

Technical note for working paper on non-UK employment and workplace wages

Data used: Workplace Employment Relations Survey 2011. This excludes workplaces with less than 5 employees but is otherwise representative of British workplaces once the data are correctly weighted. Data are available from the UK Data Service.

Weighting of results: Establishment weights supplied by the data source.

Workplace informants: The manager responsible for personnel, industrial relations and/or human resource management.

Wage information: The manager states the number of employees who are paid wages that are within certain ranges, starting from below the national minimum wage and working up to wages greater than £18 per hour. There are six ranges in all.

Summary wage variable: Median of workplace wage. This is calculated using the wage information supplied, and making the assumption that the lower bound of the wage distribution is £5/hour while the upper bound is £30/hour. The median is preferred to the mean because the lower bound assumption is supported by the national minimum wage and the calculation is insensitive to the upper bound. The formula for calculation of the median is given in any elementary statistics textbook and is easily programmable.

Wage transformation: We use the natural logarithm of the median workplace wage. This makes it easy to calculate percentage reductions/percentage increases in the wage. The natural logarithm of the median is usually very close to the natural logarithm of the mean.

Employment of non-UK workers. Managers supplied the total numbers employed from EEA countries and from other (i.e. non-EEA) countries. These figures were converted to percentages of total workplace employment. In a small number of cases managers were unable to provide numbers employed in the non-UK groups but were able to make direct estimates of the percentage. These answers were merged with the calculated percentage.

Missing information. In approximately 10 per cent of workplaces managers were unable to state whether any non-UK workers were employed. These cases were excluded from the analysis.

Analysis method. Robust regression was used for the main analyses. Data are weighted (see above for weights) and a robust variance estimator used to ensure that standard errors of estimates are appropriately adjusted for the additional uncertainty introduced by the weighting. Analyses are carried out for the whole economy (i.e. both public and private sectors) and also for the private sector subpopulation.

The chief explanatory variables are the percentage of EEA employees at the workplace (including 0 percent) and the percentage of non-EEA employees at the workplace (including 0 percent).

Control variables are included in the analyses. These are: union representation, the % of female employees at the workplace, the % of employees in managerial or professional jobs, the % in administrative, technical, lower supervisory or skilled manual jobs, the % in temporary jobs including agency staff, the geographical region (10 regions including scotland and wales), the size of the workplace (7 categories), the size of the parent organization (4 categories), the industry group (12 categories), and whether the workplace is part of a foreign-owned company. In variant analyses the banded variable for size of workplace was replaced by the natural logarithm of the total number of employees; it was found that this made little difference to results.

Key findings are summarized in the table below:

Estimated effects of non-UK employment on the logarithm of median workplace wages

non-UK employment type:	Whole economy	Private sector
- EEA	-0.00075 +	-0.00098*
- non-EEA	-0.00194**	-0.00205**
Number of workplaces	2086	1552
R-squared	0.673	0.694

Key to symbols: + significance doubtful - result would arise by chance 1 in 16 times * significant at the 5 per cent level, i.e. a result as large as this would only arise by chance 1 in 20 times (or less frequently). ** means significant at the 1 per cent level, i.e. a result as large as this would only arise by chance 1 in 100 times (or less frequently).