

A decorative graphic on the left side of the slide consists of a grid of squares in shades of red, grey, and dark blue, arranged in a stepped pattern.

# The anatomy of job polarisation in the UK

Andrea Salvatori  
ISER  
University of Essex

27 October 2015

**2015 IBS Jobs Conference  
Warsaw**

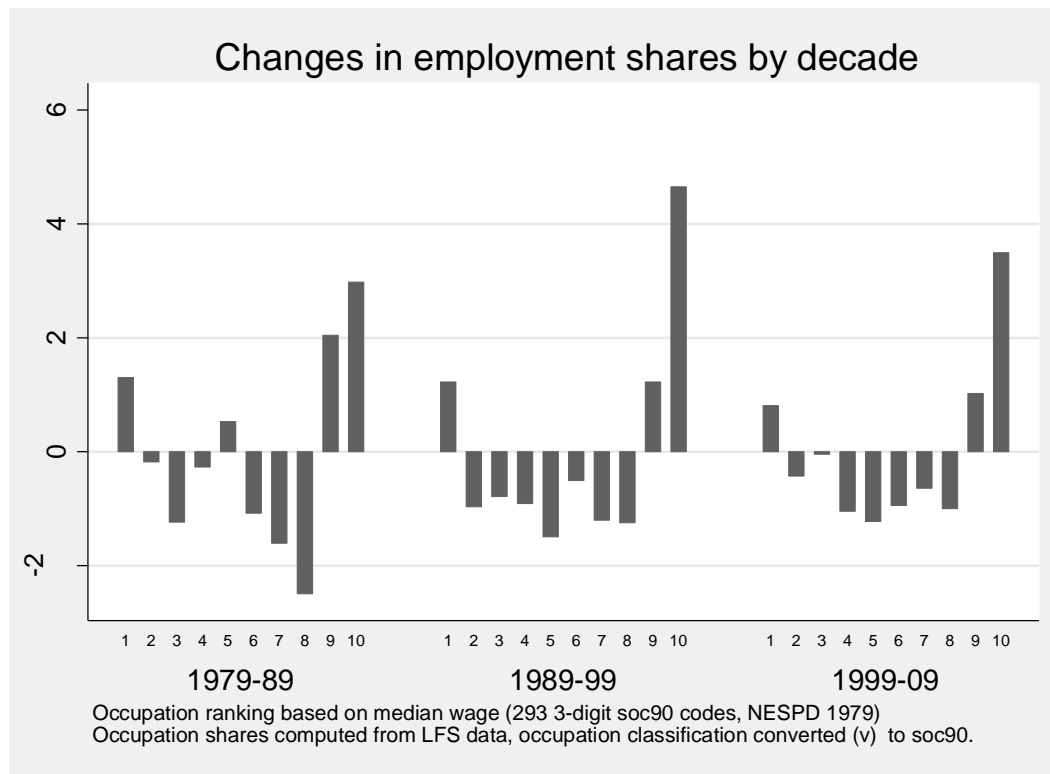
# Routinisation and job polarisation

- Routine biased technological change (RBTC) to explain decline in middling jobs
- RBTC more important than offshoring (Acemoglu and Autor 2011, Autor and Dorn 2013, Goos et al. 2014, Michaels et al. 2014)
- Evidence supports RBTC, especially in the US in the 1990s, but **puzzles**:
  - No job polarisation in the US in 2000s: growth at the bottom (Mishel et al. 2013, Autor 2014)
  - Occupational wage polarisation only in US in the 1990s, not in Germany (Dustman et al. 2009) or Canada (Green and Sand *forthcoming*).
- ➔ These puzzles cast doubts on RBTC as dominant driver of changes in labour market and highlight (i) limited understanding of impact of technology on quality and quantity of jobs and (ii) potential importance of other factors.
- ➔ **This paper**: new evidence on UK with focus on recent supply-side changes.

# Job polarisation: the UK

- Goos and Manning (2007) conclude that compositional changes cannot explain job polarisation (age-edu-gender) **1979-1999**, but
  - from mid 1990s large increase in share of graduates and immigrants in UK (at least in part as a result of policy changes)
  - In 2000s: US evidence suggests slow down in demand at the top (Beaudry et al *forthcoming*)
  
- Descriptive empirical investigation relies on 3 steps:
  - 1) Shift-Share analysis:
    - ✓ As in GM: highlights role of compositional changes
    - ✓ Shows patterns within skill groups (Spitz-Oener 2006, Acemoglu and Autor 2011)
  - 2) Changes in occupational wages:
    - ✓ Are these consistent with shift in demand as the dominant driver?
  - 3) Compare evidence with US:
    - ✓ Natural benchmark given size of lit and tech leader
    - ✓ Expected similarities between similarly developed countries
  
- **Main conclusion:** graduate growth contributed to main feature of polarisation process in UK, which is a shift from mid to top occupations.

# Job polarisation, 1979-2009, by decade



(Some) polarisation in each decade, and growth at the top always stronger than at the bottom: 80% lost in mid is gained by top.

**US:** polarisation only in 1990s. In 2000s, growth at the bottom only.

## Contributions of major occupational groups to employment changes in different segments of the occupational wage distribution, 1979-2012.

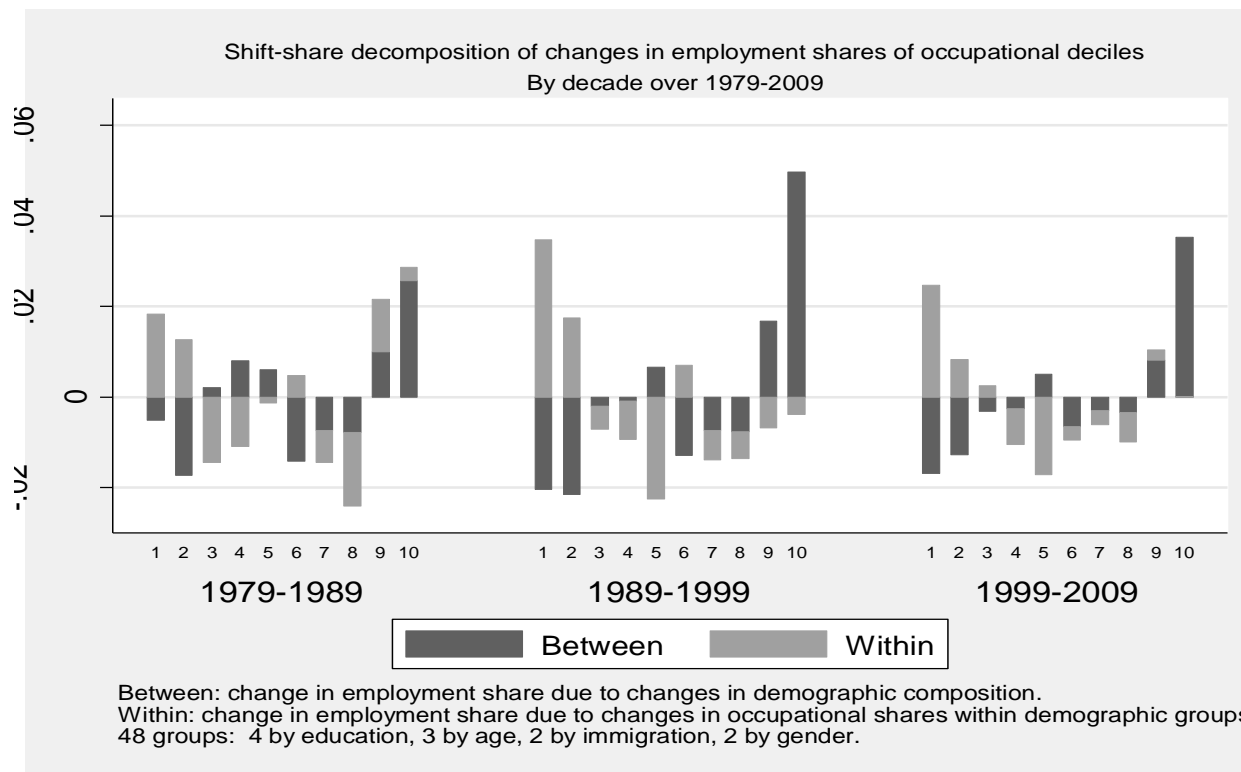
SOC90 Major Occupational Groups	Bottom		Middle		Top		All		% change
	1979 share	2012-1979 (pp change)	1979 share	2012-1979 (pp change)	1979 share	2012-1979 (pp change)	1979 share	2012-1979 (pp change)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
1 Managers and Administrators	0.28	0.04	2.27	<b>0.98</b>	5.55	<b>9.14</b>	8.10	10.16	125.4
2 Professional	-	-	0.52	0.58	6.77	<b>4.07</b>	7.29	4.65	63.9
3 Associate professional and technical	-	-	2.68	<b>2.80</b>	3.26	3.37	5.94	6.17	103.8
4 Clerical and secretarial	1.10	-0.07	17.76	-4.72	-	-	18.86	-4.79	-25.4
5 Craft and related	2.08	-1.35	16.39	-9.78	0.45	-0.23	18.92	-11.36	-60.0
6 Personal and protective services	6.07	<b>5.83</b>	0.97	0.50	0.65	0.24	7.68	6.57	85.6
7 Sales	4.89	<b>1.95</b>	0.36	-0.28	1.64	-0.20	6.90	1.47	21.3
8 Plant and machine operatives	1.67	-1.04	12.54	-6.60	0.60	-0.34	14.80	-7.98	-53.9
9 Other occupations	7.02	-2.34	4.49	-2.56	-	-	11.51	-4.90	-42.6
<b>Total</b>	23.10	3.02	57.99	-19.07	18.91	16.05	100	0	

Cells highlighted in grey are the lowest two values in the columns, figures in bold are the highest two.

Decline of the Middle driven by crafts and operatives.

- Production jobs down since 1980s
- Clerical jobs since the 1990s.

# Job polarisation, shift-share by decade



**48 groups: 4 edu, gender, immigration, 3 age.**

But main conclusions the same if 4 edu only or 400 (regions)

1979-2012	Graduates			Non-graduates		
	Total	Between	Within	Total	Between	Within
Bottom	3.9	3.1	0.8	-0.4	-12.0	11.6
Middle	9.0	8.3	0.7	<b>-28.3</b>	<b>-15.5</b>	<b>-12.7</b>
Top	15.0	16.6	-1.5	0.7	-0.4	1.2
<b>1979-1989</b>						
Bottom	0.3	0.4	0.0	0.5	-2.6	3.1
Middle	1.2	1.1	0.1	-7.1	-2.4	-4.6
Top	2.4	2.5	-0.1	2.6	1.1	1.5
<b>1989-1999</b>						
Bottom	0.3	0.7	-0.4	0.7	-4.9	5.6
Middle	3.6	2.9	0.7	-10.2	-5.4	-4.8
Top	6.2	6.4	-0.3	-0.6	0.2	-0.8
<b>1999-2009</b>						
Bottom	1.8	0.7	1.1	-1.5	-3.7	2.2
Middle	2.6	2.7	-0.2	-7.5	-4.1	-3.3
Top	4.5	5.4	-0.9	0.1	-1.0	1.1

## Polarisation is a non-graduate phenomenon:

- 1) Decline in mid entirely NG
  - Mostly from BGC (since 1990s)
- 2) Within NG: polarised, but heavily skewed to the bottom
- 3) Graduates account for all the growth at the top from 1990s.
- 4) No polarisation within graduates: in the 2000s shift towards the bottom.

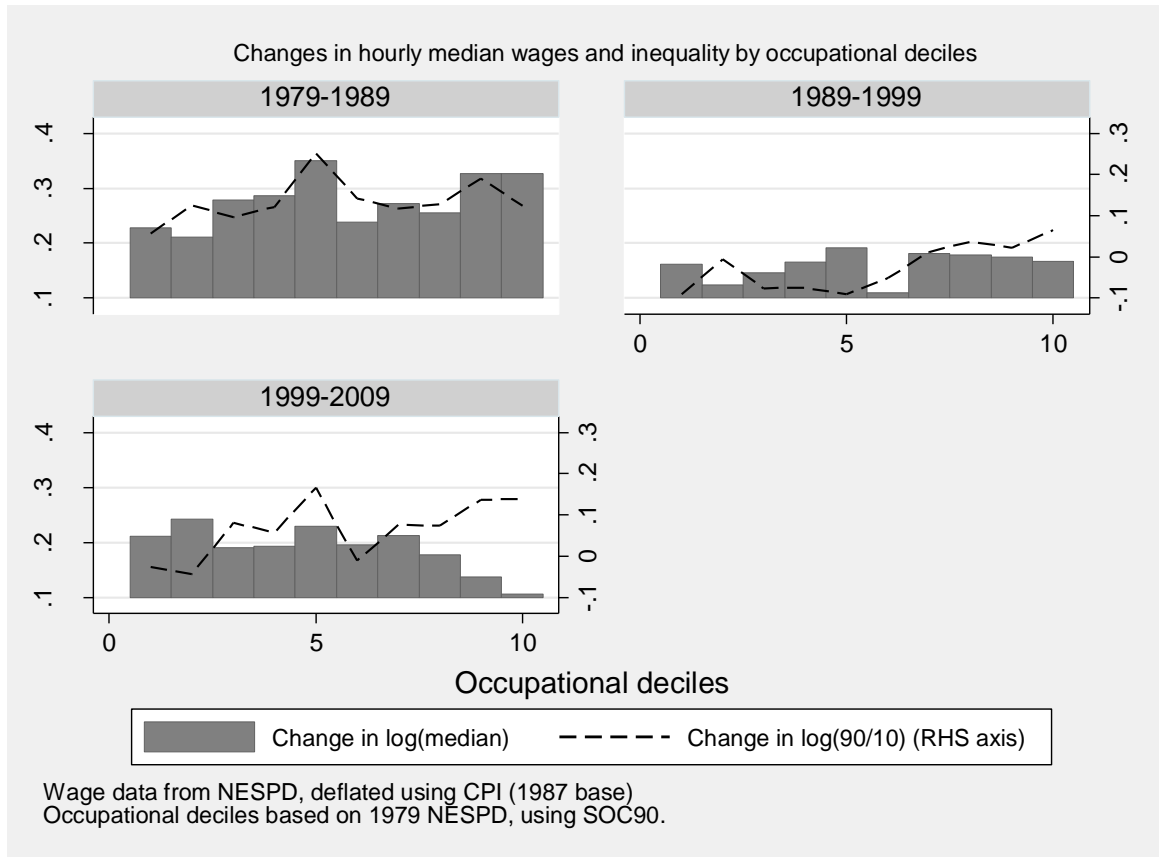
The table reports the total by education groups from the shift-share analysis with 48 skill groups.

# Further checks

- Routine employment:
  - Consider 3 classifications:
    - 1-digit Soc90 codes
    - US DOT (Goos et al. 2014, Autor and Dorn 2013))
    - Survey data from the British Skill Survey
  - Compositional changes account for most of the decline in routine employment across the distribution.
  
- Education (rather than wage) rankings:
  - Strongest decline is in bottom decile.
    - Contrast with US evidence



# Changes in occupational wages



No polarisation in occupational wages

Performance of top wages deteriorates over time.

Within-decile inequality increases in each decade at the top.

Strong relative performance of median decile in each decade:

- Wages in clerical occupations perform particularly well in spite of declining employment

→ Also in the US (Autor and Dorn 2013)



# Conclusions

- **Major differences when compared to US evidence:**

- Job polarisation in each decade, no wage polarisation ever.
- 80% of losses in middling occupations gained by top occupations.
- ➔ Long-term trend and steady rate of decline not compatible with RBTC? (Green and Sand *forthcoming*, Mishel et al. 2013).

- **Evidence that supply-side changes matter:**

- Growth in graduates account for entire growth at the top since 1990s
- BGC account for a 1/3 of decline in middling occupations
- Polarisation has not occurred within skill groups – only within non-graduates.
- Relative performance of top wages has deteriorated over time– worst in 2000s
- Edu rankings show decline of least educated occupations

- **Better identification strategies needed – but descriptive evidence not consistent with (simple) RBTC as dominant driver.**

➔ Still limited understanding of complex relationship between tech and labour to make predictions on “the future of labour” (Autor 2014).