

# **The effect of offshoring on the task-composition of occupations and employment**

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# Motivation

ICT and globalization changed the division of labour at different levels

Skill-biased technological change (SBTC) has a greater role in the changing labour demand, but offshoring is gaining importance

# Motivation # 2

Firms can offshore jobs (factory workers and clerks)  
and / or tasks (document editing and administrative tasks)

Task-based framework:

*Autor et al. 2003 (and many others), Akcomak et al. 2011*

Impact of offshoring on the labour market:

*Firpo et al. 2010, Goos et al. 2011*

# This paper

measures and interprets changing employment and task-composition of occupations in the UK.

- 1) analyse changes in the task-composition and employment of occupations
- 2) explain these changes in the light of offshoring and skill-biased technological change

# Data

## British Skill Survey (BSS)

Importance of 36 tasks for individuals  
scale 1 (not important at all) to 5 (essential)  
aggregated at occupational level (1997-2006)

## Examples of tasks

Physical strength

Noticing when making a mistake

Persuading or influencing others

# Empirical outline

- Pattern employment changes
- Construct task-composition indicators
- Construct offshoring and SBTC indicators
- Explain changing employment and task composition of occupations with offshoring, SBTC and control variables.

# Job polarization in the UK



# Task-composition indicators

1. Changes in relative importance of tasks
2. Changes in the number of relative important tasks
3. Changes in the bundling of tasks
4. Changes in the connectivity of tasks



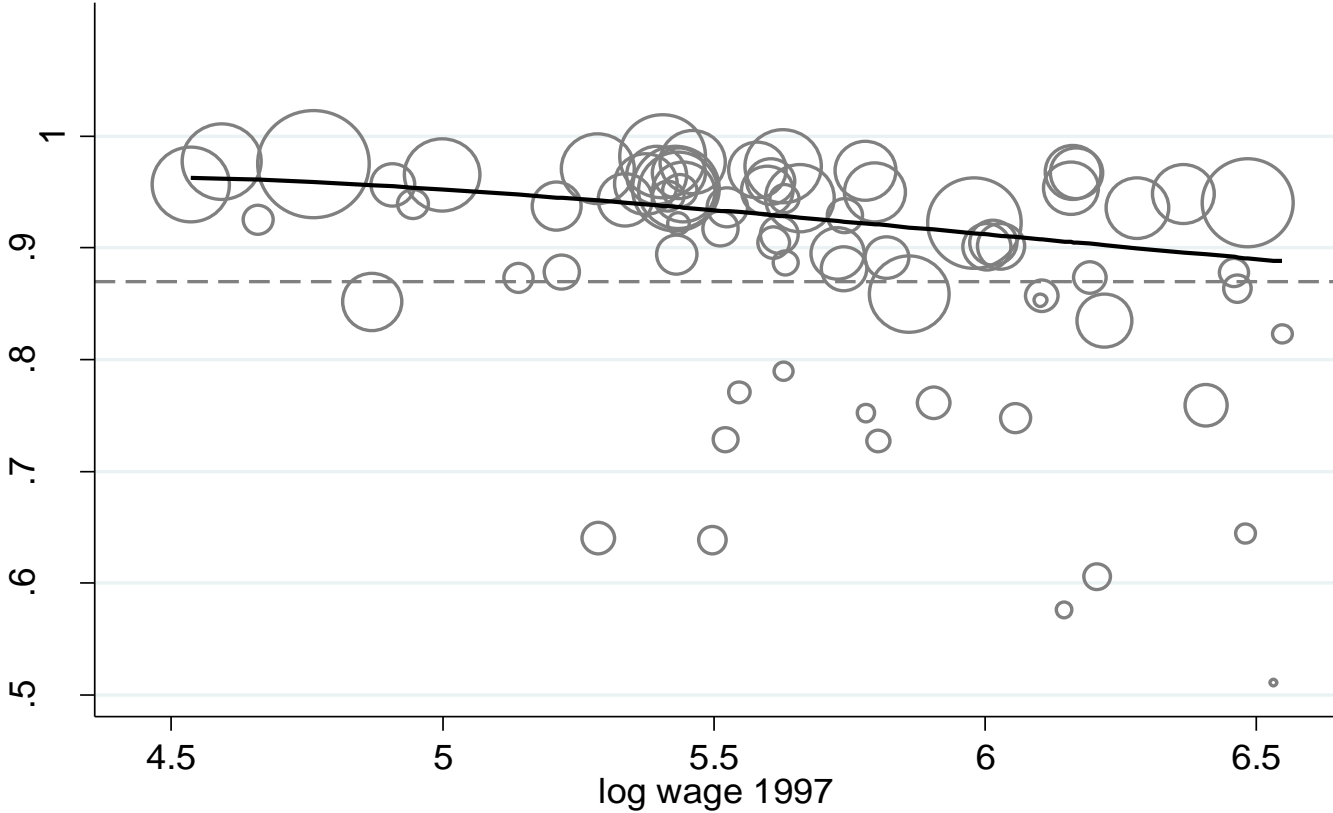
# Task-rank correlation

The changes in relative importance of tasks

The correlation between the rank of the tasks within the occupation 1997 and 2006

A lower correlation indicates more changes in the importance of tasks within the occupation

change in task-rank 1997-2006



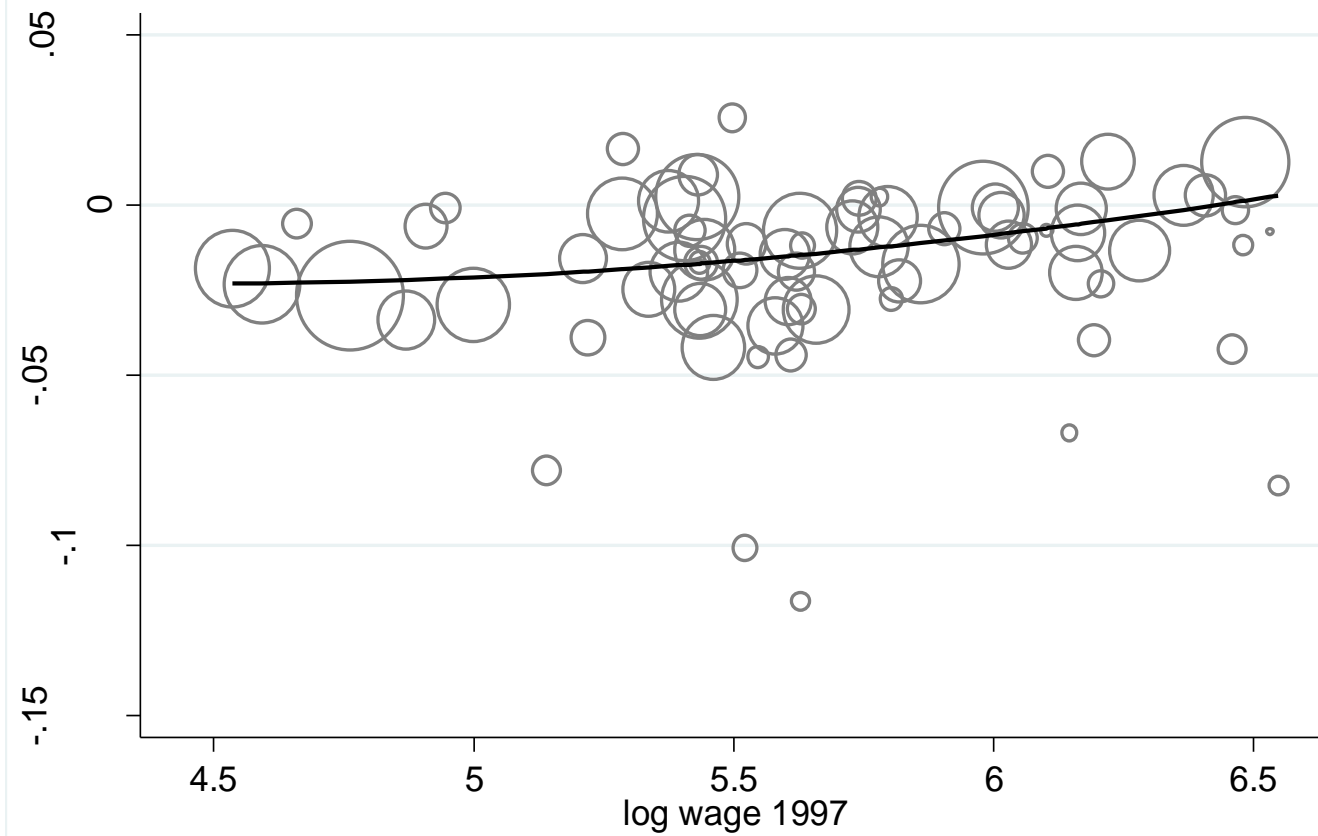
# Task-concentration indicator

The change in inequality of task importance between the 36 tasks within the occupation

Gini coefficient 1997 vs 2006

Positive values: the occupation became more specialised / concentrated, less tasks are crucial.

change in task-concentration 1997-2006



# Spatial-separability index

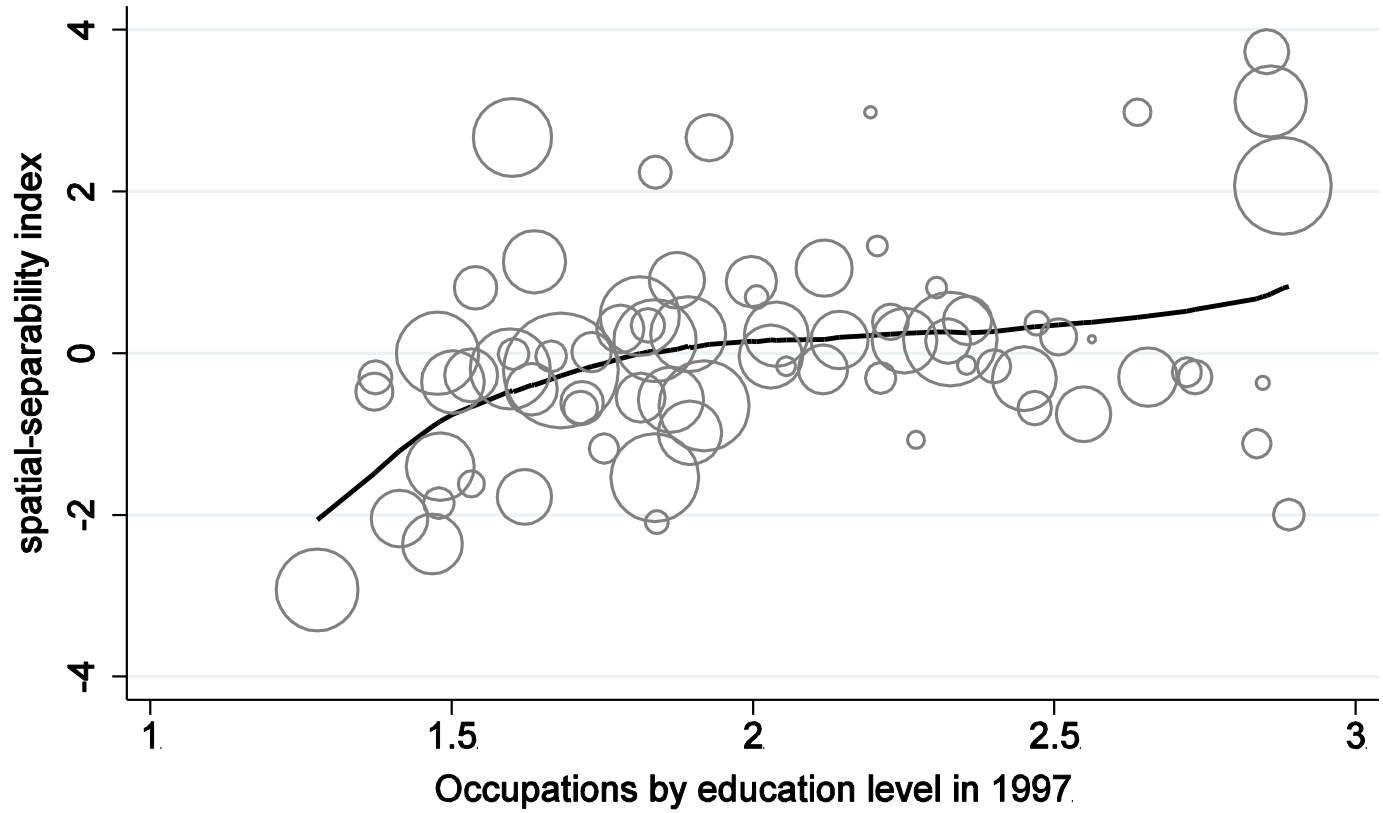
The likelihood that a task can be performed at distance from other tasks

Based on two ONET tasks:

face to face discussions

physical proximity

### Lowess smoother



# Offshoring | SBTC

## Offshoring:

- Blinder-Offshorability Index
- Goos, Manning and Salomons offshoring Index

## SBTC:

- Computer-use and change in computer use
- Routine Task Intensity (RTI) and change in RTI

# Estimation

$$X_i = \alpha_0 + \alpha_1 O_i + \alpha_2 S_i + \alpha_3 \Delta S_i + \alpha_4 C_i + \varepsilon_i$$

## Control variables:

- Wage
- Employment
- Skill level | Education
- Unionization



# Results

	EMPLOYMENT CHANGE 1997-2006			TASK-RANK CORRELATION		
SSI	0.257** (0.108)	0.251** (0.098)		-0.158* (0.091)	-0.144* (0.082)	
Blinder			0.211* (0.114)			-0.148 (0.094)
CUI 97	0.065 (0.143)			-0.011 (0.121)		
RTI 97		-0.218 (0.153)	-0.097 (0.167)		0.239* (0.129)	0.145 (0.137)
Emp 97	-0.547*** (0.106)	-0.573*** (0.105)	-0.537*** (0.107)	0.535*** (0.089)	0.555*** (0.088)	0.533*** (0.088)
Educ 97	0.135 (0.156)	0.016 (0.158)	0.113 (0.115)	0.061 (0.132)	0.155 (0.133)	0.101 (0.128)
Union9706	0.240** (0.102)	0.259** (0.100)	0.250** (0.304)	0.364*** (0.086)	0.343*** (0.084)	0.347*** (0.084)
Obs	72	73	73	72	73	73
R2	0.421	0.438	0.412	0.597	0.610	0.607

# Summary table

	OFFSHORING			SBTC	
	SSI	Blinder	CUI	CUI $\Delta$	RTI
Employment change	+	+			-
Task-rank correlation	-	-		-	
Task-concentration			+		-
Task-bundling	+		-	+	
Task-Connectivity				-	+

The GMS offshorability index and the change in RTI are never significant

# Conclusion

The UK experienced a job polarization process

The task-composition of occupations changes

> Analyses which assume constant task-composition may suffer from measurement errors

Offshoring does affect both employment changes and changes in the task-composition of jobs

# Conclusion

Spatial-separable occupations lost jobs and experienced less changes in task-composition

SBTC affected the task-concentration and task connectivity of occupations