Job Competition and Entry Wages of Highly Educated Workers: Are there Differences between Great Britain and Finland?
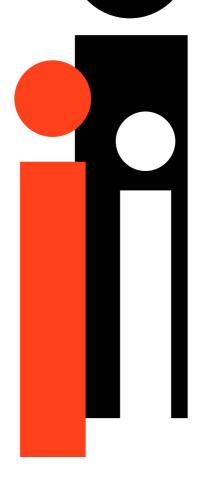
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Non-technical summary

Entering the labour market in a recession may have substantial effects on the earnings of graduates: when competition for jobs is high, new entrants in the labour market might be willing to accept comparatively lower wages to secure the job. For example, it has been found that in Canada college graduates entering the labour market in a recession suffer significant initial earnings losses, which may last up to ten years in their working careers.

We might expect entry wages of graduates to be correlated to the conditions of the local labour market in countries where wages are generally negotiated between the employer and the employee; in countries where centralised wage contracts play a more important role, such correlation is likely to be much smaller. Here, wages of graduates might be more protected in case of downturn.

We analyse this hypothesis by comparing Great Britain and Finland. We measure the condition of the local labour market (job competition) by the unemployment rate of graduates and by the rate of employed graduates engaging in on-the-job search. We estimate models that are as similar as possible – given the data available – across these two countries. Hence, if the estimated wage impact of job competition varies significantly between Great Britain and Finland, the difference can be (indirectly) related to differences in collective bargaining systems. We expect higher job competition to be correlated to lower graduate wages in both countries; but we also expect a larger correlation in Great Britain than in Finland.

The results suggest that the condition of the local labour market matters: an increase in employed job search has a depressing effect on entry wages of graduates in both countries. The impact is small in both countries but, as expected, it is smaller in Finland than in Britain. A one percent increase in the search rate of employed people decreases entry wages of graduates by about 5.8 percent in Britain and by only 1 percent in Finland. In Britain, entry wages of highly educated people do not seem to be affected by the unemployment rate, while in Finland also a one percent increase in the unemployment rate decreases entry wages of graduates by 1 percent.

Overall, the results show that competition for jobs has a bigger negative impact in Britain than in Finland; thus suggesting that in countries with more centralised bargaining systems the negative impact of high job competition in the local labour market is somewhat mitigated.

Finally, in Britain the relevant measures of job competition are at the regional level, and entry wages of graduates do not seem to be affected by job competition in other regions. In Finland, job competition in other regions also matters, indicating that centralised wage bargaining makes the wage setting processes in regions dependent on the labour market conditions in other regions too.

Job Competition and Entry Wages of Highly Educated Workers:
Are there Differences between Great Britain and Finland?[#]

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Abstract

This paper analyses the impact that local labour market conditions have on entry wages of highly educated workers in Great Britain and Finland. In both countries, workers entering the labour market in regions with (or periods of) tighter job competition obtain lower wages. Competition from employed job seekers has a negative impact on entry wages in both countries, while competition from unemployed job seekers has a negative impact only in Finland. Overall, the wage elasticity is larger in Great Britain than in Finland, suggesting that centralised collective bargaining might mitigate the impact that local labour market conditions have on entry wages.

Keywords: Highly educated workers, job competition, entry wages

JEL Classification: J30; R23

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1. Introduction

Labour market conditions at the time of graduation may have substantial effects on the earnings of graduates. New entrants in the labour market face competition for jobs from both employed and unemployed job seekers. When competition for jobs is high, new entrants might be willing to accept comparatively lower wages to secure the job. Using Canadian employer-employee data for the period 1982-1999, Oreopoulos et al. (2008) find that college graduates entering the labour market in a recession suffer significant initial earnings losses, which may last up to ten years in their working careers. In countries where wages are typically bargained at the central level, however, such correlation between job competition and the bargaining power over wages might be rather small compared to countries with more decentralised wage setting (Holden 1998; Albæk et al. 2003; Faggio and Nickell 2005).

This paper analyses the impact that the conditions of the local labour market have on entry wages of graduates in two countries with different welfare systems and wage setting processes: Britain and Finland. In Britain, wages are often negotiated between the employer and employee while in Finland centralised wage contracts, with some room for flexibility, play a more important role.[1] We estimate models that are as similar as possible – given data availability – across these two countries. Hence, if the estimated wage impact of job competition varies significantly between Great Britain and Finland, the difference between the results can be (indirectly) related to differences in collective bargaining systems.

The results show that in both countries workers entering the labour market in regions with (or periods of) tighter job competition obtain comparatively lower wages, and that the overall wage elasticity is larger in Great Britain than in Finland. In Great Britain competition from employed job seekers has a relatively large negative impact on entry wages, while competition from unemployed job seekers does not seem to have any statistically significant impact on wages of new entrants. In Finland, competition from both employed and unemployed job seekers has a negative wage impact, but this is small in both cases. In addition, in Finland labour market conditions in neighbouring regions affect wages. This suggests that in countries with

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[1] Clearly, the difference between the two countries is not always clear-cut. For example, in Britain central bargaining is common in the public sector (e.g. in education). In Finland, wage offers are negotiated at the centralised or at the union level, but with possibility for individual wages to vary, particularly for the highly educated, according to, for example, the effort exerted at work (Heikkilä 2004).

centralised collective bargaining systems local labour market conditions might have a smaller impact of on entry wages.

Before illustrating the data used and the models estimated, the next section provides a short summary of three strands of literature related to this analysis.

2. Background

By relating wages to the conditions of the local labour market, this paper is indirectly related to the Blanchflower and Oswald's (1990, 1994) wage curve literature, which finds a negative impact of the regional unemployment rate on wages. Because this elasticity has consistently been found to be close to -0.10, it has been labelled by Blanchflower and Oswald (1994, 2005) an "empirical law", and has therefore generated a large number of replications (see Nijkamp and Poot 2005 for a systematic review of the empirical wage curve literature). This paper differs from the wage curve literature in that it focuses only on highly educated workers who are entering the labour market. Most wage curve estimations relate wages to the total regional unemployment rate; only Kennedy and Borland (2000) estimate wage curves using education-specific models and unemployment rates, still finding a statistically significant negative relationship.

The wage curve is based on a spot market model, in which wages are continuously renegotiated depending on the current conditions of the labour market. In this case, it is the current unemployment rate which should have an impact on wages. The literature suggests other ways in which the conditions of the local labour market might affect wages (see Malcomson 1999 for a review). If workers are not mobile, the full-commitment risk-sharing model, in which initial wages and subsequent wage increases are negotiated at the beginning of the contract, suggests that it is the labour market conditions at the time the worker was hired that matter. When workers are very mobile, however, the contract is renegotiated in periods of improved labour market conditions to avoid workers' quits. Hence, the risk-sharing implicit contract model suggests that wages depend on the best labour market conditions observed since the worker was hired (Beaudry and DiNardo 1991). Beaudry and DiNardo (1991) and Grant (2003) test these three different wage setting models for the US and find support for the implicit contracts model, but not for the spot market model. McDonald and Worswick (1999) obtain similar results from Canada, while the results of Devereux and Hart (2007) for the UK support both spot

market and implicit contract models. These studies, however, are at the national level and their definition of local labour market is geographically rather large. Differently from the previous literature, this paper uses a geographically smaller definition of local labour market and focuses only on highly educated workers. By analysing the impact that the current conditions of the local labour market have on entry wages, this paper is consistent both with the spot market and with the risk-sharing model.

By focussing on graduates only, this paper assumes that graduates do not face relevant job competition from non graduates. This assumption is not unreasonable. Clearly, non graduates are unlikely to apply for jobs that need a degree, but the other way round is possible. The literature on overeducation suggests that graduates might be willing to accept non graduate jobs and therefore compete with non graduates in some cases. However, even in these jobs graduates might be seen as good substitutes for non graduates, while non graduates might be seen as bad substitutes for graduates. If employers prefer graduates to non graduates, competition from non graduates is likely to be of little relevance even for those graduates who apply for jobs for which a degree is not necessary. In summary, only other graduates – already in the labour market – are seen here as directly in competition with graduates entering the labour market.

New entrants in the labour market face competition from both employed and unemployed job seekers. The literature suggests that among job applicants with similar characteristics, employers tend to prefer workers who are already employed (Blau and Robins, 1990). Although there is no direct evidence, it is likely that employers prefer employed job seekers to new entrants, and new entrants to unemployed job seekers. New entrants might lack in work experience compared to other employed job seekers, but might not carry the negative signal of unemployment.

The proportion of job seekers who are already employed is likely to change over time: in favourable economic conditions competition from employed workers could be even stronger than competition from unemployed job seekers (e.g. Burgess, 1993; Broersma, 1997; Mumford and Smith, 1999; Burgess and Turon, 2003). In less favourable economic conditions, instead, unemployed people are likely to constitute the largest part of job competition, since for those who are already employed it is not profitable to spend time searching for new jobs (Anderson and Burgess, 2000). In addition, part of employed job search is due to temporary contracts and to dissatisfaction with the current job (e.g. Delfgaauw, 2007).

Empirically, on-the-job search constitutes a substantial part of job competition: among the highly educated the proportion of job seekers who are already employed is around 65 percent both in Britain and in Finland. Hence, in this paper the measure of job competition includes both unemployed and employed job seekers, and the results confirm that it is important to account for that part of job competition that comes from employed job seekers. It can be argued that on-the-job search might be unimportant since workers moving from job to job increase labour supply, but also labour demand, through releasing their own jobs. However, there are at least three reasons for which one might expect the increase in labour supply to be larger than the increase in labour demand. First, the employer might decide not to replace the worker, so that the probability of a new vacancy opening as a result of job-to-job moves is less than one; second, this new vacancy is likely to appear with a delay. Third and most important, not all workers engaging in on-the-job search are successful in finding a new job: a proportion of employed job seekers keep searching without generating any vacancy.

Finally, it might be argued that an analysis of wages at the regional level is not appropriate for highly educated workers. Graduates are likely to rely on national newspapers or websites to search for a job (e.g. Böheim and Taylor, 2002); furthermore, as they tend to marry later than non graduates, they have more limited family commitments and fewer constraints on their geographical mobility. On the other hand, since regions specialise in certain industries and economic sectors, job opportunities are likely to vary considerably across regions, thus making the analysis at the national level inappropriate. This issue is indirectly investigated by including the spatial lag of job competition in the econometric model, among the explanatory variables. The results show that in Britain the spatial lags do not have a relevant impact on the results, thus suggesting that the chosen spatial dimension is correct. In Finland the spatial lags are statistically significant, indicating that the wage effects of labour market conditions spill over to neighbouring regions.

3. Data

For both countries the models are estimated on cross-sectional micro data for the period 1997-2004. For Britain both the search rates and the micro data are from the British quarterly Labour Force Survey (LFS). For Finland the search rates are derived from the Finnish LFS, while the micro data is provided by Statistics Finland.

The British LFS is a household survey conducted quarterly by the Office for National Statistics. The data cover approximately 0.1 percent of the population and is representative of the whole population of Great Britain. The LFS collects data on a large number of individual and household characteristics, employment status, education, and job characteristics. Although in the LFS respondents are interviewed for up to five successive quarters, this analysis keeps only one observation per individual, corresponding to the first interview for which (entry) wage data is available. The data for Britain includes both full- and part-time workers.

The LFS asks questions on job search to both unemployed and employed people, thus allowing the computation of the proportion of workers engaging in on-the-job search. The education-specific (i.e. separately for graduates and post-graduates) local unemployment rates and employed search rates are computed from the LFS using sample weights, and are therefore representative of the population measures. The number of employed and unemployed job seekers is then divided by the number of people in the active population. These search rates are computed by quarter and over 18 British regions. The final sample includes 1,240 individuals with a university degree and 4,477 individuals with any kind of post-graduate education, from post graduate professional qualifications to PhDs.

The data identify both the region of residence and the region of work, thus allowing the computation of flows of commuters across regions. Commuting flows are rescaled by the population of the region, and used – without distinction between qualifications – as a proxy for inverse commuting distances: a large flow indicates that it is easy to commute between two regions, while a small flow indicates comparatively larger barriers to commuting.

The data for Finland are a regionally representative 7 percent random sample of the Finnish population aged between 16 and 70 years drawn from the Finnish census in 2001. These people are followed backwards and forwards from 1975 to 2004 by combining information from labour, taxation, social security registers, and municipal and regional statistics, with the census data. The data contain variables on the economic situation, place and characteristics of residence, family, education and work.

Concentrating on wages in the first job of people completing their studies in the period 1997-2004, the final sample includes 4,263 individuals with a graduate, and 4,441 individuals with a post-graduate degree. The yearly search rates based on the

Finnish LFS are computed for 15 regions, called TE-Centre regions, according to the location of the job. For the computation of the search rates, the methodology of the Finnish LFS follows the methodology of the British LFS described above.

All wage observations for Finland include only those individuals who are defined as full-time wage earners in the taxation registers at the end of the observation year. The wage income used as a dependent variable is the average monthly wage in the year of graduation if the individual is defined as a full-time wage earner at the end of that year, and the wage income for the year after the graduation otherwise.

For Finland data is available on road distances between the centres of the TE-Centre regions; the inverse square distances are used as proxy for commuting barriers, where a shorter distance indicates that it is easier to commute between two regions.

4. Modelling strategy and descriptive statistics

Individual-level equations for entry wages are defined in a Mincerian setting complemented by several variables capturing the wage effects of individual characteristics, industry, sector and regional factors. The wage equation for individual i, with education level e working in region r at time t takes the form:

$$\ln w_{iert} = \alpha + \beta_1 \ln u_{ert} + \beta_2 \ln emp_{ert} + \beta_{1w} \mathbf{W} \ln u_{et} + \beta_{2w} \mathbf{W} \ln emp_{et} +$$
$$\beta_3 \mathbf{X}_{iert} + \boldsymbol{dt} + \boldsymbol{dr} + \varepsilon_{iert} \qquad (1)$$

and is estimated separately by country. Monthly wages (w_{iert}) are at constant prices of 2004, deflated using living costs indices; α is the constant term; u_{ert} is the education-specific unemployment rate in region r at time t; and emp_{ert} is the education-specific search rate for the employed. The unemployment and the employed search rates include all highly educated workers, with any level of labour market experience, but are computed separately for graduates and post-graduates. $\mathbf{X}_{iert}$ is a vector of individual and job characteristics; $\boldsymbol{dt}$ denotes dummies for years; $\boldsymbol{dr}$ are dummies for regions; and ε_{iert} is a random error term. As already mentioned, the literature has consistently found a negative coefficient for the log unemployment rate. Given that employers are likely to prefer employed job seekers to new entrants, and given the high proportion of employed job seekers, the regression coefficient of $\ln emp_{ert}$ is also expected to be negative and, probably, even larger than the coefficient of $\ln u_{ert}$. The

business cycle and the fact that high job search by the employed implies good market conditions while a high search rate by the unemployed implies the reverse, should be picked up by the time – and regional – dummies.

Although people moving from job to job are expected to push up wages, one should notice that only a small proportion of employed job seekers will receive a suitable offer and move to a different job. There is yet no evidence as to what is the proportion of employed job seekers who find a suitable job, and whether this is higher in periods of growth. What is of interest for this analysis of job competition is the amount of employed and unemployed job seekers queuing for jobs, rather than the amount of those who are successful in their search for a job.

The terms $\mathbf{W}\ln u_{et}$ and $\mathbf{W}\ln emp_{et}$ are the spatial lags of the education-specific unemployment and employed search rates, i.e. the weighted averages of unemployment and employed search rates in the neighbouring regions, and assume no correlation over time or across education groups. The spatial weights in $\mathbf{W}$ are the flows of commuters across regions for Britain, and the inverse of the squared road distances across regions for Finland. In case of missing education-region-time combinations, the weight is zero, and can be interpreted as a situation in which no new jobs for graduates or post-graduates are available in that region in that period. In this case, the region should have no influence on the neighbours. Finally, since the spatial lags refer to the explanatory variables, rather than to the dependent variable, they are not expected to generate problems of endogeneity.

The explanatory variables in $\mathbf{X}_{iert}$ include age and its square; dummies for women, for married or cohabiting, for the presence of pre-school children (younger than 5 in Britain and younger than 7 in Finland), for immigrants, for post-graduates (as opposed to university graduates), dummies for industries and for fields of study.[2] For Britain the models also include a dummy for public sector and one for part time,

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[2] The industry dummies are: A-B: agriculture, hunting & forestry + fishing; C: mining, quarrying; D: manufacturing; E: electricity gas & water supply; F: construction; G: wholesale, retail & motor trade; H: hotels & restaurants; I: transport, storage & communication; J: financial intermediation; K: real estate, renting & business activities; L: public administration & defence; M: education; N: health & social work; O-P: other community, social & personal + private households with employed persons (these two groups are kept separate for Finland); and (only for Finland) extra-territorial organizations and bodies.
The dummies for field of study differ across the two countries. There are ten groups for Britain: 1: medicine and medical related; 2: biological sciences; 3: agricultural, physical/environmental studies; 4: math and computing; 5: engineering, technology, architecture; 6: social sciences, business and finance; 7: languages; 8: humanities; 9: arts; and 10: education. For Finland there are eight groups: 1: education; 2: humanities and arts; 3: social sciences, business and law; 4: science; 5: engineering, manufacturing and construction; 6: agriculture; 7: health and welfare; 8: services.

while for Finland the models also include dummies for the state and the municipality sectors, and a dummy for whether the job started before the year of graduation.

The descriptive statistics for the main variables are shown in Table 1. As expected, workers with a university degree are slightly younger and earn substantially lower wages, on average, than workers with a post-graduate qualification. Post-graduates are comparatively more likely to be married or cohabiting (probably due to age) and more likely to work in the public sector. In Britain, post-graduates are slightly more likely to hold part-time positions. In Finland, over one third of graduates and of post-graduates has started their jobs before the year of graduation.

For both groups the unemployment rate is rather low. While for graduates it is only 3.1 percent in Britain and 4.2 percent in Finland; for post-graduates it is only 2.8 percent in Britain and 3.0 percent in Finland. With values higher than 7 percent in Finland and 8 percent in Britain, the search rate of already employed workers is a relevant component of job competition. This is in line with previous research suggesting that highly educated workers are more likely to engage in on-the-job search and suffer lower unemployment rates than workers with lower education (Pekkala and Tervo, 2002; Faggian et al., 2007), and that most hirings are job-to-job – rather than unemployment-to-job – moves (Pissarides, 1994).

Table 1: Descriptive statistics

	Degree	Post-Graduate	Degree	Post-graduate
		Britain		**Finland**
Average age	33	36	30	31
Female (%)	51.1	53.1	53.3	53.0
Married/cohabiting (%)	38.8	47.8	66.0	67.6
With pre-school children (%)	7.6	7.9	17.0	19.1
Public sector (%)	30.2	46.7	53.6	62.7
Municipality sector (%)			25.0	31.7
State sector (%)			28.6	31.0
Immigrant (%)	16.1	20.4	2.0	1.8
Job started before graduation (%)			31.6	30.1
Part-time job (%)	17.0	18.1		
Average monthly wages	£1722	£2011	€2398	€2744
Unemployment rate	3.1	2.8	4.2	3.0
Employed search rate	8.2	8.0	7.1	7.1

5. The wage impact of job competition

The results of the empirical models are shown in Table 2. The models are estimated by OLS with standard errors clustered by region. Endogeneity is unlikely to be a problem in this case, since the analysis is based on individual data: individual entry wages of such a specific subgroup of the population are unlikely to have a relevant impact on the aggregate unemployment or job search rate. The models in Columns (1) include only the search rates and the individual characteristics. The models in Columns (2) also include yearly and regional dummies, hence controlling for the year-specific as well as the time-invariant regional factors in the wage equations and allowing for the effects of the search rates to be unaffected by these potentially substantial factors.

In Britain the two specifications – with and without time and regional dummies – yield similar results. While there does not seem to be any statistically significant impact of the log unemployment rate on wages, the log of employed search rate is negative and statistically significant in both specifications, with a regression coefficient of -0.058. In Finland, the elasticity between entry wages and the unemployment rate is robust across the two specifications, with a regression coefficient of only -0.01. Job search of employed workers does not have any wage effect in the first specification but the effect becomes negative and statistically significant in the second specification, with a coefficient similar to that of the unemployment rate: -0.01. This suggests that for highly educated workers competition for jobs has overall a more relevant negative impact in Britain than in Finland, and is consistent with the idea that the conditions of the local labour market have a smaller impact on wages in countries with centralised bargaining systems.

In Britain, competition from employed job seekers seems much more important than competition from unemployed people. There is empirical evidence that – at least in Britain and the US – employers might prefer to hire employed than unemployed job seekers (e.g. Burgess, 1993). Potential employers might rank new entrants in the labour market after employed job seekers, but before unemployed people: new entrants do not have the experience of other employed job seekers, but do not carry the negative signal which is related to unemployment. Maybe because of centralised collective bargaining, in Finland job competition from employed job seekers does not seem to be more relevant than competition from unemployed people.

Table 2: Impact of job competition on individual entry wages

Dependent variable:	Britain		Finland	
Ln starting wages	(1)	(2)	(1)	(2)
Ln unemployment rate	0.027	-0.013	-0.011**	-0.010***
	(0.033)	(0.028)	(0.005)	(0.003)
Ln employed job search rate	-0.137***	-0.058**	0.011	-0.010*
	(0.038)	(0.026)	(0.013)	(0.005)
Time dummies	No	Yes	No	Yes
Region dummies	No	Yes	No	Yes
Adjusted R^2	0.49	0.51	0.23	0.25
Observations	5717	5717	8704	8704

Robust standard errors in parenthesis, clustered by regions; * Significant at 10%, ** Significant at 5%, *** Significant at 1%.

Other explanatory variables: age and its square, dummy for women, dummy for the presence of pre-school children and its interaction with the dummy for women, dummy for married/cohabiting and its interaction with the dummy for women, dummy for public sector, immigrant, part time in Britain, dummy for the job started before the graduation in Finland, dummy for post-graduates, dummies for industries and field of study.

The coefficients of the other explanatory variables also differ somewhat between the two countries (see Appendix). As expected, there is a wage premium for post-graduates: post-grads' entry wages in Britain are on average 7.6 percent higher than entry wages of graduates, while in Finland the post-graduate wage premium is as high as 16.8 percent. This difference is probably related to the slightly different definition of "post" graduates in the two countries. Consistently with the previous literature, in Britain there seems to be a wage premium for people working full-time, while there seem to be a wage penalty for immigrants. In Finland, there is no wage penalty for immigrants, but the proportion of immigrants is very low: only 2 percent of graduates and 1.8 percent of post-graduates entering the labour market. The results also confirm the existence of a pay gap for women in both countries, which increases for those who are married or cohabiting. The presence of pre-school children seems not to have a statistically significant impact on wages of highly educated mothers in Britain, while negatively affecting mothers' wages in Finland. This difference might partly be due to differences in the welfare systems of the two countries: in Britain mothers who do not work are likely to be those who would receive comparatively lower wages, while in Finland all mothers are encouraged to go back to work. Finally, while in Britain, entry wages in the public sector do not seem to differ from those in the private sector; in Finland, the sector of the job matters: the highest wages are paid in the municipality sector and the lowest in the state sector.

Models including the spatial lags of unemployment and employed search rate are shown in Table 3. In Britain the inclusion of the spatial lags has only a very small impact on the other regression coefficients, and does not change the previous conclusions. The coefficients of the spatial lags themselves are not statistically significant when region and time dummies are included in the model. When these dummies are not included, the spatial lag of the unemployment rate is not statistically significant, while the spatial lag of employed job search is statistically significant, but only at the ten percent level. This suggests that in Britain such statistical regions are good approximations of the local labour market.

Table 3: Impact of job competition, larger local labour markets

Dependent variable:	Britain		Finland	
Ln starting wages	(3)	(4)	(3)	(4)
Ln unemployment rate	0.034	-0.012	-0.010*	-0.009***
	(0.032)	(0.029)	(0.005)	(0.003)
Ln employed job search rate	-0.107**	-0.063**	0.005	-0.009*
	(0.040)	(0.028)	(0.011)	(0.005)
Spatial lag ln unemployment rate	-0.067	-0.008	-0.086***	-0.046***
	(0.040)	(0.025)	(0.011)	(0.015)
Spatial lag ln employed job search rate	-0.119*	0.040	0.090***	0.002
	(0.065)	(0.040)	(0.012)	(0.026)
Time dummies	No	Yes	No	Yes
Region dummies	No	Yes	No	Yes
Adjusted R^2	0.49	0.51	0.24	0.25
Observations	5717	5717	8704	8704

Robust standard errors in parenthesis, clustered by regions; * Significant at 10%, ** Significant at 5%, *** Significant at 1%.
Other explanatory variables: age and its square, dummy for women, dummy for the presence of pre-school children and its interaction with the dummy for women, dummy for married/cohabiting and its interaction with the dummy for women, dummy for public sector, immigrant, part time in Britain, dummy for the job started before the graduation in Finland, dummy for post-graduates, dummies for industries and field of study.

In Finland the spatial lag of the unemployment rate is statistically significant, and the elasticity of individual wages with respect to the spatially lagged unemployment rate is relatively large: -0.046. Hence, contrary to Britain, labour market conditions in neighbouring regions do seem to affect entry wages. The regression coefficients of the control variables are robust against the inclusion of the spatial lags, with the exception of the post-graduate wage premium, which decreases from 16.8 percent to 14.5 percent. The results indicate that in Finland entry wages of graduates and post-graduates react to both the local unemployment rate and that of other regions. This is consistent with the idea that centralised bargaining systems set

wages taking into account labour market conditions in all – own and neighbouring – regions. Finally, even when job competition in neighbouring regions is accounted for, the overall wage elasticity – to the different components of job competition – is still larger in Great Britain than in Finland, but the difference between the two countries decreases.

6. Conclusions

This paper analyses the impact that the conditions of the local labour market have on entry wages of highly educated workers in two countries with different welfare systems and wage setting processes: Britain and Finland. The measures of job competition are extended from the conventional aggregate regional unemployment rates to include both local unemployment rate and employed job search, and are computed separately for graduates and post-graduates.

The results suggest that the condition of the local labour market matters: an increase in employed job search has a depressing effect on entry wages in both countries: the wage elasticity is -0.058 in Britain and about -0.01 in Finland. In Britain, entry wages of highly educated people do not seem to be affected by the unemployment rate, while in Finland there is a negative wage elasticity of about -0.01. Competition for jobs has overall a more relevant negative impact in Britain than in Finland; thus suggesting that in countries with more centralised bargaining systems the negative impact of high job competition in the local labour market is somewhat mitigated.

Finally for the highly educated workers entering the labour market in Britain, the relevant measures of job competition are at the regional level, and wages are not affected by job competition in other regions. In Finland, job competition in other regions also matters, indicating that the centralised wage bargaining makes the wage setting processes in regions dependent on the labour market conditions in other regions too. This is consistent with the idea that unions might take into account the conditions of all local labour markets in their bargaining.

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Appendix. Complete estimation results

Table A1: Impact of job competition on individual entry wages

	Britain		Finland	
	(1)	(2)	(1)	(2)
Age	0.121***	0.114***	0.022***	0.022***
	(0.009)	(0.007)	(0.004)	(0.004)
Age^2	-0.001***	-0.001***	-0.0002***	-0.0002***
	(0.0001)	(0.00009)	(0.0001)	(0.0001)
Female	-0.040**	-0.038**	-0.062***	-0.066***
	(0.016)	(0.016)	(0.010)	(0.009)
Married/cohabiting	0.238***	0.253***	0.045***	0.043***
	(0.016)	(0.013)	(0.008)	(0.008)
Married/cohabiting * Female	-0.270***	-0.266***	-0.055***	-0.055***
	(0.022)	(0.024)	(0.006)	(0.006)
Whether pre-school children in household	0.001	-0.008	-0.007	-0.005
	(0.056)	(0.053)	(0.008)	(0.009)
Whether pre-school children in household * Female	0.085	0.089	-0.015**	-0.014***
	(0.070)	(0.066)	(0.005)	(0.004)
Job in the public sector	-0.027	-0.014		
	(0.029)	(0.027)		
Job in the state sector			-0.025***	-0.052***
			(0.004)	(0.005)
Job in the municipality sector			0.069***	0.055***
			(0.014)	(0.015)
Part-time job	-1.112***	-1.091***		
	(0.033)	(0.036)		
Job started before graduation			0.045***	0.065***
			(0.007)	(0.009)
Immigrant	-0.049**	-0.082**	0.005	0.003
	(0.022)	(0.033)	(0.011)	(0.011)
Post-graduate	0.102***	0.076***	0.160***	0.168***
	(0.021)	(0.024)	(0.015)	(0.012)
Sectors:				
C: mining, quarrying	0.448**	0.492***	0.173	0.153*
	(0.158)	(0.122)	(0.101)	(0.084)
D: manufacturing	0.181***	0.171***	0.066*	0.054
	(0.049)	(0.053)	(0.034)	(0.032)
E: electricity gas & water supply	0.144	0.173	0.050	0.033
	(0.133)	(0.133)	(0.045)	(0.043)
F: construction	0.196**	0.158*	0.012	0.001
	(0.072)	(0.080)	(0.033)	(0.032)
G: wholesale, retail & motor trade	-0.024	-0.047	0.069*	0.047
	(0.061)	(0.068)	(0.034)	(0.033)
H: hotels & restaurants	-0.199**	-0.210**	-0.023	-0.041
	(0.089)	(0.096)	(0.038)	(0.037)
I: transport, storage & communication	0.096	0.048	0.094***	0.071**

	(0.062)	(0.070)	(0.031)	(0.030)
J: financial intermediation	0.297*	0.219*	0.091**	0.064**
	(0.145)	(0.123)	(0.031)	(0.028)
K: real estate, renting & business activities	0.268***	0.216***	0.046	0.026
	(0.057)	(0.060)	(0.038)	(0.037)
L: public administration & defence	0.084	0.052	-0.061*	-0.060
	(0.058)	(0.061)	(0.034)	(0.034)
M: education	0.039	0.018	-0.068**	-0.065**
	(0.069)	(0.073)	(0.029)	(0.028)
N: health & social work	0.111*	0.084	-0.052	-0.059*
	(0.060)	(0.068)	(0.033)	(0.031)
O-P: other community, Social & personal	0.064	0.003	-0.049	-0.068*
	(0.060)	(0.056)	(0.035)	(0.034)
Q: extra-territorial organisations			0.464***	0.403***
			(0.032)	(0.028)
Field of study:				
Biological sciences	-0.288***	-0.293***		
	(0.029)	(0.038)		
Agricultural, physical/environmental	-0.278***	-0.263***		
	(0.044)	(0.044)		
Math and computing	-0.175**	-0.175**		
	(0.077)	(0.076)		
Engineering, technology, & architecture	-0.190***	-0.178***		
	(0.032)	(0.029)		
Social sciences, business & finance	-0.213***	-0.222***		
	(0.037)	(0.034)		
Languages	-0.285***	-0.315***		
	(0.047)	(0.039)		
Humanities	-0.368***	-0.396***		
	(0.057)	(0.044)		
Arts	-0.340***	-0.360***		
	(0.046)	(0.040)		
Education	-0.198***	-0.196***		
	(0.056)	(0.053)		
Humanities and arts			0.006	0.008
			(0.012)	(0.012)
Social sciences, business & law			0.013	0.018
			(0.012)	(0.013)
Science			-0.020	-0.014
			(0.014)	(0.013)
Engineering, manufacturing & construction			0.053***	0.060***
			(0.013)	(0.013)
Agriculture			-0.043*	-0.033
			(0.021)	(0.019)
Health and welfare			0.105***	0.115***

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		(0.015)	(0.014)
Services		0.107***	0.115***
		(0.017)	(0.017)
Regions:			
Rest of Northern region	-0.069***		
	(0.016)		
South Yorkshire	-0.039***		
	(0.010)		
West Yorkshire	-0.016		
	(0.010)		
Rest of Yorks & Humberside	-0.096***		
	(0.018)		
East Midlands	-0.037*		
	(0.020)		
East Anglia	0.027		
	(0.022)		
London	0.301***		
	(0.013)		
Rest of South East	0.087***		
	(0.015)		
South West	0.006		
	(0.013)		
West Midlands Metropolitan	0.021*		
	(0.010)		
West of West Midlands	-0.014		
	(0.014)		
Greater Manchester	0.084***		
	(0.011)		
Merseyside	0.028**		
	(0.010)		
Rest of North West	-0.056***		
	(0.013)		
Wales	-0.075***		
	(0.016)		
Strathclyde	0.068***		
	(0.011)		
Rest of Scotland	-0.022		
	(0.019)		
Southwest Finland			-0.046***
			(0.007)
Satakunta			-0.023**
			(0.008)
Häme			-0.007
			(0.008)
Pirkanmaa			-0.023***
			(0.005)
Northeast Finland			-0.061***
			(0.007)
Southern Savo			-0.036***
			(0.009)
Northern Savo			-0.033***
			(0.006)

	(1)	(2)	(3)	(4)
Northern Karelia				-0.082***
				(0.010)
Central Finland				-0.040***
				(0.005)
Southern Ostrobothnia				-0.076***
				(0.008)
Ostrobothnia				-0.051***
				(0.007)
Northern Ostrobothnia				-0.028***
				(0.007)
Kainuu				-0.050***
				(0.007)
Lapland				-0.004
				(0.007)
Year dummies: Y1998		-0.053**		0.057**
		(0.023)		(0.020)
Y1999		-0.039		0.105***
		(0.045)		(0.013)
Y2000		0.035		0.109***
		(0.030)		(0.022)
Y2001		0.036		0.111***
		(0.036)		(0.015)
Y2002		0.036		0.129***
		(0.035)		(0.019)
Y2003		0.064		0.114***
		(0.047)		(0.012)
Y2004		0.097**		0.139***
		(0.042)		(0.020)
Quarter dummies: Q1		-0.010		
		(0.019)		
Q2		-0.019		
		(0.013)		
Q3		0.015		
		(0.021)		
Ln Unemployment rate	0.027	-0.013	-0.011**	-0.010***
	(0.033)	(0.028)	(0.005)	(0.003)
Ln Employed job search rate	-0.137***	-0.058**	0.011	-0.010*
	(0.038)	(0.026)	(0.013)	(0.005)
Constant	4.851***	4.939***	7.188***	7.142***
	(0.142)	(0.199)	(0.077)	(0.088)
Adjusted R^2	0.49	0.51	0.23	0.25
Observations	5717	5717	8704	8704

Robust standard errors in parenthesis, clustered by regions; * Significant at 10%, ** Significant at 5%, *** Significant at 1%

Table A2: Impact of job competition on individual entry wages, larger local labour markets

	Britain		Finland	
	(3)	(4)	(3)	(4)
Age	0.121***	0.114***	0.022***	0.022***
	(0.008)	(0.007)	(0.004)	(0.004)
Age^2	-0.001***	-0.001***	-0.000***	-0.000***
	(0.0001)	(0.0001)	(0.000)	(0.000)
Female	-0.038**	-0.038**	-0.063***	-0.066***
	(0.015)	(0.016)	(0.009)	(0.009)
Married/cohabiting	0.240***	0.253***	0.045***	0.043***
	(0.016)	(0.013)	(0.008)	(0.008)
Married/cohabiting * female	-0.271***	-0.267***	-0.055***	-0.055***
	(0.022)	(0.024)	(0.007)	(0.006)
Whether pre-school children in household	0.003	-0.009	-0.007	-0.005
	(0.056)	(0.053)	(0.008)	(0.009)
Whether pre-school children in household * Female	0.082	0.089	-0.015***	-0.014***
	(0.071)	(0.066)	(0.005)	(0.004)
Job in the public sector	-0.027	-0.014		
	(0.029)	(0.028)		
Job in the state sector			-0.032***	-0.051***
			(0.003)	(0.006)
Job in the municipality sector			0.065***	0.056***
			(0.014)	(0.015)
Dummy for those working part time	-1.109***	-1.092***		
	(0.032)	(0.036)		
Job started before graduation			0.054***	0.065***
			(0.007)	(0.009)
Immigrant	-0.039	-0.082**	0.005	0.003
	(0.023)	(0.033)	(0.011)	(0.011)
Post-graduate	0.071***	0.076***	0.132***	0.145***
	(0.022)	(0.025)	(0.016)	(0.012)
Sectors:				
C: mining, quarrying	0.466***	0.489***	0.181*	0.149*
	(0.152)	(0.121)	(0.089)	(0.085)
D: manufacturing	0.177***	0.170***	0.058*	0.053
	(0.053)	(0.053)	(0.033)	(0.032)
E: electricity gas & water supply	0.137	0.173	0.043	0.032
	(0.138)	(0.132)	(0.044)	(0.043)
F: construction	0.188**	0.156*	0.009	0.001
	(0.077)	(0.080)	(0.032)	(0.031)
G: wholesale, retail & motor trade	-0.031	-0.047	0.060*	0.046
	(0.068)	(0.068)	(0.033)	(0.034)
H: hotels & restaurants	-0.203**	-0.211**	-0.028	-0.042
	(0.093)	(0.095)	(0.038)	(0.037)
I: transport, storage & communication	0.082	0.047	0.086**	0.071**
	(0.065)	(0.070)	(0.030)	(0.029)
J: financial intermediation	0.287*	0.219*	0.082**	0.063**

	(1)	(2)	(3)	(4)
	(0.140)	(0.124)	(0.029)	(0.028)
K: real estate, renting & business activities	0.258***	0.215***	0.039	0.026
	(0.062)	(0.060)	(0.037)	(0.037)
L: public administration & defence	0.074	0.052	-0.065*	-0.062*
	(0.062)	(0.061)	(0.033)	(0.034)
M: education	0.031	0.018	-0.072**	-0.067**
	(0.073)	(0.072)	(0.028)	(0.028)
N: health & social work	0.099	0.085	-0.059*	-0.060*
	(0.064)	(0.068)	(0.032)	(0.030)
O-P: other community, Social & personal	0.051	0.003	-0.057	-0.069*
	(0.059)	(0.056)	(0.034)	(0.034)
Q: extra-territorial organisations			0.433***	0.398***
			(0.032)	(0.027)
Field of study: Biological sciences	-0.288***	-0.293***		
	(0.029)	(0.037)		
Agricultural, physical/environmental	-0.278***	-0.263***		
	(0.046)	(0.044)		
Math and computing	-0.176**	-0.174**		
	(0.077)	(0.076)		
Engineering, technology, & architecture	-0.189***	-0.178***		
	(0.033)	(0.029)		
Social sciences, business & finance	-0.216***	-0.222***		
	(0.036)	(0.034)		
Languages	-0.287***	-0.315***		
	(0.045)	(0.039)		
Humanities	-0.371***	-0.396***		
	(0.055)	(0.044)		
Arts	-0.342***	-0.360***		
	(0.045)	(0.040)		
Education	-0.202***	-0.195***		
	(0.056)	(0.052)		
Humanities and arts			0.008	0.009
			(0.012)	(0.012)
Social sciences, business & law			0.015	0.018
			(0.011)	(0.013)
Science			-0.020	-0.014
			(0.014)	(0.013)
Engineering, manufacturing & construction			0.054***	0.060***
			(0.013)	(0.013)
Agriculture			-0.041*	-0.033
			(0.022)	(0.019)
Health and welfare			0.110***	0.116***
			(0.015)	(0.014)
Services			0.109***	0.116***

		(0.017)	(0.017)
Regions			
Rest of Northern region		-0.071***	
		(0.017)	
South Yorkshire		-0.040***	
		(0.011)	
West Yorkshire		-0.015	
		(0.011)	
Rest of Yorks & Humberside		-0.100***	
		(0.021)	
East Midlands		-0.036	
		(0.021)	
East Anglia		0.029	
		(0.023)	
London		0.304***	
		(0.014)	
Rest of South East		0.090***	
		(0.019)	
South West		0.008	
		(0.014)	
West Midlands Metropolitan		0.020*	
		(0.011)	
West of West Midlands		-0.012	
		(0.016)	
Greater Manchester		0.086***	
		(0.012)	
Merseyside		0.029***	
		(0.009)	
Rest of North West		-0.056***	
		(0.016)	
Wales		-0.074***	
		(0.016)	
Strathclyde		0.075***	
		(0.009)	
Rest of Scotland		-0.022	
		(0.021)	
Southwest Finland			-0.058***
			(0.009)
Satakunta			-0.025***
			(0.008)
Häme			0.014
			(0.020)
Pirkanmaa			-0.004
			(0.015)
Northeast Finland			-0.067***
			(0.007)
Southern Savo			-0.032***
			(0.010)
Northern Savo			-0.037***
			(0.006)
Northern Karelia			-0.110***
			(0.019)

	(1)	(2)	(3)	(4)
Central Finland				-0.037***
				(0.008)
Southern Ostrobothnia				-0.075***
				(0.009)
Ostrobothnia				-0.055***
				(0.008)
Northern Ostrobothnia				-0.064**
				(0.028)
Kainuu				-0.079***
				(0.020)
Lapland				-0.070
				(0.048)
Year dummies: Y1998		-0.050*		0.047*
		(0.024)		(0.023)
Y1999		-0.040		0.095***
		(0.044)		(0.018)
Y2000		0.039		0.099***
		(0.027)		(0.026)
Y2001		0.042		0.099***
		(0.034)		(0.020)
Y2002		0.042		0.112***
		(0.035)		(0.026)
Y2003		0.073		0.100***
		(0.044)		(0.019)
Y2004		0.106**		0.130***
		(0.039)		(0.028)
Quarter dummies: Q1		-0.013		
		(0.021)		
Q2		-0.019		
		(0.013)		
Q3		0.015		
		(0.021)		
Ln Unemployment rate	0.034	-0.012	-0.010*	-0.009***
	(0.032)	(0.029)	(0.005)	(0.003)
Ln Employed job search rate	-0.107**	-0.063**	0.005	-0.009*
	(0.040)	(0.028)	(0.011)	(0.005)
Spatial lag Ln Unemployment rate	-0.067	-0.008	-0.086***	-0.046***
	(0.040)	(0.025)	(0.011)	(0.015)
Spatial lag Ln Employed job search rate	-0.119*	0.040	0.090***	0.002
	(0.065)	(0.040)	(0.012)	(0.026)
Constant	4.429***	4.999***		6.869***
	(0.232)	(0.186)		(0.250)
Adjusted R^2	0.49	0.51	0.24	0.25
Observations	5717	5717	8704	8704

Robust standard errors in parenthesis, clustered by regions; * Significant at 10%, ** Significant at 5%, *** Significant at 1%