Impact of Cultural Diversity on Wages and Job Satisfaction in England

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Structure of the Talk

- Background and previous literatures
- Contribution of this paper
- Data and modelling strategy
- Empirical results
- Conclusions

Diversity as a Production Amenity

+ Complementarity of skills and of problem-solving abilities across culturally diverse people → increase in innovation and productivity
– Performance might be higher in homogeneous teams
– A poor understanding of the common language might increase communication costs, create creating misunderstandings, conflicts and uncooperative behaviour

Moderate levels of diversity should have a positive impact;
too much diversity might be detrimental →
There should be an optimum level of diversity
which maximises productivity

Diversity as a Consumption Amenity

- Compensating differentials: people living in areas with better amenities will accept lower wages, while people living in areas with worse amenities will be compensated by comparatively higher wages
- Cultural diversity might lead to a larger variety of services offered such as shops and restaurants, and may indicate the presence of a tolerant local population → Positive amenity
- People may fear that a culturally diverse population might generate social conflicts or increase crime → Negative amenity

Diversity may have a positive, negative, or no overall impact on wages

Besides Wages and Productivity

Job satisfaction (never studied before)

- Workers receiving higher wages should be more satisfied with their pay
- Interaction with co-workers is an important aspect of people's jobs and an important component of job satisfaction; frequent misunderstandings may lower job satisfaction
- Cultural diversity may make the type of work more diverse and enjoyable

Employment

- If diversity promotes growth and leads to higher wages, it may have an on employment

Empirical Evidence

Aggregate Data

- Diversity has a positive impact on average wages (Ottaviano and Peri 2005, 2006); high skill foreign workers increase productivity while low skill foreign workers generate negative wage and employment effects (Suedekum et al. 2009)
- Cross-region/cross-country comparisons

Individual Data

- Diversity has a negative impact on trust and social capital (Costa and Kahn 2003b; Putnam 2007; Letki 2008, Fumagalli and Fumagalli 2009)
- Cross-section of individuals, diversity varies across regions but not over time (census data)

Case Studies

New Contribution

- Use of individual data from British Household Panel Survey (1991-2007)
- Combined with population estimates for England (2001-2006) rather than census data

→ Exploit the panel nature of the data (FE+IV)

→ Look at the impact of diversity on wages, job satisfaction, and employment probability of English people

Data

- Diversity is computed using the population estimates for England 2001→2006
  at the level of Local Authority Districts (LADs; 353 in England)

  Focus on population in working age
- Analysis of wages and job satisfaction is based on individual data from the British Household Panel Survey (BHPS)

  Focus on interviews taken in 2002→2007 with working age White British respondents living in England

Measure of Diversity

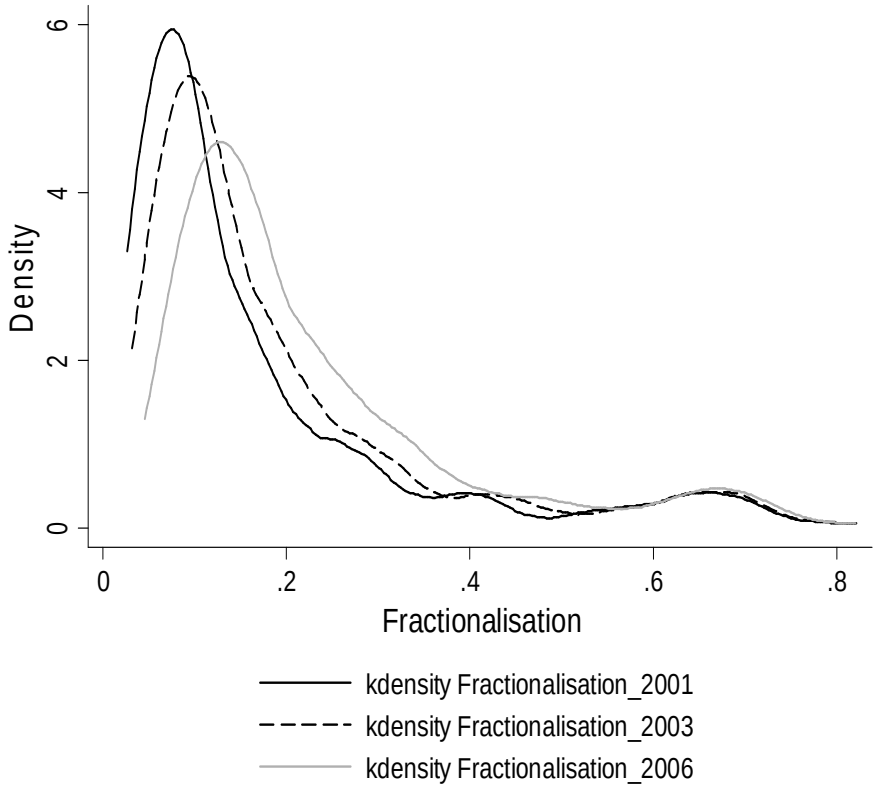
- Index of fractionalisation (on working age people)

$$F_{rt} = 1 - \sum_{k=1}^{K} \left(\frac{EthnicGroup_{krt}}{Population_{rt}} \right)^2$$

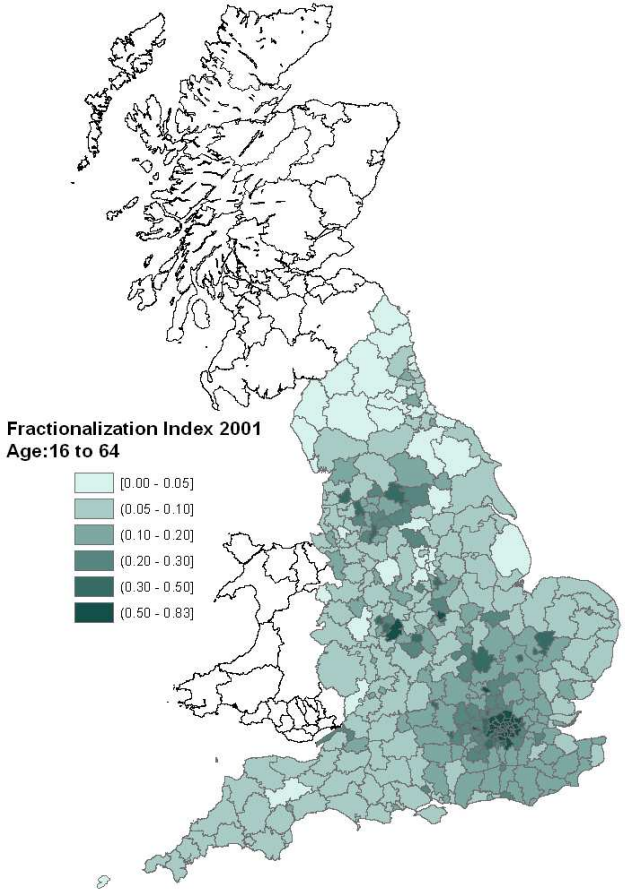
- Probability that two people randomly drawn from the population have the same ethnicity (range: 0-1)
- Accounts both for the number of ethnic groups in the local area and for their size
- Ethnic Groups in 2001: White British (87.0%); White others (3.9%); Caribbean (1.6%); African (1.1%); Indian (2.1%); Pakistani and Bangladeshi (2.0%); Chinese (0.4%); Other ethnic groups (1.8%)

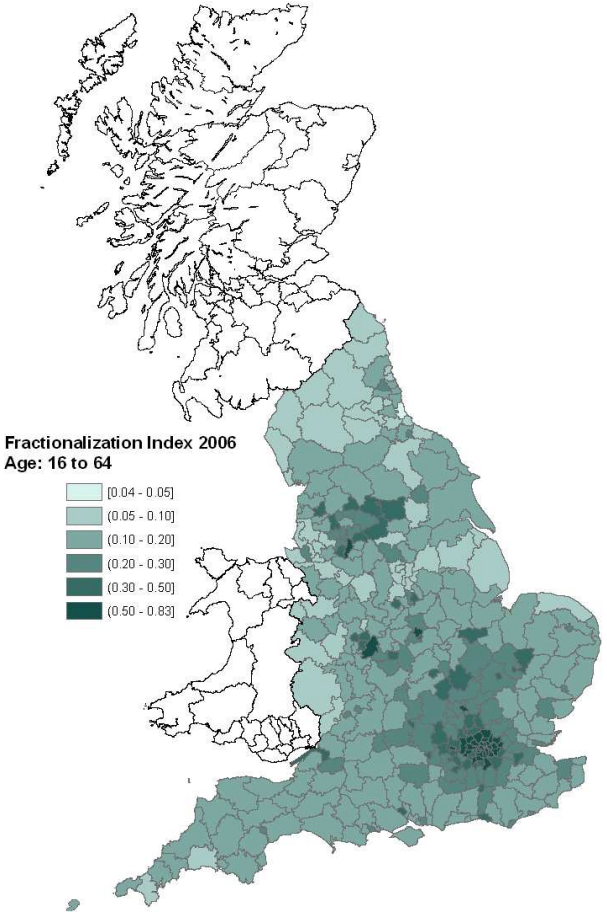
Fractionalisation Index (Working Age)

	2001	2006
Min	0.027	0.045
P50	0.107	0.169
Mean	0.172	0.228
Max	0.821	0.820
N	353	353



Fractionalisation across Districts





Model

$$\text{Wellbeing}_{irt} = \alpha_i + \beta_1 \text{Fractionalisation}_{r,t-1} + \beta_2 \text{Fractionalisation}^2_{r,t-1} + \gamma \text{Controls}_{irt} + \varepsilon_{irt}$$

Wellbeing:

log basic hourly pay rate; log usual monthly wages; ←!

satisfaction with total pay; with job security; with work itself; with hours worked; overall job satisfaction;

dummy for whether employed or self-employed as opposed to unemployed or inactive

Model

$$\text{Wellbeing}_{irt} = \alpha_i + \beta_1 \text{ Fractionalisation}_{r,t-1} + \beta_2 \text{ Fractionalisation}^2_{r,t-1} + \gamma \text{ Controls}_{irt} + \varepsilon_{irt}$$

Wellbeing:

log basic hourly pay rate; log usual monthly wages; ←!

satisfaction with total pay; with job security; with work itself; with hours worked; overall job satisfaction; 7-point scale

dummy for whether employed or self-employed as opposed to unemployed or inactive

Model

$$\text{Wellbeing}_{irt} = \alpha_i + \beta_1 \text{ Fractionalisation}_{r,t-1} + \beta_2 \text{ Fractionalisation}^2_{r,t-1} + \gamma \text{ Controls}_{irt} + \varepsilon_{irt}$$

Controls: age; dummies for female, married, 9 qualification levels; 9 occupations; part-time; London/Regional dummies; population density; Time dummies

Estimators:

Wages: Pooled OLS and FE

Satisfaction: Linear Model on 7-scale: pooled OLS and FE (correlated ordered random effects probit)

Employment: Linear Probability Model: pooled OLS and FE

All with standard errors clustered by individuals

Different types of instrumental variables (discussed later)

Impact of Diversity on Wages

Basic hourly wages	OLS	OLS	FE	FE
Fractionalisation	0.396*	0.126	0.700	0.290
Fractionalisation^2	-0.243	0.090	-0.808	-0.512
Observations: 5,390				
Usual monthly wages				
Fractionalisation	0.418*	0.102	-0.292	-0.425
Fractionalisation^2	-0.384	-0.048	0.237	0.326
Observations: 17,086				
Time dummies	Yes	Yes	Yes	Yes
Region (GOR) dummies	No	Yes	No	Yes
Individual effects	No	No	Yes	Yes

Standard errors are clustered by individuals; + Significant at 5%, * Significant at 1%; other control variables: age and its square, job tenure, dummies for married, part-time, occupations, a dummy for London, and population density. OLS models also include dummies for female and qualification level.

Impact on Job Satisfaction and Employment

	Sat. with Pay	Sat. with Security	Sat. with Work	Sat. with Hours	Sat. Overall	Prob. Employed
			Only time dummies			
Fractionalisation	-0.884+	-0.632	-0.735+	-0.562	-0.543	0.300*
Fractionalisation^2	1.489+	1.185	1.244+	0.781	0.996+	-0.357+
Observations	17,055	17,026	17,064	17,068	17,078	25,517
			Individual effects, time and region dummies			
Fractionalisation	-0.420	-1.851+	0.349	-0.270	0.024	-0.256
Fractionalisation^2	1.369	3.032+	-1.029	0.863	-0.067	0.294
Observations	17,055	17,026	17,064	17,068	17,078	25,517

Coefficients of linear probability models; standard errors are clustered by individuals; + Significant at 5%, * Significant at 1%; other control variables: age and its square, dummies for married, a dummy for London, and population density. The satisfaction models also include job tenure, dummies for part-time and occupations. OLS models also include dummies for female and qualification level.

Endogeneity - Instrumental Variables

British people who are likely to profit from diversity may be attracted by more diverse areas → Fixed Effects helps

Areas with higher wages or employment probability may attract immigrants who then generate higher levels of diversity

1. Proportion of ethnic minorities joining the 'New Deal Programme' in each district and year
2. Index of diversity at the county level (about 100 counties)
3. Index of diversity at the Government Office Regions level (9 regions)

Problem for wages and employment, but not for satisfaction

Instrumental Variables Results

	OLS	IV1	IV2	IV3	FE	IV1 FE	IV2 FE	IV3 FE
Basic hourly wages								
Fract.	0.265*	0.237*	0.302*	0.435^{+}	-0.046	1.107	1.138^{+}	0.077
Usual monthly wages								
Fract.	0.206*	0.140	0.341*	0.688^{+}	-0.221	-0.045	-0.197	-1.661*
Employment								
Fract.	0.300*	0.198	0.518^{+}	1.948	-0.256	-0.373	-0.373	-0.875
Fract.^{2}	-0.357^{+}	-0.147	-0.746	-3.614	0.294	0.485	0.485	-3.566

Standard errors are clustered by individuals; + Significant at 5%, * Significant at 1%; other control variables: age and its square, population density, dummies for married, part-time, London, occupations, and a full set of time dummies. OLS models also include dummies for female and qualification level. FE models also include a full set of regional dummies. The instrument IV1 is the proportion of ethnic minorities joining the 'New Deal Programme' in each district and year (the instrument refers to the same year of the measure of diversity: t-1, from 2001 to 2006); the instrument IV2 and IV3 are the fractionalisation measure in the larger area, as suggested by Dustmann and Preston (2001). The larger area is the County for IV2 and the Government Office Region for IV3.

Conclusions

- Cross-section models that diversity seems to have a statistically significant impact on individual wages, on the probability of having a job, and on some aspects of job satisfaction
- In panel data models accounting for individual heterogeneity the impact of diversity disappears → diversity has no impact on wages, job satisfaction or employment
- Instrumental variables models tend to confirm that there is no impact of diversity

The results found in the previous literature

may be driven by area and individual heterogeneity

Additional Sensitivity Analysis

- Movers vs. stayers
- Impact by Education and Occupation
- Size of the Geographical Area
  - Include weighted average of the fractionalisation index in the neighbouring districts among explanatory variables
  - Use larger geographical areas (counties)
- Other Measures of Diversity
  - Index of fractionalisation computed after excluding the white British majority
  - Specialisation index commonly used to measure the level of industrial specialisation across regions