

Kaplanis, Ioannis

Conference Paper

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46th Congress of the European Regional Science Association: "Enlargement, Southern Europe and the Mediterranean", August 30th - September 3rd, 2006, Volos, Greece

Provided in Cooperation with:

European Regional Science Association (ERSA)

Suggested Citation: Kaplanis, Ioannis (2006) : The Geography of Employment Polarisation in Britain, 46th Congress of the European Regional Science Association: "Enlargement, Southern Europe and the Mediterranean", August 30th - September 3rd, 2006, Volos, Greece, European Regional Science Association (ERSA), Louvain-la-Neuve

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The Geography of Employment Polarisation in Britain

Ioannis Kaplanis

Department of Geography and Environment, LSE

Abstract

Employment polarisation in developed countries has been of central focus for research and policy circles and has caused a vivid debate, known as the ‘job quality debate’. An important question that has not been explored is the geography of this polarisation. This paper aims to address this, by examining empirically the special patterns of employment polarisation for Britain in the past decade. In the empirical part of the paper, econometric techniques are used to investigate whether employment polarisation happens within regions or just across regions and whether it is a predominantly urban phenomenon. New Earnings Survey microdata are used for this purpose. The main result found is that all regions experience some degree of employment polarisation during the 1990s. Remarkably, London appears unique in terms of the magnitude of its employment polarisation. It experiences disproportionately higher growth in the employment share of both high-paid jobs and low-paid jobs compared to the other regions. Investigating areas that are predominantly metropolitan, the empirical evidence does not verify an urban specific thesis for increased employment polarisation.

Keywords: employment polarisation, regional labour markets

Acknowledgements

I would like to thank Steve Gibbons, Diane Perrons, Ian Gordon and Vassilis Monastiriotes for their comments on various drafts of this paper.

1. Introduction

In recent decades, the employment prospects of low-skilled workers have been a central focus of labour market policy and academic research in many developed countries. The perspective most commonly held is that skill-biased technological progress has adversely affected the labour market outcomes of low-skilled workers and so measures are needed to improve skills amongst these groups. In this respect, the UK government's insistence on 'education, education, education' is clearly the right way forward. Nevertheless, it has been recently suggested that a more subtle treatment of the issue is needed and that the increases in earnings inequality in Britain in the recent decades can be partly explained by employment polarisation, with growth occurring in high-paid and low-paid jobs, relative to middle-ranking occupations (Goos and Manning, 2003). An important question that has not been explored is the geography of these changes. This paper aims to address this, by examining empirically these patterns of employment polarisation at the regional level for Britain in the past decade.

Initially, a brief review of the employment polarisation literature is presented. This section reviews contributions to the 'job quality debate' that examine the theoretical and empirical basis for proliferation in low-wage employment. In the empirical part of the paper, econometric techniques are used to investigate spatial patterns of job polarisation in Britain. Specifically, we examine whether employment polarisation happens within regions or just across regions, and whether it is a predominantly urban phenomenon. New Earnings Survey (NES) microdata that span over a long time period and are workplace-based are used for this purpose. The main result found is that all regions experience some degree of employment polarisation during the 1990s. Remarkably, London appears to experience greater employment polarisation compared to the other regions. Furthermore, we investigate if there is an urban specificity in these processes by examining if employment polarisation is stronger in metropolitan areas than in areas that are less urbanised. The main hypothesis underlying this is that low-quality jobs, defined either as low-paid jobs or low-skill jobs, depend increasingly on the growth of employment of high-quality jobs. The presence of a growing high-income workforce in the economy generates consumer demand for local services leading to an increase in low-skill, service-related employment. As these local services refer mainly to the non-traded sector of the

economy, this hypothesis implies physical proximity of the low-skilled and high-skilled jobs. If large metropolitan areas have a higher share relatively of high-income workforce compared to the other geographical areas, this would lead to proliferation of low-wage service employment in these areas. Our empirical results do not entirely support this hypothesis, although there is evidence of strong employment polarisation in London compared to other regions. Therefore, in a subsequent section we investigate further the differential performance of London in terms of employment polarisation. Analysis for different subgroups of the labour force such as male and female workers, as well as full-time and full-time male workers is presented. It is suggested that female participation in the labour force can partly explain the differential pattern of employment polarisation in London and the rest of the regions when considering all workers. In the final section, results from other time periods are presented for comparison purposes and to check for robustness of the initial results.

2. Theories on the emergence of employment polarisation

Interest in ‘employment polarisation’ has engendered a vivid debate in the academic and social policy circles, better known as the ‘job quality’ debate (Baumol, 1968; Bluestone and Harrison 1986, 1988a, 1988b; Kosters and Ross, 1987). Baumol (1968) instigated the discussion by arguing that technological progress favours specific sectors in the economy. There are adverse effects on the survival of sectors of the economy that have limited scope for productivity increases and these could end up vanishing. On the contrary, if the relative outputs of the non-progressive sectors are to be maintained, then a growing share of the labour force would be employed in those. Baumol argues that maintaining such a relative output ratio could only happen due to price inelastic or income elastic demand or government support. In that respect, the retailing sector can be thought as a non-progressive sector with high income elasticity or low price elasticity and its increasing employment that is observed in the recent decades can be explained using this model. Similarly, the survival of relatively ‘unprogressive’ theatres or hospitals may only be possible with the government support.

Bluestone and Harrison (1986, 1988a, 1988b) argue that there was an increase in low paid jobs in US from the mid 70s to the mid 80s. Plotting the low-wage share of the year-round full-time workforce over time for 1963-1986, they find evidence of a characteristic U-shaped curve, with falling levels till 1969 and rising ones after 1978 (1988b). This pattern is observed to different degrees for most demographic groups, most regions and most sectors of the economy. Controlling for business cycles, they test for the determinants of low-wage proliferation and find rising productivity to be associated with declines in the low-wage share, while the fall in manufacturing employment leads to a higher low-wage share. Baby-boom and increased female labour force participation are not significant as dependent variables. Nevertheless, the above factors account only for 40 percent of the variance in the de-cycled low-wage trend and therefore Bluestone and Harrison (1988b) point to institutional explanations for the rise of low-wage share.

However, Costrell (1990) is critical of the approach of Bluestone and Harrison that estimate net employment gains straight from the earnings distribution. In that approach, followed also by Kosters and Ross (1987), low and high cut off points are assigned to the earnings distribution and then the workers falling in each earnings stratum are counted each year. Rather, he categorises industries according to average pay and subsequently estimates the net employment gains in these industry cells. Using this more conventional ranking of job quality, he presents empirical evidence for US (early 70s to mid-80s) that new jobs have been created increasingly in industries that pay lower wages.

Gittleman and Howell (1995) employ a job classification that depends on broader measures of job quality than just pay in accordance with labour segmentation theory. They found that the two highest contours in terms of job quality were gaining employment in US in the 1980s, the two middle ones were losing and the lowest two remained roughly in the same level. On the contrary, Ilg (1996) uses pay in order to rank his occupation-industry cells accordingly and group them into a high-, a middle and a low-wage category. The high-wage and to a less degree the low-wage categories are gaining employment while the middle-wage category declines in US in the early 1990s. Using similar methodology, the OECD Employment Outlook reports of 2001 and 2003 provide empirical evidence that UK in the 1990s experiences growth in the high pay sector of employment and the low wage one, while there is a decline in the

middle one. Remarkably, for the period 1993-2001 the growth has been stronger in the low pay sector than the high pay one (OECD, 2003).

Meisenheimer II (1998) argues that focusing only in pay is not a satisfactory measure of job quality and it might portray service jobs bleaker than they are (see OECD, 2001 for a similar discussion). He considers also other job characteristics such as employee benefits, job security, occupational structure and occupational safety to point out that the shift to services does not mean a shift to bad jobs. Nevertheless, his research shows that the service industry includes some of the “best jobs” but also some of the “worst jobs” according to his enhanced job quality measure.

Comparing the 1960s and the 1990s, Wright and Dwyer (2003) provide evidence of increased racially polarised patterns in the employment growth in US. Additionally, they conjecture the possibility of elements of a servant class arising in the future, as the current employment growth is mainly in high technology jobs that have a high pay and retail trade and personal services that have a low pay.

In one of the few pieces of research examining Britain, Goos and Manning (2003) refer to technological progress to account for the rise in employment polarisation. They find evidence of increased employment polarisation in Britain in the period 1975-1999. Using regression analysis, they find a U-shape curve relating employment growth to job quality, i.e. greater employment growth in high-paid and the low-paid jobs, accompanied by shrinkage in employment in average-paid jobs. To explain this polarisation, they refer to Autor et al. (2003) research from the US, that technology can substitute for human labour in routine tasks but not in non-routine tasks. Goos and Manning (2003) argue that non-routine tasks are found increasingly in high- paid cognitive jobs, like the managerial, financial and creative ones but also at low-paid manual jobs like cleaning and bar-tender services. On the contrary, technology has managed to replace human labour in middling skill jobs that involve routinisation whether cognitive (e.g. clerical jobs) or manual (e.g. factory work). Furthermore, they find evidence that employment polarisation alone can account for roughly the 30% and 50% of the rise in wage inequality in Britain in the recent decades, measured as the 90-50 and 50-10 deciles wage differentials respectively.

Research from other disciplines, like urban sociology and geography also has a lot to say about the issue of employment polarisation and offers a number of important theories to account for it (Friedman and Wolf, 1982; Mollenkopf and Castells, 1991;

Sassen, 1991). Specifically, it has been suggested that the changing nature of the global economy leads to the formation of 'world cities' whose economies are boosted by the growth of the financial services and the new economy sectors. Although, these world cities are characterised by great economic dynamism and increased prosperity, at the same time social and economic polarisation emerges. Saskia Sassen (1991) has been of the most prominent researchers to develop this argument, the main idea being that the proliferation of a high-income workforce in the large metropolitan centres generates a consumer demand for goods and services that are supplied by low-paid workers.

Since Sassen has been very influential and important in developing this thesis, we shall now refer with more details to her arguments. Sassen (1991, 2001) argues that there is a change in contemporary social and employment norms that tends to increase the number of low-paid jobs needed by the new growth sectors and to shape the work process in more informal and casual forms of employment. Specifically, globalisation and deregulation of financial markets has boosted producer services and finance sector and soared their profits. These new growth sectors concentrate in global cities which are the strategic sites for the location of global command functions because of the available infrastructure and facilities. The consequent expansion of the high-income workforce has led to high-income gentrification and engendered a new culture of consumption in the city associated with high demand for expensive, non-standardised, non-mass produced goods and services. In Sassen's words "high income residential and commercial gentrification is labor intensive and raises the demand for maintenance, cleaning, delivery, and other types of low-wage workers" (2001, p.286).

It is only very recent that attempts have been made to empirically investigate whether the proliferation of urban high-income workforce can have positive effects on the employment prospects of low-skilled workers in the local level. Although, not linked with the debate in the urban sociology/geography disciplines, Manning (2004) has developed a model that predicts that demand for low-skilled workers is increasingly linked to the non-traded sector of the economy and is increasingly dependent on physical proximity to the more skilled workers. The mechanism is consumer demand that is based on the earnings inequality between the high-skilled and low-skilled. He finds empirical evidence consistent with the predictions of the model when tested on a

panel of 242 US Cities for 1994-2002. Specifically, the employment-population ratio of low-skilled workers is higher in cities with higher fractions of skilled workers.

3. Examining Employment Polarisation in Britain

The work of Goos and Manning (2003) considered employment polarisation in Britain at the national level only. The empirical analysis below extends their approach and methodology to explore regional and finer geographical patterns in employment polarisation. Firstly, the data sources available are presented, before moving onto my empirical investigation.

Data sources

The main surveys in UK with individual microdata on labour statistics are the New Earnings Survey and Labour Force Survey and for the purposes of our research we will use the former. The latter is more representative as a sample but it does not have information on earning until 1993. It is also residence-based and therefore commuting is an issue when trying to examine the co-location of high-paid and low-paid jobs. The New Earnings Survey is more appropriate for our research purposes and has information on wages as far back as 1975. It is the largest survey on labour statistics with information on approximately 160,000 employees each year. It is an employer-based survey and covers the employees whose National Insurance number ends with a specific pair of digits- approximately 1% of national insurance pool. The same pair of digits is used each year and therefore in the panel data of survey individuals can be traced over year (the New Earnings Survey Panel Data or NESPD).

One disadvantage of the NES is that it disproportionately under-samples a large number of workers with low pay as these will most likely not show in the survey if their weekly pay is below the one for paying National Insurance contributions. This is problematic, especially for part-time workers. In addition, the NES disproportionately covers workers who have recently changed jobs. Missing information for the workers who don't pay National Insurance contributions as well as those working at the

informal sector can be problematic for our research of investigating the employment polarisation of the labour force, as this way the low wage sector of the economy is undercounted.

There is another issue arising because of a discontinuity in the occupational coding in the early 1990s. The occupational coding that the Office for National Statistics (ONS) uses for NES changed to SOC90 in the 1991 survey and it is not possible to make a consistent mapping with the earlier codes. Therefore, the main period I examine is 1991-2001, which is the latest available data from NES with a consistent occupational coding. For comparison purposes we are also investigating 1975-1990. I also discuss results for 1975-2001 using a probabilistic mapping algorithm ¹ although these results should be considered with caution and only for comparison purposes.

Concerning geographical disaggregation, I use the eleven Standard Statistical Regions (SSRs) of Britain as the main reference point for my empirical investigation. The NES areas are finer geographical units and have to be aggregated to compile these 11 regions. Subsequently, larger clusters, such as Metropolitan and non-Metropolitan Britain as well as London and Rest of Britain, are composed from these NES areas in order to investigate broader spatial patterns in employment polarisation.

Defining job quality

Firstly, we are going to examine the concept of ‘job quality’. There is an interesting literature on various definitions of job quality and corresponding measurements (see Gittleman and Howell, 1995; Meisenheimer 1998; OECD, 2001).

For the purposes of my research, both for simplicity reasons and availability of data, I am going to follow Ilg (1996) and Goos and Manning (2003) approaches and use median pay of the occupational category as a measure of the quality of job. We measure job quality in our basis year, which is 1991. In order to do so, we use three-digit socio-occupational class (SOC90) categories as our ‘occupational categories’ so that we end up having 366 of these (see Tables 1 and 2).

Using this measure of job quality, we define employment polarisation as a polarised distribution of individuals to low-paid and high-paid jobs in the labour market compared to a previous time period; i.e. more people doing low-paid jobs and high-

¹ devised by Steve Gibbons

paid ones, while there is a shrinking of the ‘average-paid’ jobs. So, the main empirical investigation is to see if employment in the job categories that are classified as low-paid and high-paid has grown, while the size of the categories that are in the middle has reduced.

The job quality rank does not change much over time as the correlation coefficient of the rank in 1991 and 2001 is 0.95. The few changes that occur pertain mainly to occupational categories with small samples and don’t affect our results as they are weighted down in the regressions that follow.

Table 1 shows occupations that are at the bottom of our job quality ranking in 1991, along with their employment growth over the next 11 years. It can be seen from Table 1, that ‘job quality category 1’ is made up mainly of occupations that are related to low skill services, as well as care occupations. Many of those and especially the largest ones in terms of size seem to grow further over this 11 year period. For example, the bar staff occupational category has grown its employment share by 32% and childcare occupations by 20%. ‘Sales assistants’ which is the largest occupational category of all 366 in terms of employment, has grown its share by 47%.

In Table 2, the top occupations in terms of pay that have considerable size are presented. It appears that most of those are in business and finance as well as the new growth sectors. Additionally, most of these high-pay occupations have experienced an increase between 1991 and 2001, with the exception of the educational occupations. Identifying the most sizeable occupational categories that experience growth, we note that marketing and sales managers employment share rose by 54% and financial institutions managers rose by 73%.

Most of the occupational categories that are least paid are labour intensive. A simultaneous increase in the employment shares of both the highest paid and the least paid occupations at the same geographical area could be consistent with the hypothesis of a growing high-income workforce boosting the demand for low-paid services. The rest of this paper will try to investigate this in more detail.

Empirical Investigation

Specifically, regression analysis and other methodologies are used to estimate the employment polarisation into low-paid jobs and high-paid jobs.

As suggested earlier, we use median hourly pay including overtime to characterise each of the 366 job categories (3-digit SOC90) and we rank them from worst to best in terms of pay. On this basis, 'job quality category 1' contains workers from the lowest paid occupations comprising the 10% lowest paid workers in the whole labour force in 1991. If in 2001 the number of workers in these occupations has increased relative to workers in other occupations, then 'job quality category 1' will form a larger share of the labour force than the initial 10%. Similarly, if in one region the 'job quality category 1' forms a larger part than 10%, this means that the workers of the least paid occupations are overrepresented in this region.

The percentage point change of the employment share of the different job quality categories is presented in Figure 1 and Table 3. For the whole of Britain, it can be seen that the share of good jobs rises and to a lesser extent of the bad jobs while the share of jobs of middling quality appears to reduce. This result is very similar to the results of Goos and Manning (2003). It is more interesting to see what happens at the different regions. There is a general pattern, with the exception of East Anglia, of rising shares for the high paid and low paid jobs and falling for the middle ones. London appears to have the greatest growth in high-paid jobs but also a strong increase in least paid jobs. This pattern is weaker for the other regions and for some the growth in least paid jobs is very small. In Figure 1, the changes in Britain, London and South East, are shown for comparative purposes.

We also track the employment shares of the job quality categories 1 and 10 for each year between 1991-2001 (Table 4). Using correlation coefficients, we investigate if the two are moving together and if this relationship is stronger for some regions than others. The correlation is stronger for London with a coefficient of 0.95 and then South West follows with 0.87. This simply tells us that there is more co-movement of employment in job quality categories 1 and 10 for London than for the other regions. Specifically, the employment share of job quality category 1 is 9.1% of the London labour force in 1991 and rises steadily each year up to reach the 11% in 2001. Job quality category 10 experiences a similar but faster growth from 14% in 1991 to

19.4% in 2001. This simultaneous increase in the least paid and highest paid occupations over this 11 year period shows that our result is not sensitive to the selection of two specific points in time.

Regression analysis of employment polarisation

The dependent variable in our regressions is the change in the employment share of different occupational categories, as discussed above. The regressor is the rank of the occupational category in the initial period (1991). Regressions are weighted by occupational category size in the initial period. Using a quadratic form in the regression, a U-shape relationship of the change in employment and rank can be detected.

$$\Delta n_i = \beta_0 + \beta_1 q_{i0} + \beta_2 q_{i0}^2 \quad (1)$$

(Δn_i : change in employment share of occupational category i; q_{i0} : initial median rank of occupational category i)

(see Table 5)

Our national regression for 1991-2001 verify Goos and Manning (2003) findings for emergence of employment polarisation in Great Britain. Their study used log median wages as regressors and examined an earlier time period (mid 1970s- late 1990s). In our regressions, the coefficient of the rank (β_1) is negative and the coefficient of the square of the rank (β_2) is positive implying a U-shape relationship between growth of employment shares of the occupations and the initial occupation quality rank (1991). This is the case for the whole Britain and the 11 Standard Statistical Regions that we apply separate regressions to. The linear and the quadratic term are significant for all regions, although for some regions our quadratic regression seems to have more explanatory power than others. Higher values for the quadratic term and lower values for the linear term indicate stronger U-shape and therefore stronger employment polarisation. The significance of these coefficients and the R^2 give us information on the explanatory power of the employment polarisation proposition.

It appears that London is the region with the stronger U-shape, followed by the West Midlands and the rest of South East. On the contrary, the regions North and Wales appear to have the flatter U-shapes and the evidence for employment polarisation is weaker for these regions. In Figure 2 where the fitted regressions curves for all regions are shown, the curve for London stands out in terms of steepness, although it is harder to tell the difference between the other regions.

In Figure 3, scatter plots of the growth of employment share by job quality rank are presented for London and the South West. The U-shape curve is evident for both regions, although the increased polarisation for London is hard to notice just from the scatter plots unless you consider the size of the occupational categories in 1991 as well.

As London appears to be distinct from the other regions when considering the magnitude of its coefficients and its remarkably high explanatory power, hypothesis testing is employed to examine this further. When doing a regression with interactions with London as the basis, the β_2 coefficient for London is significantly different than the ones for East Midlands (10% significance level), Yorkshire (10%), NW (5%), North (1%) and Wales (1%).

This leads us to investigate further if there is a ‘London specificity’ in the employment polarisation proposition in a subsequent section.

A pooled regression with regional fixed effects is given in the last row of Table 5. However, the regional fixed effects for the regions are not found jointly significant.

$$\Delta n_{ij} = \beta_{j0} + \beta_1 q_{ij0} + \beta_2 q_{ij0}^2$$

(β_{j0} : regional dummy variable)

In sum, our empirical analysis shows that employment polarisation appears in all regions but to different degrees. The empirical evidence does not support the theoretical possibility that employment polarisation can arise in the national level only because some regions are gaining high-paid jobs and some others are gaining low-paid jobs. London is found to have the stronger employment polarisation and this issue is investigated further in the following section.

Urban specific or London specific?

Firstly, the case that employment polarisation might be urban specific is examined. In other words, we investigate if employment polarisation is stronger in areas that are predominantly metropolitan. In order to do so, the NES areas are classified as metropolitan and non-metropolitan, and separate quadratic regressions applied to these two broader geographical clusters. Here, 'metropolitan Britain' consists of Greater London (33 local authorities) and the six former metropolitan counties West Midlands, South Yorkshire, West Yorkshire, Greater Manchester, Merseyside, Tyne & Wear. This large geographical compound covers the 32% of British population in 1991. The rest of the 58 NES areas consist the 'non-metropolitan Britain' part.

The results are presented in Table 6. The regressions predict a steeper U-shape curve for employment growth for metropolitan Britain than non-metropolitan. Nevertheless, both the quadratic and the linear term are not statistically different between the two. This applies to a large extent for all workers and the various subgroups of the labour force we investigate (men, women, full-time workers, full-time male workers). As a result, evidence in favour of the urban specificity proposition is not found from these regressions.

Table 7 shows similar separate regressions for London alone and for Britain excluding London, called 'Rest of Britain'. As expected the U-shape curve predicted for London is much steeper than the Rest of Britain indicating stronger employment polarisation. This is the case for all workers and the various subgroups examined though to different degrees (Fig.4i-4iv).

The differences in the coefficients of the linear term (β_1) and the quadratic term (β_2) between London and the Rest of Britain are much more notable than between metropolitan and non-metropolitan Britain examined earlier (Table 6). Hypothesis testing verifies this, as the differences are now significant. Specifically, the hypothesis that the coefficients of the linear and the quadratic term are jointly equal for London and the Rest of Britain is rejected at the 5% significance level. This applies also for all the subgroups examined. Regarding the coefficient of the square of the rank (β_2), it is found significantly different between London and the Rest of Britain for all workers, for women and for full-time workers.

Additionally, examining the various subgroups of the labour force using the regression tables and visual inspection reveals interesting patterns. Employment polarisation does not emerge amongst female workers in the Rest of Britain as the curve is slightly J-shaped and the linear and quadratic terms are not significant. Nevertheless, in London there is increased employment polarisation amongst women shown by a strong U-shape curve. For men as well, the U-shape curve is steeper for London than the Rest of Britain. However, in relative terms the distinction between London vs. Rest of Britain is greater for women than men. Therefore, it seems that the more polarised female employment in London contributes more to the pattern that arises for all workers.

Considering only full-time employment, we can also observe interesting points. In Figure 4iv, London is shown to have greater employment polarisation for full-time workers than the Rest of Britain. Nevertheless, when we drop full-time female workers from the sample, the relative growth of employment of the low-paid jobs to the average-paid ones appears to be the same in London and the Rest of Britain (Fig.4v). Furthermore, a similar analysis considering only part-time employees has been attempted. For them, the quadratic regression appears to have very low explanatory power and the coefficients are insignificant. Remarkably, the quadratic coefficient for the Rest of Britain is negative and the corresponding curve has an inverted U-shape.

Other time periods

We have experimented with other time period as well and have obtained qualitatively similar results. Specifically for periods 1992-2001 and 1991-2000, London appears to experience stronger employment polarisation than the rest of Britain.

It is interesting to look whether employment polarisation arises in earlier decades and what are its geographical patterns. For that similar quadratic regressions are employed for 1975-1990 and presented in Table 8. Although, employment polarisation appears to emerge nationally, the evidence is weaker for London. The quadratic regression does not perform well for London, as the linear term is not significant and the quadratic term is only weakly significant. Therefore, there is the possibility that employment polarisation does not adequately describe the processes in London for

1975-1990 and skill-biased technological change as an alternative possibility should be examined.

Regional regressions for the period 1975-2001 have also been performed and there is evidence of employment polarisation for all regions, with the strongest one appearing for London and West Midlands. As said earlier when discussing the NES dataset, the lack of a consistent mapping of the occupational codes before and after 1990 has made us focus the research in the period 1991-2001.

4. Concluding Remarks

In this paper, the spatial patterns of employment polarisation in Britain have been examined. Rather than some regions gaining high-paid jobs and other regions gaining low-paid jobs, employment polarisation is found to emerge in all regions to some extent. London appears unique in terms of the magnitude of its employment polarisation. It experiences disproportionately higher growth in the employment share of both high-paid jobs and low-paid jobs compared to the other regions. Investigating areas that are predominantly metropolitan, the empirical evidence does not verify an urban specific thesis for increased employment polarisation. Other explanations, like world city or global city propositions, might be more adequate to account for its distinct employment polarisation pattern and further research is needed to illuminate that. Moreover, empirical analysis for various subgroups of the labour force can reveal interesting points for the spatial patterns of employment polarisation

TABLES

Table 1. Bottom Occupations by Median Wage in 1991 for Britain

Job quality rank (1991)	Label of occupational category	decile 1991	median wage 1991	Employment share (%) in 1991	growth of share 1991-2001	growth rank (1991)
1	Hairdressers, barbers	1	3.44	0.189	-5.79	218
2	Bar Staff	1	3.70	0.636	31.89	300
3	Petrol pump forecourt attendants	1	3.82	0.091	-38.74	68
4	Kitchen porters, hands	1	3.92	0.704	-23.34	136
5	Waiters, waitresses	1	3.99	0.406	15.92	273
6	Launderers, dry cleaners, pressers	1	4.06	0.221	-33.27	88
7	Other childcare and related occupations n.e.c.	1	4.09	0.624	29.06	297
8	Counterhands, catering assistants	1	4.15	0.950	-0.12	234
9	Cleaners, domestics	1	4.17	3.348	-24.74	128
10	Sales assistants	1	4.21	4.055	47.11	323
11	Sewing machinists, menders, darners and embroiderers	2	4.24	0.696	-59.91	17
12	Dental nurses	2	4.29	0.111	23.46	289
13	Retail cash desk and check-out operators	2	4.30	0.693	-8.40	210
14	Hotel porters	2	4.43	0.043	-8.67	208
15	Shelf fillers	2	4.45	0.226	26.66	294
16	Other health associate professionals n.e.c.	2	4.47	0.030	83.77	347
17	Domestic housekeepers and related occupations	2	4.52	0.025	158.41	363
23	Beauticians and related occupations	2	4.69	0.033	38.90	310
26	Care assistants and attendants	2	4.82	1.103	83.84	348
29	Receptionists	2	4.89	0.635	38.79	309
43	Educational assistants	2	5.14	0.245	240.26	366

Table 2. Top Occupations by Median Wage in 1991 for Britain

Job quality rank (1991)	Label of occupational category	decile 1991	median wage 1991	Empl. share (%) 1991	growth of share 1991-2001	growth rank (1991)
366	General managers; large companies and organisations	10	31.24	0.103	115.92	359
362	Treasurers and company financial managers	10	19.50	0.334	73.11	342
360	Medical practitioners	10	17.87	0.384	25.18	291
359	Management consultants, business analysts	10	17.53	0.107	98.55	351
354	Bank, Building Society and Post Office managers (except self-employed)	10	16.40	0.337	32.15	301
353	Computer systems and data processing managers	10	16.19	0.327	75.44	344
352	Higher and further education teaching professionals	10	16.15	0.882	-27.15	111
351	Solicitors	10	15.97	0.178	57.17	330
350	University and polytechnic teaching professionals	10	15.90	0.265	103.10	353
348	Special education teaching professionals	10	15.58	0.186	0.25	236
344	Secondary (and middle school deemed secondary) education teaching professionals	10	15.20	1.744	-2.31	229
343	Electrical engineers	10	15.12	0.176	-13.70	188
340	Software engineers	10	14.71	0.221	154.95	362
338	Primary (and middle school deemed primary) and nursery education teaching professionals	10	14.45	1.459	14.20	271
335	Underwriters, claims assessors, brokers, investment analysts	10	13.96	0.472	27.94	295
334	Electronic engineers	10	13.87	0.112	-40.66	62
333	Marketing and sales managers	10	13.76	1.534	54.29	327
332	Personnel, training and industrial relations managers	10	13.64	0.242	71.78	340
317	Other financial institution and office managers n.e.c.	9	12.48	0.927	73.03	341
312	Other managers and administrators n.e.c.	9	12.31	1.510	-1.21	231
308	Police officers (sergeant and below)	9	12.14	0.755	6.03	256
305	Computer analyst/programmers	9	11.95	0.766	39.64	311
303	Production, works and maintenance managers	9	11.82	1.166	6.77	259

Table 3. Percentage point change in employment share by ‘job quality category’, 1991-2001

Job quality categ.	GB	London	SE	East Anglia	SW	West Midlands	East Midlands	Yorkshire & Humb.	NW	North	Wales	Scotland
1	1.25	1.87	1.03	-0.13	2.00	1.19	1.89	1.31	1.04	1.13	0.33	0.44
2	0.60	2.07	0.52	0.42	0.91	0.70	-0.89	-0.15	0.37	0.04	0.07	0.65
3	1.68	0.19	1.06	-0.01	1.55	1.38	2.85	2.55	2.33	3.24	2.44	2.37
4	-1.23	-2.98	-1.59	-0.16	-1.04	-0.55	-1.00	-0.85	-0.30	0.20	-1.37	-1.49
5	-1.27	-1.58	-1.29	-1.38	-1.70	-1.12	-0.81	-1.06	-1.39	-1.86	-0.44	-0.98
6	-2.47	-3.59	-2.44	-2.29	-2.89	-3.55	-1.80	-1.66	-2.06	-1.32	-1.95	-1.88
7	-1.83	-1.99	-1.52	-1.53	-1.00	-2.12	-1.62	-2.42	-2.15	-1.52	-1.29	-2.55
8	-0.69	-0.74	-0.61	1.48	-0.42	-0.20	-1.78	-1.47	-0.47	-1.90	-0.39	-0.60
9	1.28	1.33	1.60	1.13	1.09	1.40	1.53	1.89	0.73	0.38	0.97	1.56
10	2.69	5.42	3.24	2.48	1.51	2.88	1.63	1.86	1.89	1.61	1.64	2.47

Table 4. Employment shares of least-paid and highest-paid jobs over 1991-2001

	Decile	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	<i>Correlation.</i>
London	1	9.14	9.30	9.52	10.08	10.11	10.05	10.41	10.73	10.36	10.98	11.02	0.95
	10	13.99	14.91	15.50	15.88	16.38	16.86	17.32	17.61	17.97	18.15	19.41	
SE	1	11.08	11.61	11.75	12.25	12.31	12.31	12.19	11.86	11.99	11.82	12.12	0.35
	10	11.05	11.45	11.33	11.14	11.89	12.25	12.84	12.64	13.17	13.51	14.28	
East Anglia	1	11.47	11.63	12.18	11.69	11.94	11.14	10.88	12.05	12.08	11.94	11.34	-0.27
	10	8.31	8.97	9.14	9.45	9.30	9.73	10.28	9.55	9.68	10.41	10.79	
SW	1	11.94	12.20	12.19	12.53	13.00	12.58	12.76	12.67	12.96	13.77	13.94	0.87
	10	9.68	9.94	10.13	10.40	10.52	10.55	10.40	10.24	10.18	10.66	11.18	
West Midlands	1	11.02	11.33	11.66	11.51	11.60	11.38	12.03	11.81	12.10	11.44	12.21	0.58
	10	8.61	9.17	9.65	9.50	9.56	9.37	9.30	9.64	10.04	10.91	11.49	
East Midlands	1	10.54	11.10	10.99	11.57	11.02	11.24	11.78	12.02	12.34	12.63	12.43	0.64
	10	8.25	8.62	8.09	8.56	8.58	8.39	8.10	8.34	8.56	9.38	9.87	
Yorkshire & Humberside	1	12.06	12.30	12.58	12.93	12.49	12.74	14.02	14.05	12.90	12.72	13.37	0.40
	10	8.43	9.12	8.86	8.78	9.16	9.13	9.16	9.43	9.84	9.85	10.29	
NW	1	11.29	11.68	12.00	11.75	11.47	11.58	12.02	11.93	11.81	11.75	12.34	0.60
	10	8.79	8.94	9.19	9.42	9.48	9.84	10.05	9.72	10.40	10.46	10.68	
North	1	13.13	12.81	13.14	13.98	13.64	13.81	14.17	14.50	14.73	14.01	14.26	0.70
	10	6.99	8.06	6.78	8.08	8.01	7.76	8.15	8.28	8.46	8.49	8.60	
Wales	1	12.75	13.42	13.29	13.74	13.76	12.76	12.94	13.35	13.28	12.81	13.13	-0.13
	10	8.00	8.36	7.71	8.14	8.09	7.33	8.32	8.50	9.02	9.83	9.71	
Scotland	1	12.31	12.25	12.78	13.48	13.40	13.23	13.36	13.21	12.94	12.81	12.72	0.35
	10	8.95	8.09	9.32	9.63	9.62	9.77	10.11	10.33	10.94	10.89	11.40	

Table 5. Regional Regressions and Regression for GB with regional fixed effects; All workers, 1991-2001

Regression Specification	Available jobs	Geographical Scale	β_0 (const.)	β_1	β_2	R^2	
3-digit job categories (total: 366)	366	GB	18.51 (1.50)	-0.4089 (-2.49)	0.00124 (3.52)	0.12	
	347	Greater London	35.82 (1.59)	-0.7841 (-3.11)	0.00241 (3.91)	0.20	
	354	Rest of South East	15.62 (1.35)	-0.4187 (-3.09)	0.00137 (3.66)	0.11	
	328	East Anglia	6.30 (0.74)	-0.2880 (-2.18)	0.00115 (2.51)	0.04	
	344	South West	20.93 (1.30)	-0.4294 (-2.22)	0.00130 (2.53)	0.07	
	352	West Midlands	20.58 (1.91)	-0.4673 (-3.57)	0.00148 (3.93)	0.09	
	352	East Midlands	15.22 (1.13)	-0.3202 (-1.94)	0.00096 (2.16)	0.04	
	355	Yorkshire & Humberside	15.79 (1.29)	-0.3469 (-2.43)	0.00107 (2.77)	0.05	
	356	North West	15.74 (1.31)	-0.3251 (-2.30)	0.00097 (2.49)	0.04	
	337	North	14.38 (1.30)	-0.2747 (-1.93)	0.00080 (1.87)	0.02	
	334	Wales	8.40 (0.77)	-0.2252 (-1.59)	0.00077 (1.88)	0.02	
	355	Scotland	14.22 (0.88)	-0.3538 (-1.94)	0.00114 (2.39)	0.05	
		3,814	GB with regional fixed effects	18.19 (3.79)	-0.4253 (-7.54)	0.00135 (8.93)	0.07

Table 6. Regressions Metropolitan vs. non Metropolitan Britain, 1991-2001

Regression Specification	Available jobs	Geographical Scale	β_0 (const.)	β_1	β_2	R^2
LHS: %emp. growth	366	GB	18.51 (1.50)	-0.4089 (-2.49)	0.00124 (3.52)	0.12
All workers	366	non-Metropolitan	14.86 (1.26)	-0.3457 (-2.60)	0.00107 (3.03)	0.09
	363	Metropolitan	25.46 (1.77)	-0.533 (-3.40)	0.00158 (4.09)	0.16
Male	360	non-Metropolitan	41.71 (3.64)	-0.6489 (-5.07)	0.00176 (5.31)	0.18
	360	Metropolitan	57.96 (4.39)	-0.8533 (-6.07)	0.00223 (6.50)	0.23
Female	314	non-Metropolitan	-1.48 (-0.12)	-0.1670 (-0.79)	0.00095 (1.34)	0.07
	300	Metropolitan	7.07 (0.46)	-0.4446 (-1.88)	0.00212 (2.63)	0.14
Full-time workers	366	non-Metropolitan	14.94 (1.64)	-0.3790 (-3.97)	0.00123 (4.59)	0.14
	363	Metropolitan	21.20 (2.26)	-0.5060 (-5.25)	0.00160 (6.23)	0.20
Full-time Male	359	non-Metropolitan	28.38 (3.05)	-0.4984 (-4.72)	0.00144 (5.03)	0.14
	360	Metropolitan	37.42 (4.16)	-0.6285 (-6.24)	0.00176 (6.56)	0.16

Table 7. Regressions London vs. Rest of Britain, 1991-2001

Regression Specification	Available jobs	Geographical Scale	β_0 (const.)	β_1	β_2	R^2
LHS: %emp. growth	366	GB	18.51 (1.50)	-0.4089 (-2.49)	0.00124 (3.52)	0.12
All workers	366	Rest of Britain	15.79 (1.36)	-0.3561 (-2.74)	0.00109 (3.18)	0.09
	347	London	35.86 (1.59)	-0.7844 (-3.11)	0.00241 (3.91)	0.20
Male	363	Rest of Britain	47.84 (4.42)	-0.7020 (-5.97)	0.00184 (6.13)	0.20
	337	London	45.40 (2.12)	-0.8750 (-3.54)	0.00261 (4.18)	0.19
Female	326	Rest of Britain	-2.11 (-0.17)	-0.1588 (-0.79)	0.00090 (1.38)	0.07
	248	London	25.90 (1.04)	-1.0193 (-2.45)	0.00508 (3.34)	0.17
Full-time workers	366	Rest of Britain	17.08 (1.89)	-0.3977 (-4.32)	0.00126 (4.94)	0.14
	344	London	14.18 (1.15)	-0.5787 (-3.97)	0.00208 (5.26)	0.25
Full-time Male	362	Rest of Britain	33.57 (3.77)	-0.5402 (-5.54)	0.00150 (5.75)	0.15
	334	London	18.95 (1.53)	-0.6037 (-3.77)	0.00208 (4.58)	0.19

Table 8. Regressions London vs. Rest of Britain, 1975-1990

Regression Specification	Available jobs	Geographical Scale	β_0 (const.)	β_1	β_2	R^2
LHS: %emp. growth	428	GB	22.66 (2.78)	-0.4068 (-3.74)	0.00099 (3.47)	0.06
All workers	427	Rest of Britain	26.47 (3.22)	-0.4401 (-4.07)	0.00105 (3.71)	0.06
	391	London	1.02 (0.09)	-0.2414 (-1.49)	0.00082 (1.77)	0.05

FIGURES

Figure 1. Percentage point change in employment shares of the job quality categories: London, SE and GB 1991-2001

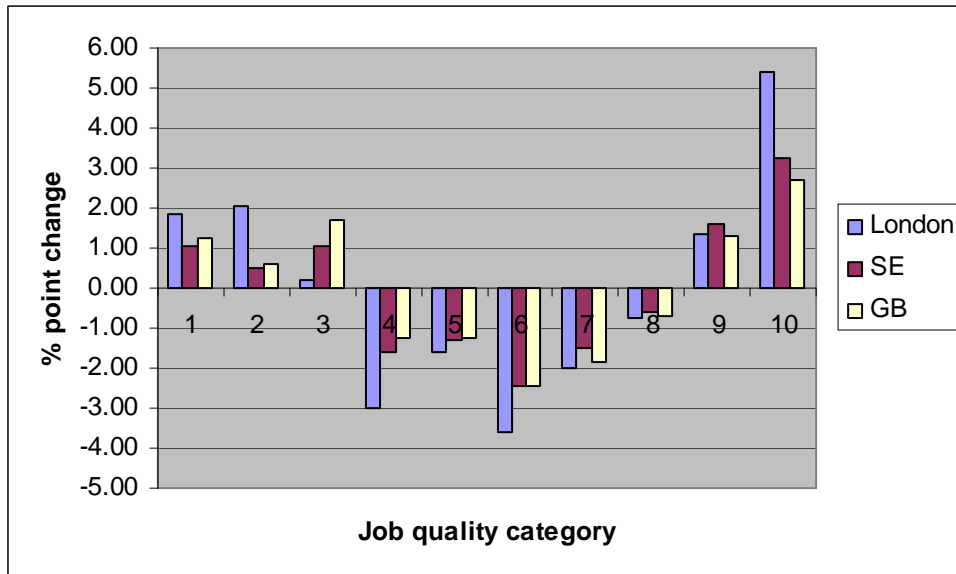
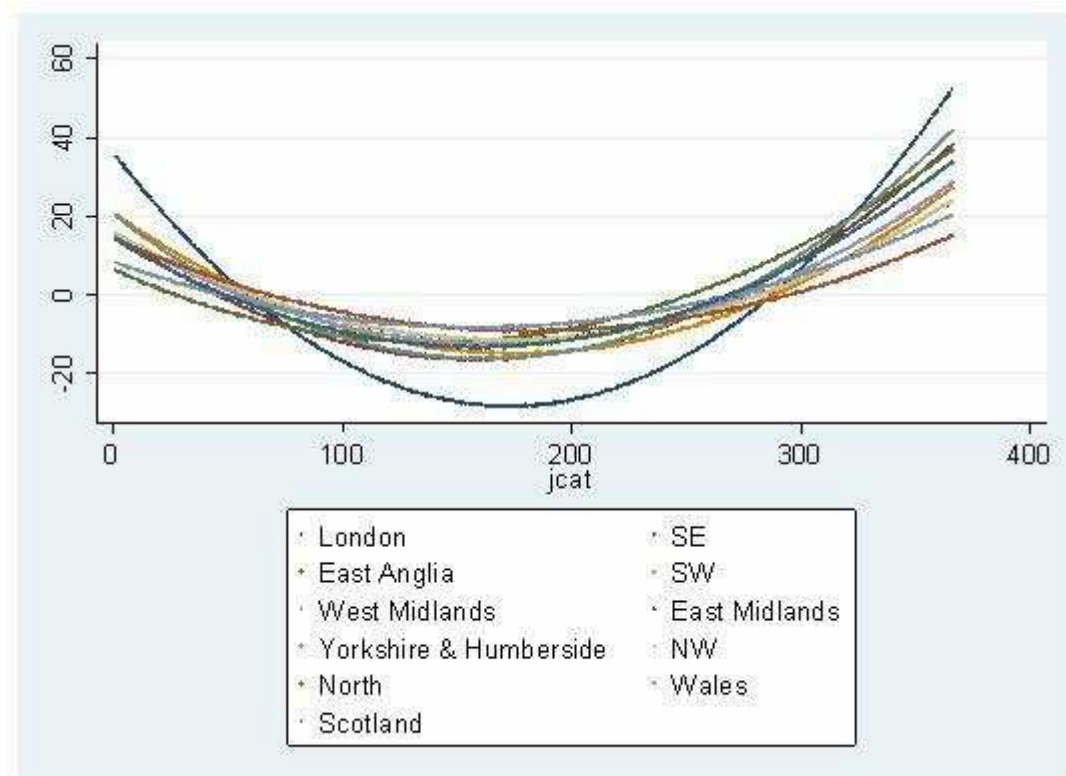


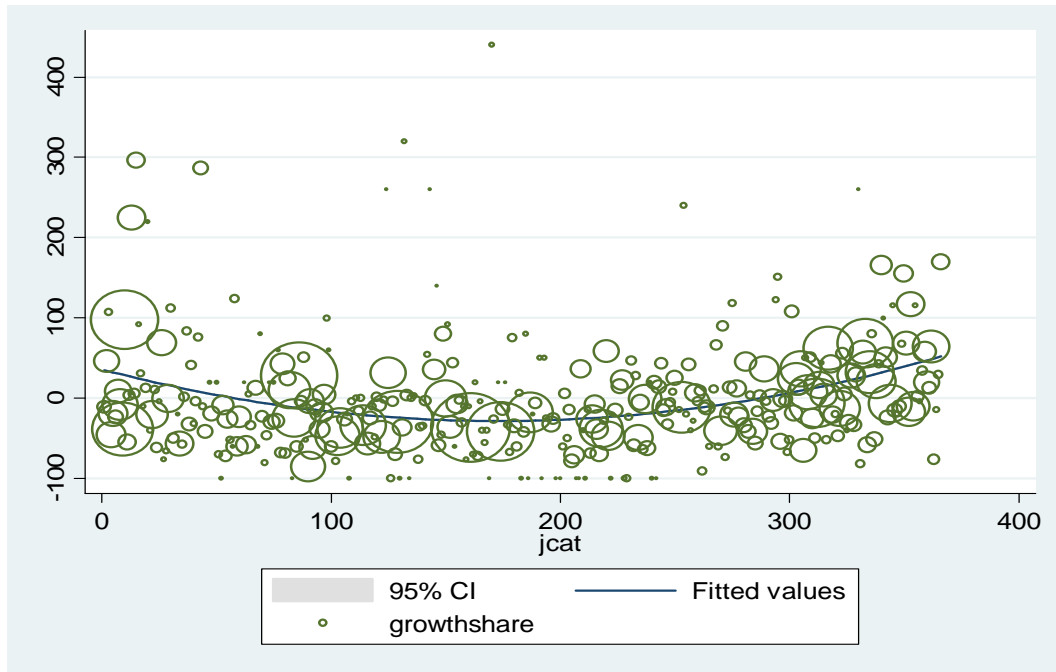
Figure 2. Fitted regional regressions, 1991-2001



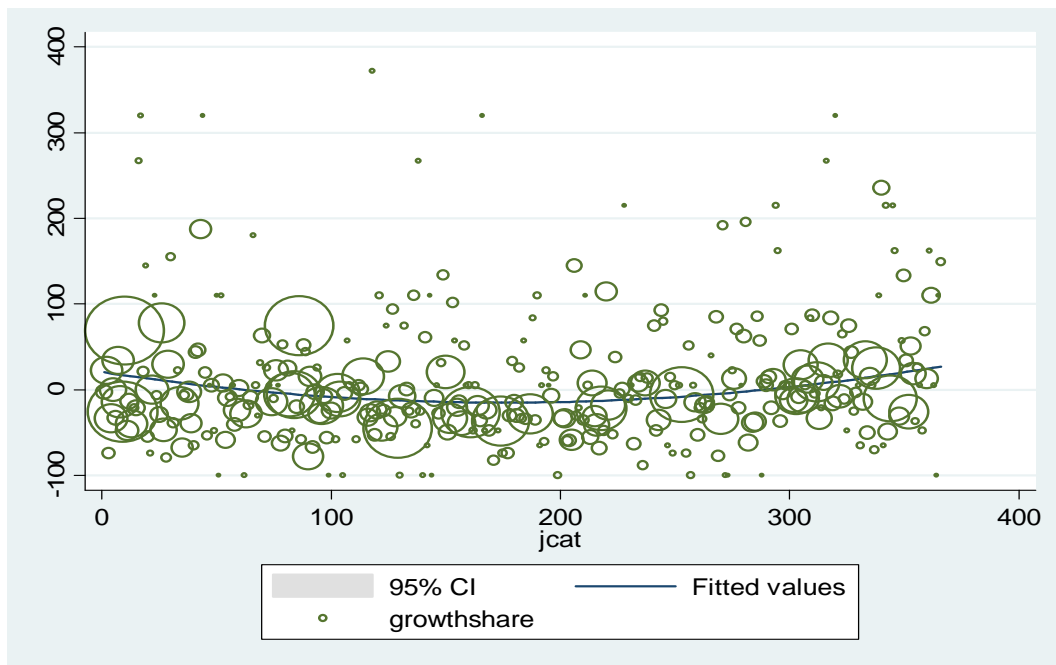
Note: London's curve is the one with the lower minimum.

Figure 3. Scatter plots of % employment growth (1991-2001) and job quality rank in 1991

London



South West



Note: Size of circle corresponds to initial occupational category size. Fitted regressions shown with the continuous line. Contrary to the regressions, job categories correspond to exactly the same occupations in London and the SW.

Figures 4i-4v: Fitted regressions for various subgroups of the labour force, 1991-2001

(Growth of employment share 1991-2001 against job quality rank in 1991)

Notes:

1. Contrary to the regressions, job categories correspond to exactly the same occupations in London and the SW.
2. London's curve is in all four graphs the one with the lower minimum.

Figure 4i: All workers

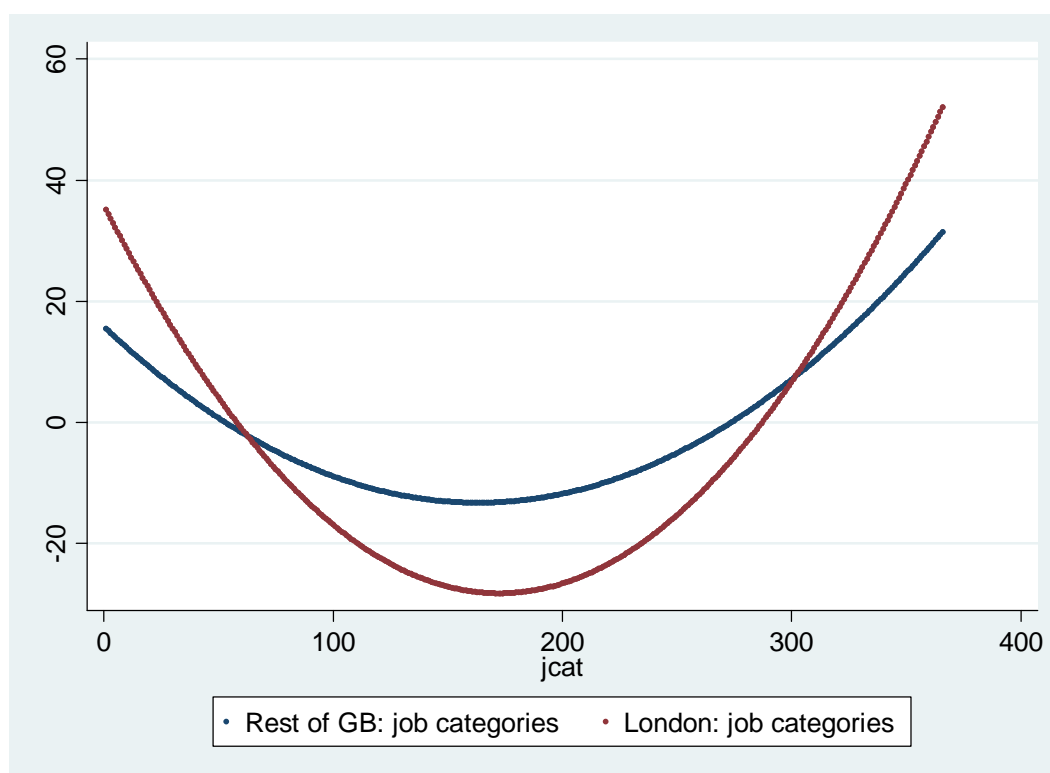


Figure 4ii: Male workers

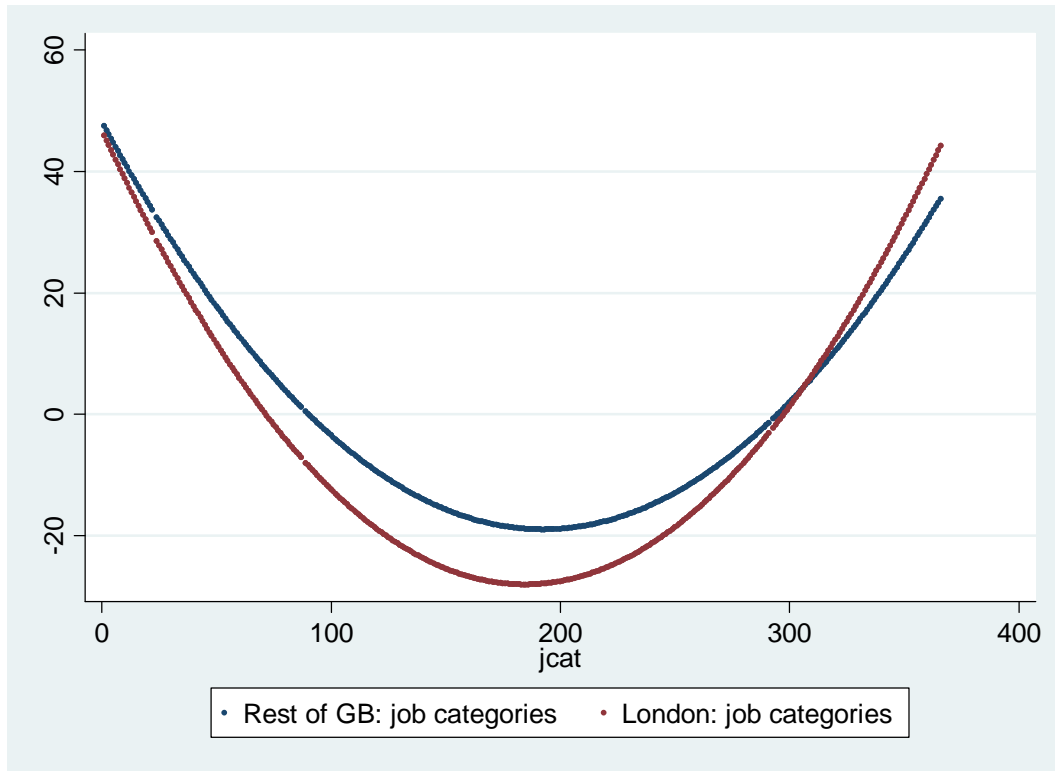


Figure 4iii: Female workers

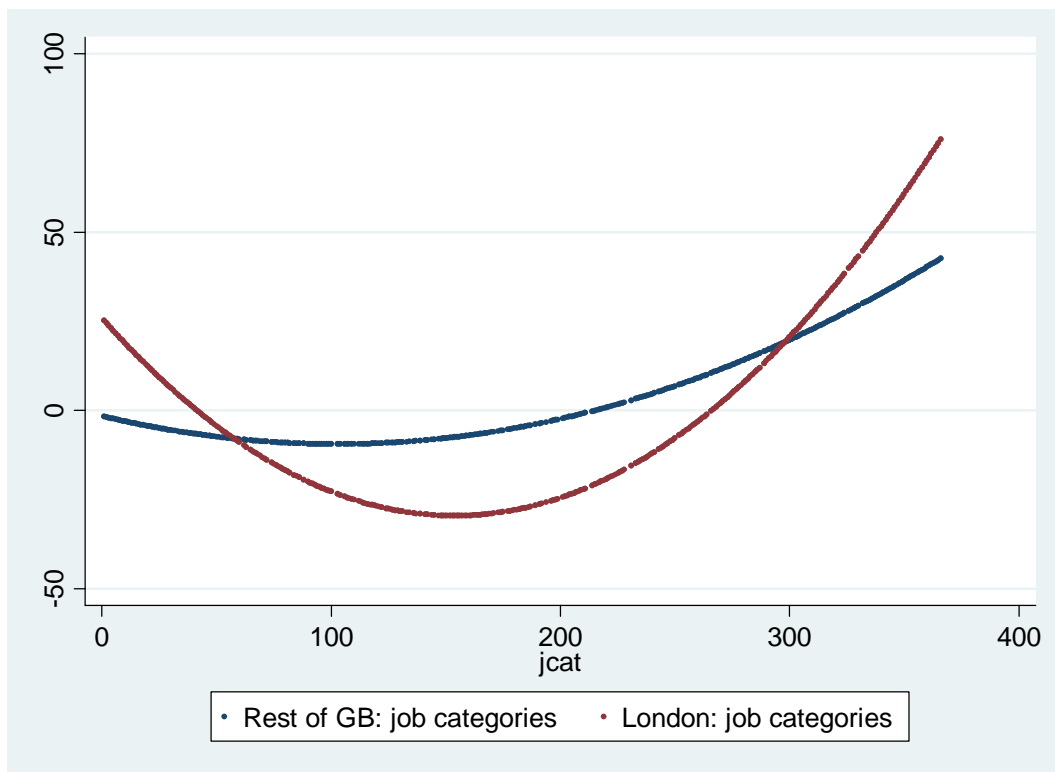


Figure 4iv: Full-time workers

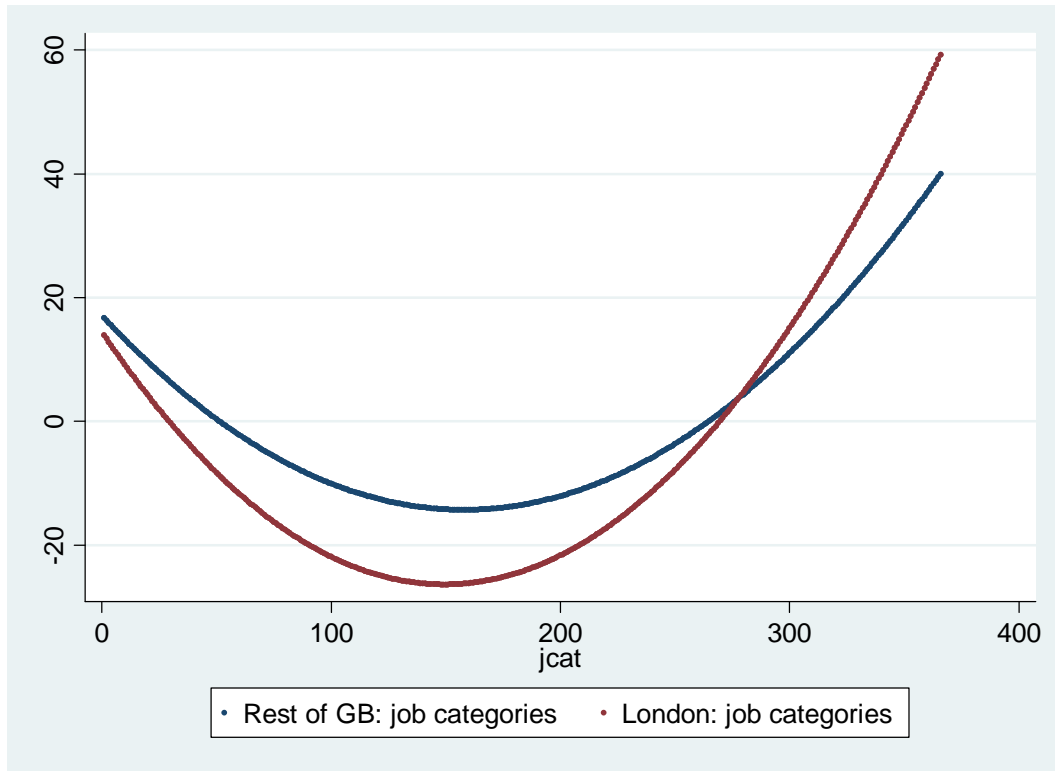
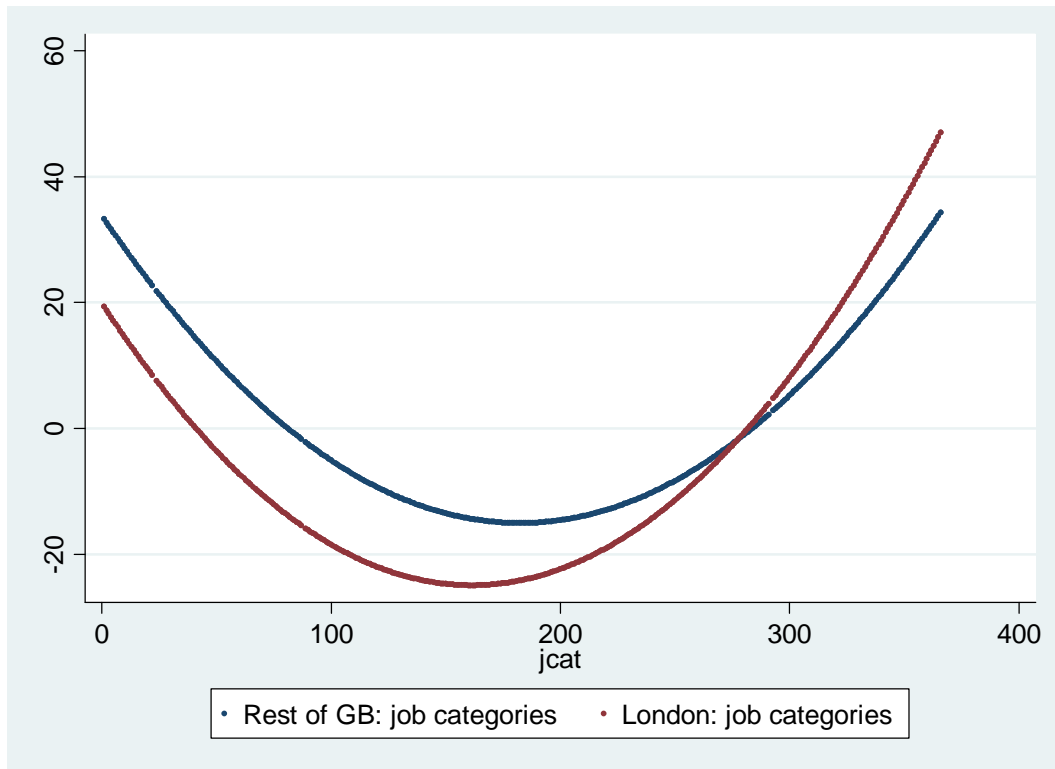


Figure 4v: Full-time male workers



REFERENCES

- Autor, David H, Frank Levy and Richard J Murnane, "The Skill Content of Recent Technological Change: An Empirical Exploration," *Quarterly Journal of Economics*, CXVIII (2003), 1279-1333.
- Baumol, W.J. (1967) "Macroeconomics of Unbalanced Growth: The Anatomy of Urban Crisis," *American Economic Review*, 57, pp.415-26
- Bluestone and Harrison (1986) "The Great American Jobs Machine", *US Joint Economic Committee*, December 1986
- Bluestone and Harrison (1988a) *The Great U-Turn: Corporate Restructuring and the Polarizing of America*, New York: Basic Books
- Bluestone and Harrison (1988b) The Growth of Low-Wage Employment: 1963-1986, *Annual Economic Review*, vol.78, no2
- Costrell, Robert M. (1990), "Methodology in the "Job Quality" Debate," *Industrial Relations*, XXIX, 94-110.
- Fainstein, S., Gordon, I. and Harloe, M. (eds.) (1992) *Divided Cities: New York & London in the Contemporary World*, Blackwell, Oxford
- Friedman, J. & Wolf, G. (1982): World City formation. An agenda for research and action. *International Journal of Urban and Regional Research*, 6: 309-344.
- Gittleman, Maury B. and David R. Howell (1995), "Changes in the Structure and Quality of Jobs in the United States: Effects by Race and Gender, 1973-1990," *Industrial and Labor Relations Review*, XLVIII, 420-440.
- Gregg, P. and J. Wadsworth (2000), "Mind the Gap, Please: The Changing Nature of Entry Jobs in Britain", *Economica*, No. 67, pp. 499-524.
- Hamnett, C. and Cross, D. (1998) Social Polarisation and Inequality in London: The Earnings Evidence, 1979-1995, *Environment and Planning C: Government and Policy*, 10, pp.659-680
- Ilg, Randy E. (1996), "The nature of employment growth, 1989-1995," *Monthly Labor Review*, CXIX, 29-36.
- Ilg, Randy E. and Steven E. Haugen (2000), "Earnings and Employment Trends in the 1990s," *Monthly Labor Review*, March 2000, 21-33.
- Juhn, Chinhui, Kevin M. Murphy and Brooks Pierce. (1993). "Wage Inequality and the Rise in Returns to Skill." *Journal of Political Economy*, 101(3), 410 – 442.
- Kosters, M. H., and Ross, M. N. (1987) "The Distribution of Earnings and Employment Opportunities: A Re-Examination of Evidence" AEI Occasional Papers, American Enterprise Institute
- Levy, Frank and Richard J. Murnane (1992), "U.S. Earnings Levels and Earnings Inequality: A Review of Recent Trends and Proposed Explanation", *Journal of Economic Literature*, 30:3, September 1992, 1333-1381.
- Manning, A. (2004), *We Can Work it Out: The Impact of Technological Change on the Demand for Low-Skill Workers*, CEP Discussion Paper no640, June 2004
- Manning, A. and Goos, M. (2003) *Lousy and Lovely Jobs*, CEP Discussion Paper, December 2003
- Meisenheimer, Joseph R. II (1998), "The services industry in the 'good' versus 'bad' jobs debate," *Monthly Labor Review*, February 1998, 22-47.
- Mollenkopf, J. & Castells, M. (1991): *Dual City – Restructuring New York*. Russell Sage Foundation, New York.

- Moulaert, F., Swyngedouw, E. and Rodriguez A. (2001) "Social Polarization in Metropolitan Areas: The Role of New Urban Policy", *European Urban and Regional Studies*, 8, 2, 99-102
- OECD (2001), "The Characteristics and Quality of Service Sector Jobs," OECD Employment Outlook, 2001, 89-128.
- OECD (2003), "More and Better Jobs? Aggregate Performance During the Past Decade," OECD Employment Outlook, 2003, 17-66.
- Sassen, S. (2001) *The Global City: New York, London, Tokyo*, second revised edition (first ed., 1991), Princeton University Press, Princeton and Oxford
- Stanback, Thomas M. Jr., and Thierry J. Noyelle (1982), *Cities in Transition: Changing Job Structures in Atlanta, Denver, Buffalo, Phoenix, Columbus (Ohio), Nashville, Charlotte*.
- Wright, Erik Olin and Rachel Dwyer (2003), "The Patterns of Job Expansions in the United States: a comparison of the 1960s and 1990s," forthcoming *Socio-Economic Review* (2003), I.