Job Polarization in Europe

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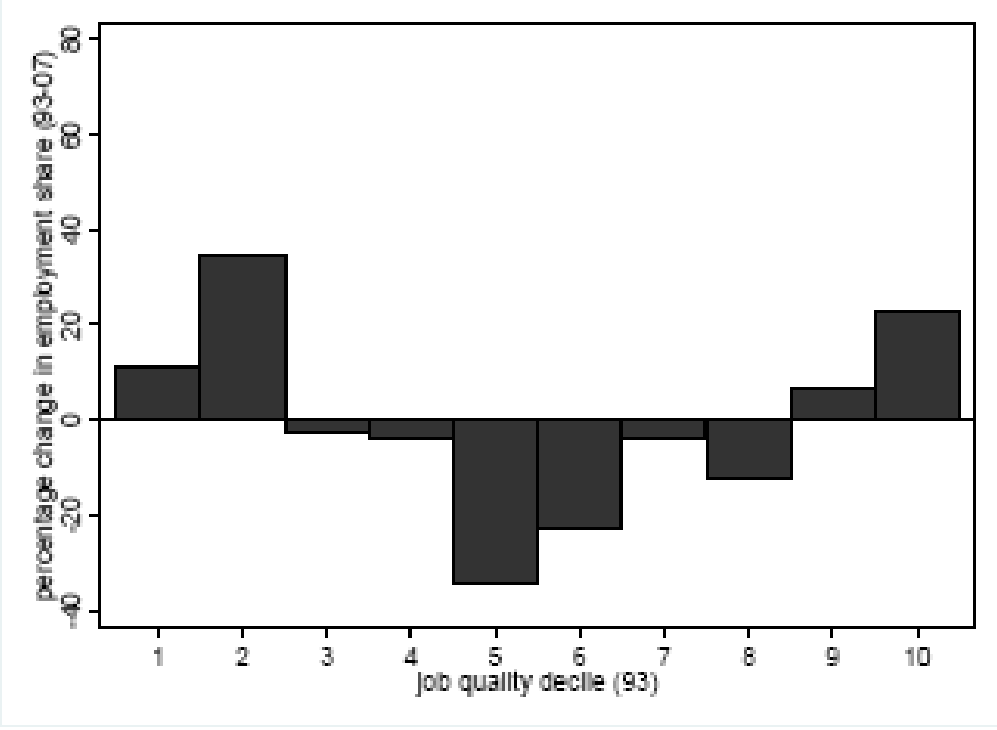
Job polarization

Employment is "polarizing" into low-wage and high-wage jobs in the US, UK and (West-)Germany



Source: UK Labour Force Survey, 1993-2007

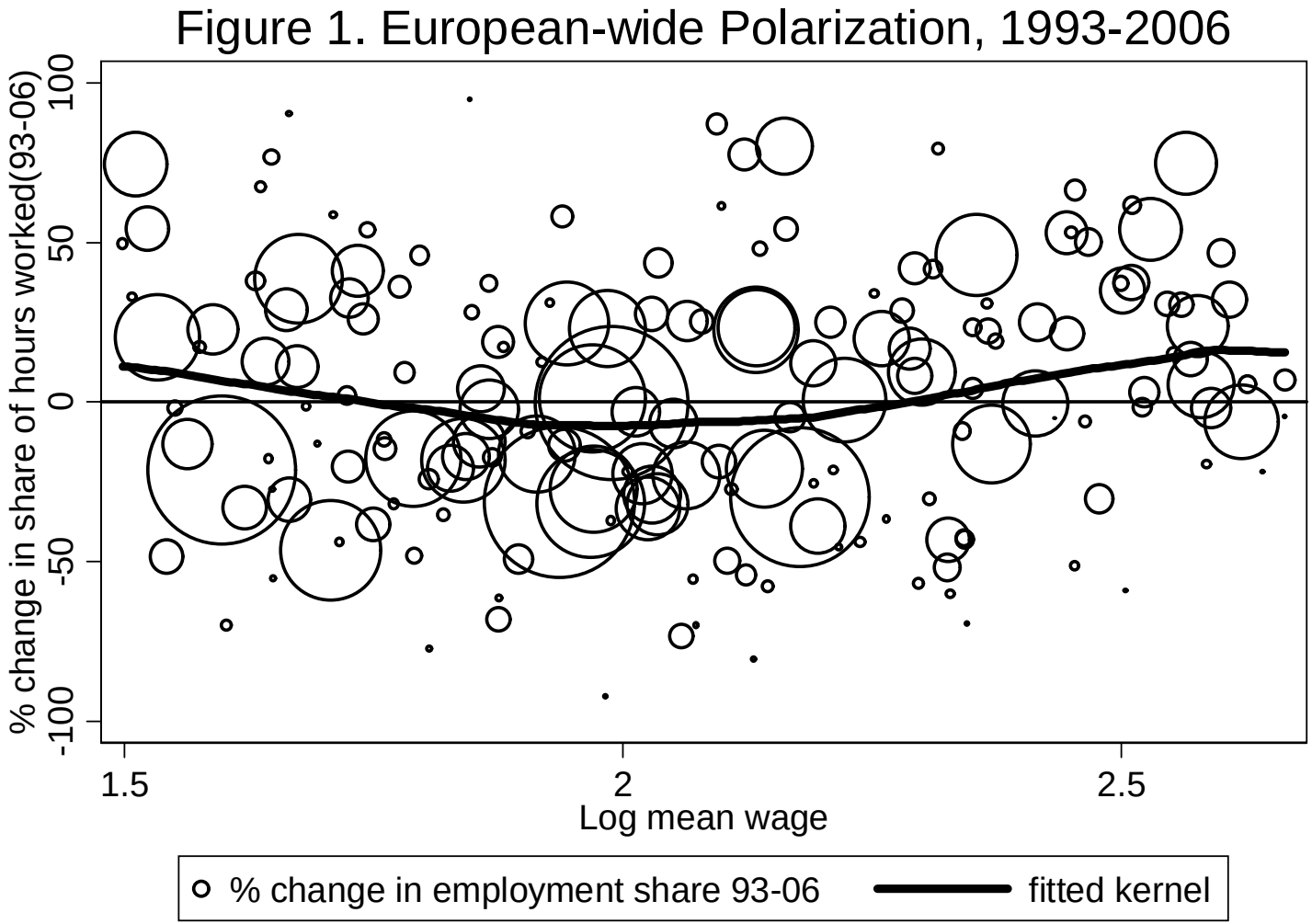
Questions about job polarization

- **Is job polarization pervasive?** There is a consensus that job polarization is present in 1990s in US, UK and West-Germany but there is no *evidence for other countries*.

- **What explains job polarization?** Literature has focused on *recent technological progress*, but how important are other changes in labor demand such as *offshoring* and how important are *relative wage changes* and how important are institutions or differences in *wage inequality*?

1. Is job polarization pervasive?

The polarization of the European labor market (I)



The polarization of the European labor market (II)

Table 1. Changes in Shares of Hours Worked over 1993-2006 for Occupations Ranked by Their Mean 1993 European Wage

ISCO occupations ranked by 1993 mean European wage	Employment share in 1993	Percentage point change over 1993-2006
8 highest paying occupations		
Corporate managers	4.54%	1.25
Physical, mathematical and engineering professionals	2.92%	1.02
Life science and health professionals	1.86%	-0.14
Other professionals	2.82%	0.70
Managers of small enterprises	3.60%	1.28
Physical, mathematical and engineering associate professionals	3.99%	0.91
Other associate professionals	6.77%	2.07
Life science and health associate professionals	2.28%	0.66
9 middling occupations		
Drivers and mobile plant operators	5.48%	-0.17
Stationary plant and related operators	1.75%	-0.39
Metal, machinery and related trade work	8.33%	-2.33
Precision, handicraft, craft printing and related trade workers	1.31%	-0.40
Office clerks	12.04%	-1.98
Customer service clerks	2.00%	0.19
Extraction and building trades workers	8.17%	-0.52
Machine operators and assemblers	6.71%	-2.01
Other craft and related trade workers	3.19%	-1.37
4 lowest paying occupations		
Personal and protective service workers	6.94%	1.15
Laborers in mining, construction, manufacturing and transport	4.11%	0.48
Models, salespersons and demonstrators	6.73%	-1.42
Sales and service elementary occupations	4.47%	1.02

The pervasiveness of job polarization in Europe

Table 2. Change in Shares of Hours Worked over 1993-2006 for High-, Middling and Low-Paying Occupations

	4 lowest paying occupations	9 middling occupations	8 highest paying occupations
	Employment share in 1993 (std dev)		
EU average	22% (3.5)	46% (5.2)	32% (7.1)
	Percentage point change 1993-2006		
EU average	1.58	-7.77	6.19
Austria	-0.59	-14.58	15.17
Belgium	1.48	-9.50	8.03
Denmark	-0.96	-7.16	8.13
Finland	6.66	-6.54	-0.12
France	-0.74	-12.07	12.81
Germany	3.05	-8.71	5.67
Greece	1.75	-6.08	4.34
Ireland	6.19	-5.47	-0.72
Italy	-8.20	-9.08	17.28
Luxembourg	-1.66	-8.45	10.10
Netherlands	2.27	-4.68	2.41
Norway	4.96	-6.52	1.57
Portugal	2.39	-1.13	-1.26
Spain	0.96	-7.04	6.07
Sweden	1.90	-6.93	5.03
UK	5.77	-10.32	4.55

Conclusions

- Recent changes in the employment structure of **16 European countries** have been similar to those taking place in the US and the UK.
- The employment shares of high-paid professionals as well as low-paid personal services workers have increased at the expense of the employment shares of middling manufacturing and routine office workers – a process known as **job polarization**.

2. What explains job polarization?

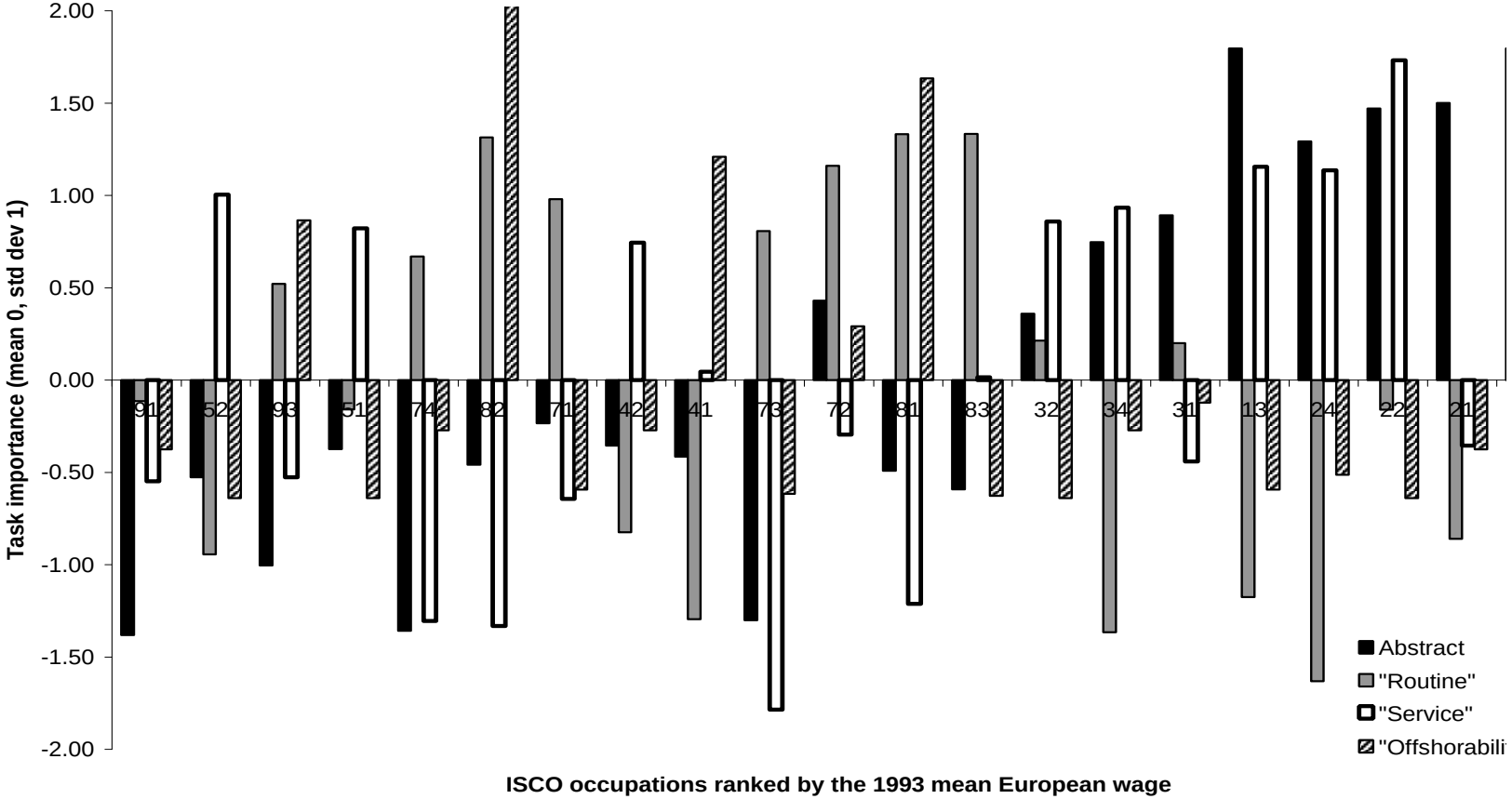
Biased technological progress and offshoring (I)

- **Task-biased technological change (the routinization hypothesis)** predicts a secular decrease in the relative demand for *occupations* intense in routine tasks (compared to non-routine tasks) capturing the relative substitutability between routine tasks and capital.

- **Task-offshoring** predicts a secular decrease in the relative demand for *occupations* doing offshorable tasks (compared to non-offshorable tasks) capturing the relative substitutability between offshorable tasks and foreign labor.

Biased technological progress and offshoring (II)

Figure 2. Abstract, Routine, and Service task importances and offshorability for 21 occupations ordered by the 1993 mean European wage



Testing different hypotheses (I)

Consider the following **estimating equation** for employment in occupation j, country c at time t, N_{jct}:

$$\log N_{jct} = \beta_0 + \beta_1' \left(X_j * timetrend\right)_{jt} + \beta_2 \log w_{jct} + \beta_3' F_{jc} + \beta_4' F_{ct} + \varepsilon_{jct}$$

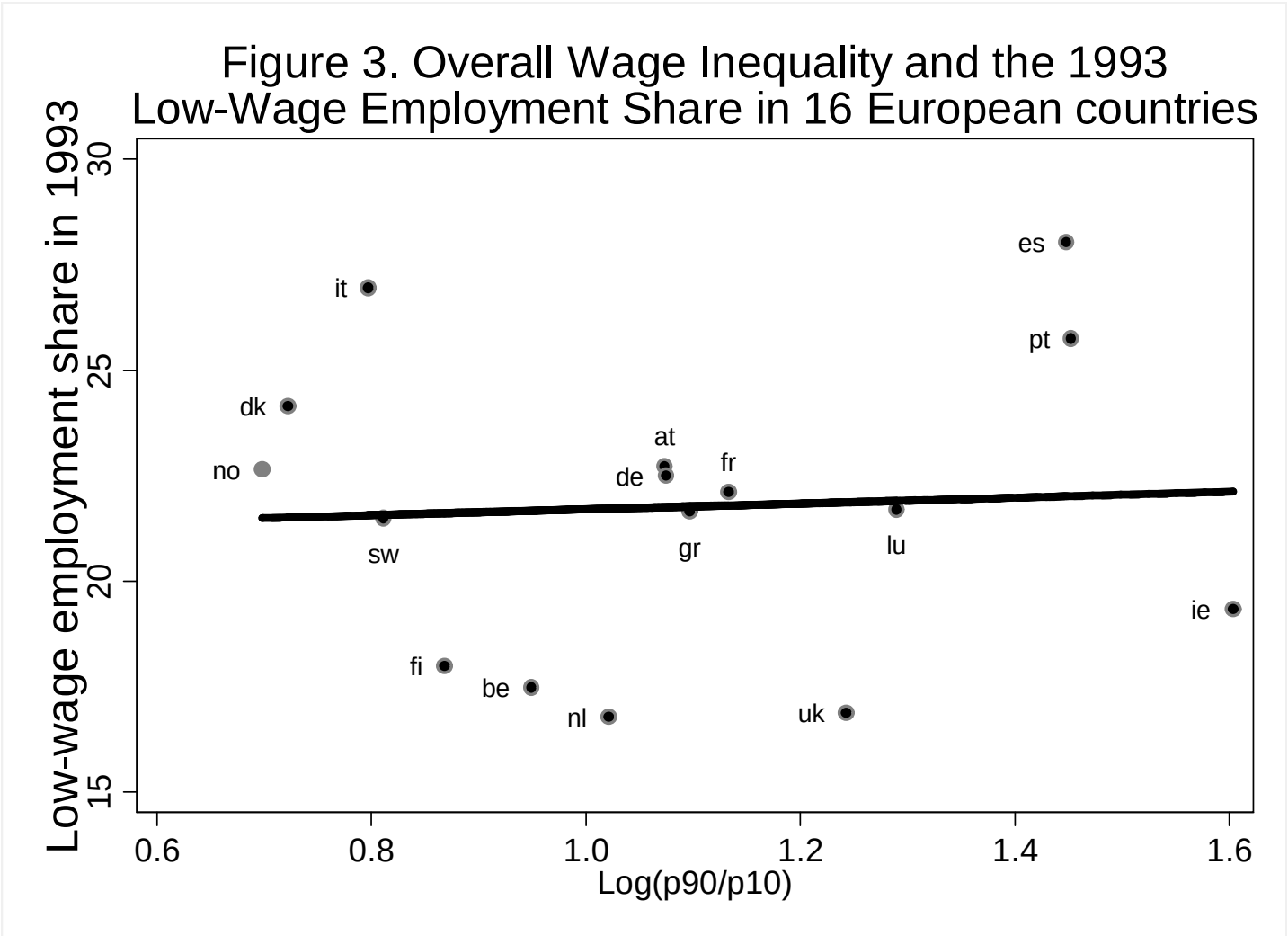
- X_j occupational measures of abstract, routine or service intensity; offshorability of occupation j; mean level of educational attainment in occupation j
- w_{jct} the wage in occupation j, country c at time t
- F_{jc} and F_{ct} occupation-country and country-time fixed effects.

Testing different hypotheses (II)

Table 3. Explaining Job Polarization
Dependent variable: ln(hours worked/1000)

Linear time-trend interacted with:	(1)	(2)
ABSTRACT task importance	1.02*	0.96*
	(0.46)	(0.24)
ROUTINE task importance	-0.67*	-0.85*
	(0.30)	(0.20)
SERVICE task importance	0.24	-
	(0.32)	
Offshorability	-0.22	-
	(0.19)	
Education level	-0.19	-
	(0.48)	
Log wage	-0.32	-
	(0.29)	

Testing different hypotheses (III)



Conclusions

- At least since the early 1990s, there has been **pervasive employment polarization** in 16 European countries.
- Pervasive job polarization is in line with the evidence that in advanced countries, technologies are becoming **more intense in the use of non-routine tasks**.
- The evidence for alternative explanations - offshoring and inequality - is much weaker.

Goos, Manning and Salomons (2009b)

- Provide a rich framework (a la Grossman and Rossi-Hansberg) modeling the many different channels that can affect the demand for different occupations.
- Derive estimating equations and test the identifying assumptions of our model in various ways.
- Test the different hypotheses within our framework: TBTC, SBTC, offshoring and wage inequality/institutions.