 (0.006)	0.017* (0.007)	-0.012 (0.010)	0.002 (0.004)	0.004* (0.002)	-0.011** (0.003)
N	1054865	1054865	1054865	1054865	1054865	1054865
	I=High vs. low specialization degree					
MiddleSES \times U _{field} \times I	0.004* (0.002)	0.008** (0.003)	-0.010** (0.003)	0.002 (0.002)	0.003** (0.001)	-0.006** (0.002)
LowSES \times U _{field} \times I	0.010** (0.004)	0.017** (0.006)	-0.027** (0.008)	0.006* (0.003)	0.007** (0.002)	-0.013** (0.004)
N	1054865	1054865	1054865	1054865	1054865	1054865
<i>Job attributes:</i>	Full vs. Part-time	Prof. occ.	Graduate job	Permanent contr.	Log salary	
	I=STEM vs. non-STEM					
MiddleSES \times U _{field} \times I	-0.003 (0.003)	-0.003 (0.005)	0.001 (0.003)	-0.003+ (0.002)	0.000 (0.002)	
LowSES \times U _{field} \times I	-0.010+ (0.006)	-0.013* (0.006)	-0.010* (0.004)	-0.007* (0.003)	-0.001 (0.013)	
N	662085	661210	555265	579815	291990	
	I=High vs. low specialization degree					
MiddleSES \times U _{field} \times I	-0.005+ (0.003)	-0.013** (0.004)	-0.010** (0.003)	-0.003 (0.002)	-0.006 (0.005)	
LowSES \times U _{field} \times I	-0.014** (0.005)	-0.031** (0.008)	-0.022** (0.006)	-0.008* (0.004)	-0.010 (0.008)	
N	662085	661210	555265	579815	291990	

Notes: Coefficient of the interaction between unemployment, SES and and indicator variable I for a field of study which is categorized as STEM or as having a high degree of specialization (defined by the Hirschman-Hirfindahl index). + $\rho < 0.10$ * $\rho < 0.05$ ** $\rho < 0.001$.

Longitudinal outcomes

	Activity status					
	Full-time emp.	Part-time emp.	Working & Studying	Studying	Unemployed	Other
MiddleSES \times U_{field}	0.003 (0.006)	0.000 (0.089)	-0.003 (0.003)	-0.003 (0.004)	0.005** (0.002)	-0.002 (0.003)
LowSES \times U_{field}	0.005 (0.015)	0.001 (0.002)	-0.004 (0.004)	-0.007 (0.005)	0.005* (0.002)	0.000 (0.001)
U_{field}	-0.008 (0.008)	0.001 (0.003)	0.001 (0.003)	0.008* (0.003)	0.000 (0.002)	-0.001 (0.002)
N	49030	49030	49030	49030	49030	49030
	Job attr.	Education				
	Log Salary	Postgrad. qual.				
MiddleSES \times U_{field}	-0.003 (0.011)	0.008 (0.006)				
LowSES \times U_{field}	-0.012 (0.018)	-0.003 (0.004)				
U_{field}	-0.009 (0.011)	0.003 (0.006)				
N	36130	21250				

Notes: DHLE longitudinal survey, graduation cohorts 2003, 2005, 2007, and 2009 only. Response weights applied. $+\rho < 0.10$
 $*\rho < 0.05$ $**\rho < 0.001$.

Regional vs. field U

	(1)	(2)	(3)	(4)	(5)
Middle SES	0.002** (0.001)	-0.005+ (0.003)	0.002** (0.000)	-0.001 (0.007)	-0.006* (0.003)
Low SES	0.011** (0.001)	-0.015** (0.003)	0.011** (0.001)	-0.008 (0.005)	-0.016** (0.003)
U_{region}	0.002* (0.001)	0.000 (0.001)			
Middle SES \times U_{region}		0.001** (0.000)			
Low SES \times U_{region}		0.004** (0.000)			
U_{field}			0.001 (0.001)	-0.000 (0.002)	-0.000 (0.001)
Middle SES \times U_{field}				0.001 (0.001)	0.001 (0.001)
Low SES \times U_{field}				0.006** (0.001)	0.006** (0.001)
Individual controls	Yes	Yes	Yes	Yes	Yes
Cohort dummies	Yes	Yes	Yes	Yes	Yes
HEI dummies	Yes	Yes	Yes	Yes	Yes
Field dummies	Yes	Yes	Yes	Yes	Yes
Region dummies	Yes	Yes	Yes	Yes	
Region time trends	Yes	Yes			
Field time trends			Yes	Yes	Yes
LAD dummies					Yes
$U_{LAD,t-4}$					Yes
$U_{LAD,t-4} \times$ SES					Yes
N	1054865	1054865	1054865	1054865	1054865

Notes: Standard errors clustered by region (1-2) or field of study (3-5) in brackets (wild cluster bootstrap 999 reps). $+p < 0.10$ $*p < 0.05$ $**p < 0.001$.

Different specifications

	Baseline	SES = LPN	SES = Parental occupation	U_{field} 20-40 age group	U_{field} 12 months lagged	U_{LAD} 5-year average
MiddleSES \times U_{field}	0.001 (0.001)	0.001* (0.001)	0.002* (0.001)	0.001 (0.001)	0.000 (0.001)	0.001 (0.001)
LowSES \times U_{field}	0.006** (0.001)	0.003** (0.001)	0.003** (0.001)	0.004** (0.001)	0.004** (0.001)	0.006** (0.001)
U_{field}	-0.000 (0.001)	0.001 (0.001)	0.001 (0.002)	0.000 (0.001)	-0.002* (0.001)	0.000 (0.002)
N	1054865	1054865	796150	1054865	1054865	1046855

Notes: $+\rho < 0.10$ $*\rho < 0.05$ $**\rho < 0.001$.

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Tariff score

<i>Activity status:</i>	Acad. prog.	Prof. prog.	Full-time emp.	Part-time emp.	Unemployed	Other
MiddleSES \times U _{field}	-0.002* (0.001)	0.002 (0.003)	-0.005+ (0.003)	0.005** (0.002)	0.001 (0.001)	-0.001 (0.002)
LowSES \times U _{field}	-0.004* (0.002)	0.006 (0.005)	-0.011+ (0.007)	0.007** (0.002)	0.005** (0.001)	-0.003 (0.002)
U _{field}	0.001 (0.001)	-0.005 (0.005)	0.001 (0.006)	0.000 (0.002)	0.001 (0.002)	0.002 (0.003)
N	687635	687635	687635	687635	687635	687635
<i>Job attributes:</i>	Full vs. Part-time	Prof. occ.	Graduate job	Perm. contr.	Log salary	
MiddleSES \times U _{field}	-0.007** (0.002)	-0.010** (0.002)	-0.005* (0.002)	0.002+ (0.001)	-0.002+ (0.001)	
LowSES \times U _{field}	-0.014** (0.004)	-0.014** (0.005)	-0.008+ (0.004)	0.003 (0.002)	-0.007** (0.002)	
U _{field}	-0.000 (0.003)	0.006 (0.004)	-0.001 (0.002)	-0.003+ (0.002)	-0.002 (0.004)	
N	420480	419970	358060	373410	189620	

Notes: Sub-sample of cohorts for which the UCAS tariff score is available ($\geq 2005/6$). + $p < 0.10$ * $p < 0.05$ ** $p < 0.001$.