

**Job creation and regional change under New Labour : a shift-share analysis**

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**Citation:**

JONES, Paul (2012). Job creation and regional change under New Labour : a shift-share analysis. *Environment and Planning A*, 44 (6), 1348-1362. [Article]

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## **1. Introduction**

This paper examines changes in UK regional workplace employment during the period of the new labour administration from 1997-2010, using a shift-share analysis. The period encompasses the leaderships of Tony Blair, from May 1997 to May 2007, and Gordon Brown from May 2007 to May 2010. These periods form separate and distinct periods not only in terms of leadership but also in reflecting quite different economic climates. The first period is characterised by an era prolonged economic expansion, with a continued growth of the UK employment base. By contrast, the second period is characterised by the onset of the credit crunch and subsequent global recession with a resulting shake-out of employment in some sectors and regions (see Bell and Blanchflower, 2010; ONS, 2009). The paper presents a shift-share summary of sub-regional and industry changes in employment during both periods.

The extent of structural change under the new labour administration has already received some attention in the academic literature. Coutts et al (2007) examine regional and labour market change during the period 1997-2005, highlighting the differential regional impacts of the persistent decline in industrial sector jobs and rise in service sector employment. Theodore (2007) picks up on similar themes with respect to regional aspects of labour market opportunity under new labour. Other papers have examined the regional redistribution of UK employment against a longer picture of structural change. Rowthorn (2010) traces the impacts of industrial change in Great Britain since 1971, based on a broad geographical analysis of 'North' versus 'South' changes. The persistent nature of the UK regional economic divide, given the backdrop of deindustrialisation and economic change, is a theme also taken up by Erdem (2001), Fothergill (2001) and Rowthorn (2000). Jones and Green (2009) examine regional change during the period 1997-2007, analysing changing

quality as well as quantity of jobs. Champion and Townsend (2010) undertake a study of the 1984–2007 period, with the geographical focus on the performance of UK core cities.

Whilst the shift-share methodology is not novel, it is an ideal way means of summarising regional economic change. The analysis provides a neat arithmetical summary of the regional impact of structural change, analysed by industry, with a residual regional-shift component. The basic idea behind the technique is that regional employment prospects will be affected by changes at national level. Given a retrospective knowledge of national employment growth, as manifested in the industrial profile of employment, one can readily anticipate regional employment outcomes. Any excess growth or contraction in employment, by industry, at regional level beyond this can then be thought of as reflecting the changing spatial distribution of employment, which in turn implicitly reflects changes in regional comparative advantage (see Kitson et al, 2004), although the underlying economic processes are not modelled.

Shift-share methodology has been widely employed in the regional science literature. For a review of the basic method (applied here) and its numerous variant forms see Loveridge and Selting (1998). The application of the method to UK regional analysis dates to Moore (1973) but its subsequent application to various sectoral and country settings has been extensive. (Recent examples include: Banasick and Hanham, 2008; Melachroinos, 2002; and Fotopoulos and Spence, 2001).

This paper applies the shift-share methodology in order to analyse retrospectively changes in UK employment, by industry and sub-region. This is done using (smoothed) annual employment data from the UK Labour Force Survey (LFS), over the period of the new labour administration, with a geographical coverage of 21 sub-regions of the UK and industrial analysis analysed by 17 sectors of employment. Two separate sub-periods are

analysed: the period of the Blair leadership (1997 - 2007), set against the backdrop of economic expansion; and THE Brown leadership (2007-2010), set against the backdrop of more difficult economic times with the onset of the global recession. A separate shift-share analysis is undertaken for each period.

## **2. Shift-share methodology**

### **2.1 Analytical framework**

Shift-share analysis provides a means of analysing temporal changes in regional employment in terms of three component parts. The first component attributes changes in regional employment to changes in the size of the national economy; this is the so called *national growth* component. The logic is as follows. If the UK employment base as a whole is expanding or contracting due to exogenous macro-economic or labour market factors, then this will affect all industries and regions alike, such that 'a rising tide lifts all boats'.

Secondly, changes in regional employment can be attributed to changes in the industrial composition of employment; the so called *industry mix* component. Over time, some industries will expand faster than others and some industries will contract as the derived demand for labour changes by product type. Consequently, regions will benefit differentially depending on their initial industrial composition of employment.

The third shift-share component attributes changes in regional employment to the spatial redistribution of employment within industries. This is the so called *regional shift* component. This element isolates a shift in the share of sector employment towards or away from a particular region. As such, it describes the emerging regional trends in terms of shifting regional comparative advantage, attributable to local factor conditions, agglomeration economies, and so on, although these are not modelled explicitly.

The method is described algebraically, below. Changes in regional employment are compared to changes in national employment. For ease of composition, and following the established norm, regional employment is shown in the lower case notation whereas upper case relates to the national picture. For a given region  $e_t$  denotes total regional employment at time  $t$ .  $E_t$  denotes total national employment at time  $t$ . Disaggregating by industry, and adding a subscript, region  $e_{i,t}$  denotes total regional employment in industry  $i$  at time  $t$ .  $E_{i,t}$  denotes total national employment in industry  $i$  at time  $t$ . Changes in employment compare observations at points in time,  $t-1$  and  $t$ .

By identity, the change in regional employment during the period  $(t-1, t)$  can then be decomposed as follows:

$$\frac{e_{i,t}}{e_{i,t-1}} = \frac{E_t}{E_{t-1}} + \left( \frac{E_{i,t}}{E_{i,t-1}} - \frac{E_t}{E_{t-1}} \right) + \left( \frac{e_{i,t}}{e_{i,t-1}} - \frac{E_{i,t}}{E_{i,t-1}} \right) \quad (1)$$

Subtracting one from both sides and re-writing brackets, this identity may be rearranged so that the regional employment growth in industry  $i$  at time  $t$ ,  $g_{i,t}$ , may be expressed in terms of employment totals and employment shares. i.e.

$$g_{i,t} = G_t + (1 + G_t)\Delta_{i,t} + (1 + G_{i,t})\delta_{i,t} \quad (2)$$

Where  $G_t$  relates to the change in total national employment at time  $t$  (all industries), and  $G_{i,t}$  to the change in national employment in industry  $i$  at time  $t$  (maintaining upper case script as referring to national changes). Regional and national employment growth rates relate back to employment totals as follows:

$$g_{i,t} = e_{i,t}/e_{i,t-1} - 1; G_t = E_t/E_{t-1} - 1; \text{ and } G_{i,t} = E_{i,t}/E_{i,t-1} - 1$$

Further:

$$\Delta_{i,t} = \left( \frac{E_{i,t}}{E_t} \right) / \left( \frac{E_{i,t-1}}{E_{t-1}} \right) - 1$$

$$\delta_{i,t} = \left( \frac{e_{i,t}}{E_{i,t}} \right) / \left( \frac{e_{i,t-1}}{E_{i,t-1}} \right) - 1$$

The delta expressions relate to changing shares of employment, by industry and region. In the first expression (capital delta) the terms in the brackets refer to shares of national employment by industry, with the expression summarising the change over time. In the second expression (small delta) the terms in the brackets refer to shares of industry employment by region, with the expression summarising the change over time.

Finally we can sum across industries to aggregate to the regional employment growth rate,  $g_t$ . This is done using the following identity,

$$g_t = \sum_i \theta_{i,t-1} g_{i,t}$$

Where  $\theta_{i,t-1}$  relates to the proportion of regional employment in industry  $i$  at time  $t-1$ . i.e.

$$\theta_{i,t-1} = e_{i,t-1} / e_{t-1}$$

Applying the summation, we arrive at the following formula which decomposes regional employment growth into three components, additive by industry, each of which can be interpreted as a marginal contribution to growth. The square brackets highlight the separate National growth  $[NG]$ , Industry mix  $[IM]$  and Regional shift  $[RS]$  components.

$$g_t = [G_t] + [(1 + G_t) \sum_i \theta_{i,t-1} \Delta_{i,t}] + [\sum_i \theta_{i,t-1} (1 + G_{i,t}) \delta_{i,t}] \quad (3)$$

**[NG]**
**[IM]**
**[RS]**

This version of the formula is preferred as employment shares (rather than totals) are observed from the smoothed time series data, as described below. Note the comparison of equations (2) and (3). The industrial mix and regional-shift effects are now weighted by the relative contribution of each industry to the regional economy in the base period. Thus relatively larger industry employment bases will be more important in contributing to aggregated shift-share effects.

## 2.2 Data and application

This paper applies the shift-share methodology outlined to analyse retrospectively changes in UK employment during the periods of the Blair (1997-2007) and Brown (2007-2010) administrations. A separate shift-share analysis is undertaken for each period. The data utilised in this paper is taken from Labour Force Survey (LFS) datasets, available from the UK Data Archive. For the purposes of this study, employment data is observed in the second quarterly LFS (April-June) of each year from 1997 through to 2010, yielding 14 annual observations. Note that the April-Jun timing of the datasets coincides neatly with the commencement and end of each leadership period in May of the respective years.

The LFS provides microdata relating to employment. For the purposes of this study, information is retained only with respect to region of workplace (note that this is distinct from region of residence) and industry of employment. Re-aggregate counts of employment are then obtained each period by region and industry by summation and applying LFS person rescaling weights, available in each quarterly survey. In terms of place of work, the LFS GORWK variable provides consistent information on the region of place of work. There are 21 categories of this variable used (workplace outside UK is not used), based on sub-regions of the Government Office Regions (GOR) the UK. For industry, the LFS variable INDS92M is used which relates to industry sector of employment in main job. Headcounts are based on number of people in work with industry composition inferred based on main jobs. Second jobs are ignored for the purpose of this analysis. The industry variable has 17 fold classification (ignoring those working abroad) based on Standard Industrial Classification (SIC1992) classifications. It is noted that the SIC system of classification was updated to SIC2007 standards. However, an industry conversion variable is available after

2007 which converts industry back to SIC1992 categories. This is utilised so that consistent comparisons of industry are available over the whole period.

The shift-share analysis uses *smoothed* estimates of employment shares by industry and sub-region, taken at 1997, 2007 and 2010 respectively. The smoothed estimates are obtained based on a polynomial fitting of the 14 consecutive sets of annual observations, as described below. The purpose of using smoothed estimates rather than raw data is to iron-out the effects of sampling variation in the LFS which is a factor when cross tabulating employment data by industry at sub-regional level. The smoothed estimates therefore avoid presenting a false picture of changes based on anomalous counts in the start or end year; a problem to which to which shift-share is susceptible. In this respect, smoothed estimates represent a truer picture of the evolving changes in employment structure.

In relation to industry shares of total employment (in  $\Delta_{i,t}$ ), 14 consecutive annual observations are available, by industry. For each industry in turn a quadratic function is used to model the time series progression in industry shares. This is done using ordinary least squares regression. The fitted values, obtained from the model, are then rescaled so that they sum to one across all industries each period. The smoothed estimates are used in the shift share analysis rather than the raw LFS counts.

The same procedure is undertaken for the regional share of employment in each industry (in  $\delta_{i,t}$ ), but with 14 consecutive annual observations now available by sub-region and industry. The quadratic smoothing exercise is applied to these estimates, separately by sub-region and industry. Fitted values from the model are rescaled as previously, so that values sum to one across sub-regions, for each industry in each period. The shift share analysis utilises the smoothed values rather than the raw LFS counts. It is noted that instances of zero or negative (fitted) estimates were generated in a small minority of cases,

restricted to two sectors: sector B: Fishing and Q: Extra-territorial organisations & bodies, where sub-regional estimates of employment are small and subject to large sampling errors. Taking a pragmatic approach to solve this problem sector B is combined with sector A: Agriculture, hunting and forestry and sector Q is combined with sector P: Private households with employed persons.

### **3 Shift share analysis results**

#### **3.1 Employment changes at UK level: 1997 – 2010**

Table 1 summarises changes in UK employment during the periods of the Blair and Brown administration. The table shows LFS estimates of employment by industry and period, rounded to the nearest thousand, along with each industry's share of total UK employment (with figures summing to 100%). Recall that the latter figures are used to calculate of the industry mix effect. The industry total employment and shares figures reconcile with the fitted rather than raw estimates of employment, as used in the shift share analysis (although differences between actual and fitted values are small at industry level). The final two columns of the table show the percentage change in employment, by industry, during each of the two administrations.

The estimates show a marked increase in total UK employment during the Blair administration, with the UK employment base expanding by 10.5%, with the growth shared amongst most industrial sectors. During the Brown administration, however, we see a small contraction of total UK employment, by 0.7%, as the economy is affected by the global downturn, with many although not all, industries contracting in terms of employment totals. At industry level, we see a pronounced change in industry structure over both administrations. Most notable is the decline in the size and share of the manufacturing

sector (D) during both periods, reflecting the ongoing process of de-industrialisation highlighted by Rowthorn (2010). Employment in the wholesale, retail & motor trade (G) and financial intermediation (J) sectors have remained largely static, but have declined in terms of share of employment. Most other sectors have expanded, more than replacing the jobs lost in manufacturing. Most notably we see large increases in employment in the hotels & restaurants (H), real estate, renting, business activities (K), education (M), and health & social work (N) sectors, with these areas of employment continuing to expand even during the recession after 2007.

These shifts in industrial composition will impact differentially on the regions, depending on the composition of employment by industry. Regions with higher initial employment shares in manufacturing are likely to be held back in terms of overall growth, whereas regional economies with stronger service sector bases are likely to have fared better. This effect is captured via the 'industry mix' component.

**Table 1: Employment totals, shares and change by industry: 1997-2010**

Industry	Employment: total and share			Change	
	1997q2	2007q2	2010q2	1997	2007
	← Blair Government →			-2007	-2010
	← Brown Government →			Blair	Brown
A,B:Agriculture, etc; fishing	490,000 1.9%	399,000 1.4%	477,000 1.7%	-18.6%	19.5%
C:Mining, quarrying	90,000 0.3%	104,000 0.4%	120,000 0.4%	15.6%	15.4%
D:Manufacturing	4,961,000 19.0%	3,551,000 12.3%	3,041,000 10.6%	-28.4%	-14.4%
E:Electricity gas & water supply	185,000 0.7%	200,000 0.7%	210,000 0.7%	8.1%	5.0%
F:Construction	1,730,000 6.6%	2,272,000 7.9%	2,251,000 7.9%	31.3%	-0.9%
G:Wholesale, retail & motor trade	4,028,000 15.4%	4,248,000 14.7%	4,016,000 14.0%	5.5%	-5.5%
H:Hotels & restaurants	1,225,000 4.7%	1,304,000 4.5%	1,407,000 4.9%	6.4%	7.9%
I:Transport, storage, communication	1,665,000 6.4%	1,943,000 6.7%	1,800,000 6.3%	16.7%	-7.4%
J:Financial intermediation	1,144,000 4.4%	1,241,000 4.3%	1,191,000 4.2%	8.5%	-4.0%
K:Real estate, renting, business act.	2,704,000 10.3%	3,500,000 12.1%	3,656,000 12.8%	29.4%	4.5%
L:Public administration & defence	1,484,000 5.7%	2,033,000 7.0%	1,986,000 6.9%	37.0%	-2.3%
M:Education	1,986,000 7.6%	2,717,000 9.4%	2,900,000 10.1%	36.8%	6.7%
N:Health & social work	2,895,000 11.1%	3,590,000 12.4%	3,837,000 13.4%	24.0%	6.9%
O:Other community, social, personal	1,370,000 5.2%	1,643,000 5.7%	1,661,000 5.8%	19.9%	1.1%
P,Q:Private hholds; extra-territorial	169,000 0.6%	130,000 0.5%	118,000 0.4%	-23.1%	-9.2%
<b>All Industries</b>	<b>26,126,000</b> <b>100.0%</b>	<b>28,875,000</b> <b>100.0%</b>	<b>28,671,000</b> <b>100.0%</b>	<b>10.5%</b>	<b>-0.7%</b>

Note: Employment estimates are rounded to the nearest thousand.

### **3.2 Shift share analysis: Industry mix component**

#### ***Blair government (1997-2007)***

Table 2 shows the industry mix contribution to growth for the period of the Blair administration. Looking across the columns of table, we see the differing impact of the change in employment by industry. Thus we see large negative element in manufacturing (D) offset by positive effects across most of the service sector, consistent across sub-regions. The variance by industry is dominant with broadly similar industry effects by sub-region. This said, the large negative effects from the decline of the manufacturing vary somewhat, with the provincial regions of the midlands, the north of England, and Wales feeling the effect most and London being relatively little affected. The expansion of the service sector during the period yielded positive coefficients (for sector I and sectors K-O) of broadly similar magnitudes across the regions. However the largest differences are apparent in the real estate, renting, business activities (K) where initial industrial composition benefited London (and Central London in particular) and the South East region most. This effect was partially reversed in public sector industries (sectors L-M) where the Central London gained less from the expansion of these sectors. Summing the industry effects by sub-regions, we see that London and the South East were most advantaged by the composition of its industrial base whereas the midlands (and West Midlands in particular) and parts of the north were notably disadvantaged.

#### ***Brown government (2007-2010)***

Table 3 similarly shows the industry mix contribution to growth for the period of the Brown administration. Again we see greater variance by industry rather than region.

However, there is a greater mix of positive and negative effects, with the recession adversely affecting many of the industries. The overall sub-regional effects, summed across industries, are less pronounced than previously, although in part this reflects the shorter extent of the period of the Brown administration. The strongest regional effects again come through manufacturing which suffered most from the shake out of the economic downturn after 2007. The regional effects within the sector are correlated with the effects of the earlier period, reflecting partially differences in the initial size of the manufacturing base by region. As under the Blair government, the regions of the midlands and north suffered most from a disadvantageous industrial composition, particularly in relation to having a larger manufacturing base. Amongst the regions, London stands out as having been best placed to withstand the recession, given its favourable composition of employment by industry.

### **3.3 Shift share analysis: Regional shift component**

#### ***Blair government (1997-2007)***

Table 4 shows the regional shift contribution to growth for the period of the Blair administration. The cells of the table show the effect of spatial relocation of employment by industry into (positive value) or away from the sub-region (negative value). These are summed by sub-region to arrive at a total sub-regional shift figure, as shown in the last column of the table. Paying particular attention to this final column, we see a great deal of variance across sub-regions.

During the years of the Blair administration, Central London showed the greatest net gain in employment. Looking across the row we see that this was driven by a shift of

employment into Central London across a range of economic activities. This includes the net positive contributions from public sector employment (sectors L – N), a shift of manufacturing (D) employment to the capital, but also a gain in employment in the mining and quarrying (C), construction (F) and Real estate, renting, business activities (K). Where these industrial activities relate to heavy industrial activity (i.e. sectors C and D) it is likely that the phenomenon may be one of a operation aspects such as head office being relocated to the capital, along the lines described by Duranton and Puga (2005).

The central London phenomenon, however, was and not replicated over the wider city economy or in the South East region. During the period of the Blair administration we see with a net migration out jobs out of Inner London across most sectors, rescued only by the large inward shift in employment in the financial sector (J). Moreover, Outer London fared by far the worst of all the sub-regions in the UK, with a net 1 in 7 jobs migrating out of the sub region, shared across almost all sectors. The central-versus-outer London employment redistribution (large yet opposite in effect), combined with a net redeployment of jobs out of South East region, suggest a spatial dynamic of a redistribution of employment in and around London to the centre, with the centre of the city gaining to the detriment of the core.

London dynamics aside, we still see a net regional shift away from London and the South East during the Blair administration, with jobs being redistributed into the regions. Amongst the net gainers, in the regions, the sub regions of Yorkshire stand out as benefitting particularly from the spatial shifts in employment, whilst at the geographical fringe Wales, Tyne & Wear and Strathclyde also attracted net new employment. In terms of industries, the sub-regions listed gained most from net job creation in the public sector

activities, notably in health & social work (N) and public administration & defence (L); but also, in construction (F), transport, storage & communications (I) and finance (J).

Finally, whilst general patterns emerge by industry and sub-region, regional shifts may be in part idiosyncratic and specific to time and place. Large positive or negative figures by industry/sub-region in isolation point to this. An example of this is the large net decline in manufacturing (D) employment in the West Midlands (metropolitan area) during this period, in a sub-region which has otherwise held its own in terms of job numbers.

### ***Brown government (2007-2010)***

Table 5 shows the regional shift contribution to growth for the period of the Brown administration. During this period of economic shake-out we see large regional shift variances, almost comparable to the more prolonged period of the Blair administration. Remarkable is the continued net shift employment into Central London, with approximately 1 in 15 UK jobs being redistributed towards this small part of the capital during the three year period of the administration. At industry level, this is driven by net job creation in finance (J), in spite of the banking crisis, but also in manufacturing (D), construction (F) and transport, storage & communication (I). The nature of these industries again hints at the separation of the fortunes during the recession of head office jobs (located in the capital) compared to operational roles, located elsewhere.

Outside the capital, the large urban and former metropolitan areas fair particularly badly during the recession, in net losses of employment across many sectors. Net losers in the spatial re-shuffle during the recession include Inner London and, outside the capital,

notably Tyne & Wear, the West Midlands, Greater Manchester, Merseyside and South Yorkshire. With respect to the finance sector (J), we see the banking crisis felt in the provinces and not in the city. Across an array of other industries such as manufacturing (D), health & social work (N) and public administration & defence (L), we see net job losses centred on the former industrial and metropolitan areas. Away from the urban centres we see a net redistribution of jobs into some of the less populated sub-regions, including the rest of Yorks. & Humberside, rest of North East and the rest of North West, and Northern Ireland, where the pain of the economic downturn is felt less severely.

### **3.4 Summary of total effects by region**

The national growth, industry mix and regional shift components are additive, as shown in equation (3), where each component can be interpreted as a marginal contribution to economic growth. To summarise the analysis, Figure 1 shows these totals summed as a cumulative bar plot. The upper panel of the figure shows the shift-share components under the Blair administration and the lower panel similarly for the period of the Brown government.

In the charts, the sub-regions are placed in descending order by cumulative growth. The largest regional changes have been in Central London, which has seen the largest sub-regional growth, benefitting from a favourable industry mix and positive regional employment shifts, during both periods. At the other extreme, we see the relative decline of the Outer London, and to a lesser extent the South East region, as an UK employment base despite their initial advantage in terms of industry structure. In the provinces we see a

mixed picture with differential impacts over the two administrations. The West Midlands region, with its large inherited industrial base has suffered most from loss of employment. In contrast the geographical fringe of the UK, including parts of the north of England as well as Wales, Scotland and Northern Ireland, have performed well in terms of net new job creation, benefitting especially during the economic expansion of the Blair administration.

**Table 2: Industry mix contribution to growth during the Blair government (1997-2007)**

Region	Industry															All Ind.
	A,B	C	D	E	F	G	H	I	J	K	L	M	N	O	P,Q	
Tyne & Wear	-0.1	0.0	-7.9	0.0	1.3	-0.8	-0.2	0.5	-0.1	1.6	1.9	2.0	1.6	0.5	-0.1	<b>0.2</b>
Rest of North East	-0.4	0.0	-9.3	0.0	1.5	-0.8	-0.2	0.4	0.0	1.3	1.8	2.0	1.6	0.4	-0.2	<b>-2.0</b>
Greater Manchester	-0.1	0.0	-8.1	0.0	1.4	-0.8	-0.2	0.5	-0.1	1.8	1.4	2.2	1.5	0.4	-0.1	<b>-0.2</b>
Merseyside	-0.1	0.0	-6.1	0.0	1.4	-0.8	-0.2	0.5	-0.1	1.3	1.9	2.6	2.0	0.5	-0.1	<b>2.9</b>
Rest of North West	-0.7	0.0	-9.6	0.0	1.4	-0.8	-0.2	0.3	-0.1	1.4	1.5	1.6	1.5	0.4	-0.1	<b>-3.4</b>
South Yorkshire	-0.1	0.0	-8.6	0.0	1.4	-0.8	-0.2	0.4	-0.1	1.7	1.5	2.4	1.6	0.5	-0.1	<b>-0.4</b>
West Yorkshire	-0.2	0.0	-8.6	0.0	1.3	-0.8	-0.2	0.3	-0.1	1.8	1.2	2.0	1.5	0.5	-0.1	<b>-1.4</b>
Rest of Yorkshire & Humb.	-0.9	0.0	-8.3	0.0	1.2	-0.9	-0.3	0.3	-0.1	1.4	1.4	2.0	1.5	0.4	-0.2	<b>-2.3</b>
East Midlands	-0.7	0.0	-9.9	0.0	1.4	-0.8	-0.2	0.4	-0.1	1.4	1.2	2.1	1.4	0.4	-0.3	<b>-3.6</b>
West Midlands (Met.)	-0.1	0.0	-11.6	0.0	1.2	-0.7	-0.2	0.3	-0.1	1.8	1.2	2.2	1.3	0.4	-0.1	<b>-4.3</b>
Rest of West Midlands	-1.0	0.0	-9.7	0.0	1.4	-0.8	-0.2	0.3	0.0	1.6	1.3	1.9	1.3	0.4	-0.2	<b>-3.8</b>
East of England	-0.6	0.0	-7.5	0.0	1.5	-0.8	-0.2	0.4	-0.1	2.0	1.3	1.9	1.4	0.5	-0.3	<b>-0.6</b>
Central London	0.0	0.0	-2.4	0.0	0.7	-0.4	-0.2	0.4	-0.5	4.9	1.8	0.8	0.7	0.6	-0.3	<b>6.2</b>
Inner London	0.0	0.0	-4.3	0.0	1.1	-0.6	-0.2	0.4	-0.1	2.9	1.6	2.3	1.7	1.0	-0.5	<b>5.3</b>
Outer London	-0.1	0.0	-4.6	0.0	1.4	-0.9	-0.2	0.7	-0.1	2.4	1.2	2.3	1.5	0.6	-0.3	<b>3.8</b>
South East	-0.5	0.0	-6.2	0.0	1.5	-0.8	-0.2	0.4	-0.1	2.5	1.4	2.0	1.5	0.5	-0.3	<b>1.7</b>
South West	-0.9	0.0	-6.9	0.0	1.4	-0.8	-0.2	0.3	-0.1	1.9	1.8	1.8	1.6	0.5	-0.2	<b>0.0</b>
Wales	-1.0	0.0	-8.1	0.0	1.4	-0.8	-0.2	0.3	-0.1	1.2	1.6	2.3	1.8	0.5	0.0	<b>-1.1</b>
Strathclyde	-0.3	0.0	-7.2	0.0	1.5	-0.8	-0.2	0.4	-0.1	1.6	1.7	2.1	1.9	0.5	-0.1	<b>1.0</b>
Rest of Scotland	-1.1	0.1	-6.4	0.0	1.5	-0.8	-0.2	0.4	-0.1	1.6	1.6	1.9	1.6	0.5	-0.1	<b>0.4</b>
Northern Ireland	-1.7	0.0	-7.0	0.0	1.7	-0.7	-0.2	0.3	-0.1	0.6	3.2	2.4	1.7	0.3	-0.1	<b>0.7</b>

Note: The ordering of regions retains the LFS ordering with GORs of England approximately north to south followed by Wales, Scotland and N. Ireland.  
Industry key: A,B: Agriculture, etc; C: Mining, quarrying; D: Manufacturing; E: Electricity gas & water; F: Construction; G: Wholesale & retail; H: Hotels & restaurants; I: Transport, storage & communication; J: Financial intermediation; K: Real estate, renting, business activities; L: Public administration & defence; M: Education; N: Health & social work; O: Other community, social & personal; P,Q : Private households; extra-territorial organisations.

**Table 3: Industry mix contribution to growth during the Brown government (2007-2010)**

Region	Industry															All Ind.
	A,B	C	D	E	F	G	H	I	J	K	L	M	N	O	P,Q	
Tyne & Wear	0.1	0.0	-1.7	0.1	0.0	-0.7	0.4	-0.5	-0.1	0.5	-0.2	0.7	1.1	0.1	0.0	<b>-0.2</b>
Rest of North East	0.3	0.1	-2.0	0.1	0.0	-0.7	0.4	-0.4	-0.1	0.4	-0.1	0.7	1.1	0.1	0.0	<b>-0.2</b>
Greater Manchester	0.1	0.0	-1.7	0.0	0.0	-0.8	0.4	-0.5	-0.1	0.6	-0.1	0.7	1.0	0.1	0.0	<b>-0.4</b>
Merseyside	0.1	0.0	-1.3	0.0	0.0	-0.7	0.4	-0.4	-0.1	0.5	-0.2	0.8	1.2	0.1	0.0	<b>0.3</b>
Rest of North West	0.3	0.0	-2.1	0.1	0.0	-0.8	0.4	-0.4	-0.1	0.5	-0.1	0.6	0.9	0.1	0.0	<b>-0.6</b>
South Yorkshire	0.1	0.0	-1.9	0.0	0.0	-0.7	0.3	-0.5	-0.1	0.4	-0.1	0.8	1.2	0.1	0.0	<b>-0.3</b>
West Yorkshire	0.1	0.0	-2.0	0.0	0.0	-0.7	0.4	-0.5	-0.2	0.6	-0.1	0.7	0.9	0.1	0.0	<b>-0.6</b>
Rest of Yorks. & Humb.	0.6	0.0	-1.9	0.0	0.0	-0.8	0.4	-0.4	-0.1	0.5	-0.1	0.7	1.0	0.1	0.0	<b>0.0</b>
East Midlands	0.3	0.1	-2.3	0.0	0.0	-0.8	0.4	-0.5	-0.1	0.5	-0.1	0.7	0.9	0.1	0.0	<b>-0.8</b>
West Midlands (Met.)	0.1	0.0	-2.1	0.1	0.0	-0.7	0.3	-0.5	-0.1	0.6	-0.1	0.8	1.0	0.1	0.0	<b>-0.6</b>
Rest of West Midlands	0.4	0.0	-2.4	0.0	0.0	-0.8	0.4	-0.4	-0.1	0.5	-0.1	0.7	1.0	0.1	0.0	<b>-0.7</b>
East of England	0.3	0.0	-1.8	0.0	0.0	-0.8	0.4	-0.5	-0.1	0.6	-0.1	0.7	0.9	0.1	-0.1	<b>-0.2</b>
Central London	0.0	0.1	-0.7	0.0	0.0	-0.3	0.4	-0.4	-0.6	1.4	-0.2	0.3	0.4	0.1	0.0	<b>0.4</b>
Inner London	0.1	0.0	-0.8	0.0	0.0	-0.5	0.4	-0.5	-0.2	0.9	-0.1	0.7	1.0	0.2	-0.1	<b>1.1</b>
Outer London	0.1	0.0	-1.1	0.0	0.0	-0.7	0.3	-0.7	-0.1	0.7	-0.1	0.8	0.9	0.1	-0.1	<b>0.2</b>
South East	0.3	0.0	-1.5	0.0	0.0	-0.7	0.4	-0.5	-0.1	0.7	-0.1	0.8	0.9	0.1	-0.1	<b>0.2</b>
South West	0.4	0.0	-1.7	0.1	0.0	-0.7	0.4	-0.4	-0.1	0.6	-0.1	0.7	1.0	0.1	-0.1	<b>0.2</b>
Wales	0.5	0.0	-1.9	0.0	0.0	-0.7	0.5	-0.4	-0.1	0.4	-0.1	0.7	1.1	0.1	0.0	<b>0.2</b>
Strathclyde	0.2	0.0	-1.4	0.1	0.0	-0.7	0.5	-0.5	-0.1	0.5	-0.1	0.6	1.2	0.1	0.0	<b>0.3</b>
Rest of Scotland	0.5	0.4	-1.4	0.1	0.0	-0.7	0.5	-0.4	-0.2	0.5	-0.1	0.7	1.0	0.1	0.0	<b>1.0</b>
Northern Ireland	0.8	0.1	-1.7	0.0	0.0	-0.7	0.4	-0.3	-0.1	0.4	-0.2	0.6	1.0	0.1	0.0	<b>0.3</b>

Note: The ordering of regions retains the LFS ordering with GORs of England approximately north to south followed by Wales, Scotland and N. Ireland.

Industry key: A,B: Agriculture, etc; C: Mining, quarrying; D: Manufacturing; E: Electricity gas & water; F: Construction; G: Wholesale & retail; H: Hotels & restaurants; I: Transport, storage & communication; J: Financial intermediation; K: Real estate, renting, business activities; L: Public administration & defence; M: Education; N: Health & social work; O: Other community, social & personal; P,Q : Private households; extra-territorial organisations.

**Table 4: Regional shift contribution to growth during the Blair government (1997-2007)**

Region	Industry															All Ind.
	A,B	C	D	E	F	G	H	I	J	K	L	M	N	O	P,Q	
Tyne & Wear	-0.4	-0.1	-0.3	-0.4	-0.1	0.0	0.2	-0.9	1.1	0.6	1.3	0.4	1.5	0.3	-0.1	<b>3.1</b>
Rest of North East	1.3	-0.4	-1.8	0.2	0.3	-0.9	0.1	-0.3	-0.3	0.1	-0.9	0.2	0.9	0.9	0.5	<b>-0.3</b>
Greater Manchester	0.0	0.0	-0.9	-0.2	-0.5	1.1	0.4	-1.0	-0.5	1.5	-0.6	-1.1	0.2	0.3	0.1	<b>-1.5</b>
Merseyside	0.2	-0.1	0.1	-0.3	0.3	-0.5	0.1	-1.2	0.5	2.4	2.4	-1.3	-0.2	-0.1	-0.1	<b>2.2</b>
Rest of North West	0.0	-0.2	-0.4	0.2	-0.7	-0.2	-0.7	1.0	0.6	1.2	-0.2	1.1	-0.4	0.6	0.0	<b>1.8</b>
South Yorkshire	0.3	-0.6	0.3	0.2	1.7	1.5	0.0	1.2	0.8	-1.6	-0.3	0.0	3.1	0.2	0.0	<b>6.8</b>
West Yorkshire	-0.1	-0.2	0.0	0.1	0.9	-0.1	0.7	1.0	0.2	-0.8	0.8	0.0	-0.8	-1.3	0.4	<b>1.1</b>
Rest of Yorks. & Humb.	0.0	-0.5	1.1	-0.1	1.9	0.6	-1.1	0.0	-0.1	0.9	1.4	0.5	1.0	1.2	-0.1	<b>6.7</b>
East Midlands	0.5	-0.1	0.5	0.1	-0.1	0.9	0.6	0.6	-0.1	0.9	0.2	-0.5	0.5	-0.2	0.0	<b>3.8</b>
West Midlands (Met.)	0.1	0.0	-5.6	0.0	0.3	-0.6	-0.4	1.3	0.0	-1.0	0.1	-0.7	1.2	0.1	0.1	<b>-5.1</b>
Rest of West Midlands	-0.6	-0.1	0.6	0.2	-0.7	-0.5	-0.6	1.6	-0.1	-0.2	-0.4	-0.3	1.3	0.0	0.0	<b>0.2</b>
East of England	0.5	0.0	0.6	0.0	-0.1	0.7	0.3	-0.5	-0.6	-0.4	-0.2	1.1	0.0	0.0	-0.2	<b>1.3</b>
Central London	0.1	0.2	2.3	-0.1	1.0	0.3	1.5	-0.1	-0.2	0.8	2.6	0.9	0.5	0.4	-0.2	<b>9.9</b>
Inner London	0.2	0.1	-1.0	-0.2	-0.6	-1.2	-0.8	-0.3	3.8	0.9	0.4	-0.8	-0.1	-2.0	-0.2	<b>-1.9</b>
Outer London	1.2	0.1	-0.7	-0.1	0.2	-3.5	-0.3	-1.4	-1.7	-2.2	0.0	-1.4	-2.7	-0.7	-0.2	<b>-13.5</b>
South East	0.6	0.0	0.9	0.0	-0.5	0.0	-0.2	-0.4	-0.5	-1.2	-0.6	0.7	-1.0	0.3	0.0	<b>-2.0</b>
South West	-0.1	-0.1	1.1	0.2	0.1	0.9	-0.5	0.4	-0.4	-0.7	-0.9	1.1	0.1	0.1	0.1	<b>1.4</b>
Wales	0.3	-0.1	0.4	-0.5	0.5	0.5	0.6	0.5	0.2	1.1	0.2	-1.0	0.6	0.0	0.5	<b>3.9</b>
Strathclyde	-0.1	0.1	-1.1	0.5	-0.5	-0.2	0.8	0.9	0.9	1.1	0.8	-0.9	0.1	-0.3	0.1	<b>2.2</b>
Rest of Scotland	-0.8	0.8	-0.6	-0.2	-0.2	-0.2	-0.5	-0.9	1.0	-0.2	-0.3	0.6	0.7	0.1	0.3	<b>-0.4</b>
Northern Ireland	-0.5	0.2	1.3	-0.1	0.5	2.0	0.7	-1.0	0.5	4.3	-1.6	-3.5	-0.3	0.7	0.3	<b>3.4</b>

Note: The ordering of regions retains the LFS ordering with GORs of England approximately north to south followed by Wales, Scotland and N. Ireland.

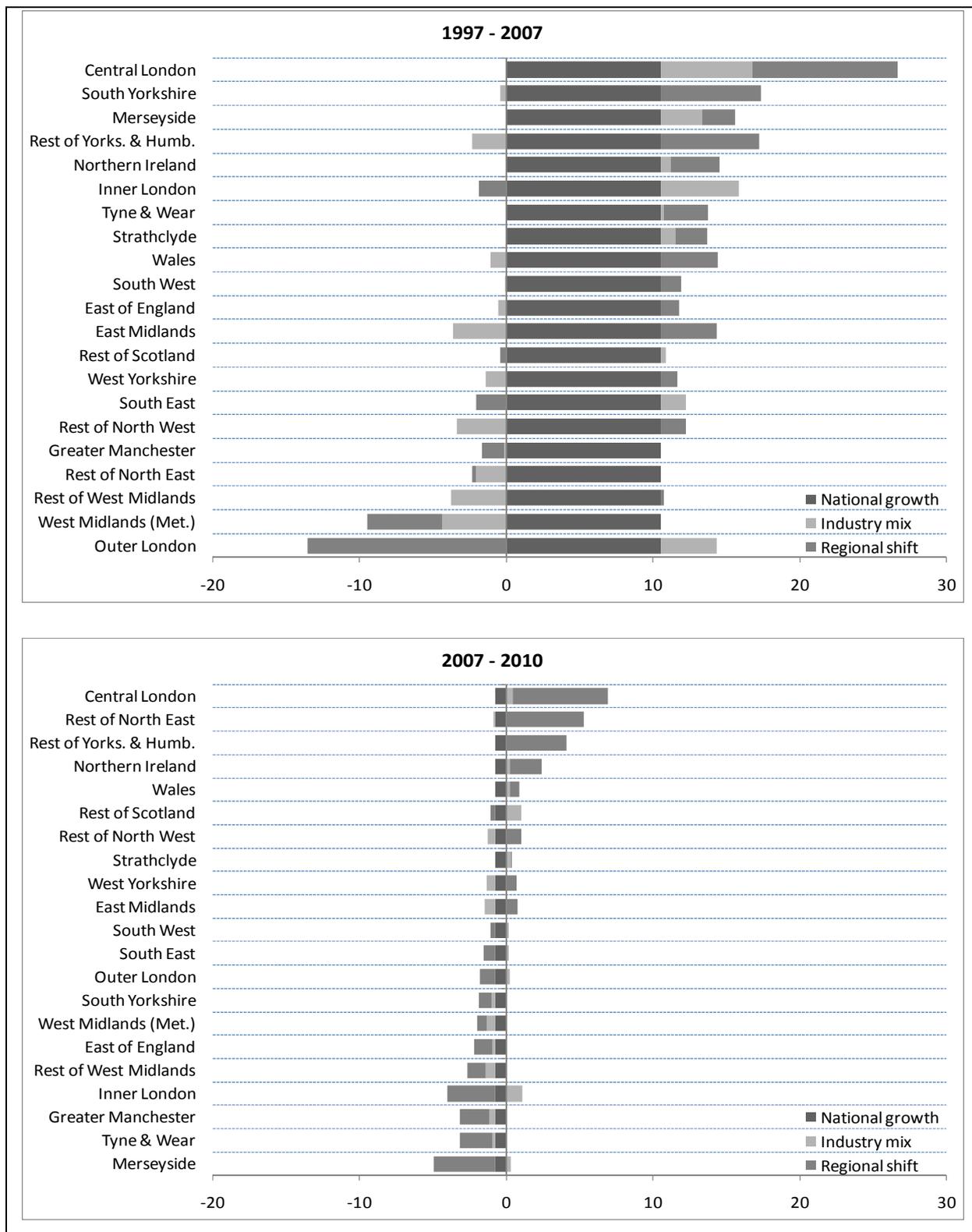
Industry key: A,B: Agriculture, etc; C: Mining, quarrying; D: Manufacturing; E: Electricity gas & water; F: Construction; G: Wholesale & retail; H: Hotels & restaurants; I: Transport, storage & communication; J: Financial intermediation; K: Real estate, renting, business activities; L: Public administration & defence; M: Education; N: Health & social work; O: Other community, social & personal; P,Q : Private households; extra-territorial organisations.

**Table 5: Regional shift contribution to growth during the Brown government (2007-2010)**

Region	Industry															All Ind.
	A,B	C	D	E	F	G	H	I	J	K	L	M	N	O	P,Q	
Tyne & Wear	-0.1	0.0	-0.4	-0.4	1.4	-1.0	-0.3	-0.3	-0.6	0.5	-0.9	0.0	-0.3	0.1	0.0	<b>-2.3</b>
Rest of North East	-0.3	-0.1	0.0	0.1	1.0	2.0	0.7	-0.1	0.2	0.7	1.0	0.0	0.3	-0.1	-0.2	<b>5.3</b>
Greater Manchester	0.1	0.0	-0.1	-0.1	0.6	-0.5	-0.1	-0.2	0.0	-0.5	-0.1	-0.7	-0.2	-0.2	-0.1	<b>-2.1</b>
Merseyside	0.0	0.1	-0.3	0.1	0.1	-1.0	-0.2	-0.3	-1.3	-0.2	0.0	0.0	-1.4	0.1	0.1	<b>-4.2</b>
Rest of North West	0.1	0.1	-0.5	-0.2	0.0	0.3	0.7	0.4	0.0	0.1	-0.5	-0.2	1.0	-0.2	-0.1	<b>1.0</b>
South Yorkshire	0.1	0.0	-0.6	0.1	-0.2	0.1	-0.9	-0.1	-0.6	0.7	-0.1	-0.3	0.5	0.4	0.1	<b>-0.8</b>
West Yorkshire	0.0	0.0	-0.3	-0.1	0.3	0.3	-0.5	0.0	0.3	1.1	0.2	-0.1	-1.1	0.7	-0.2	<b>0.7</b>
Rest of Yorks. & Humb.	1.3	0.2	0.3	0.0	-1.0	1.6	0.3	0.1	0.6	-0.9	0.8	-0.1	0.5	0.5	0.0	<b>4.1</b>
East Midlands	-0.7	-0.1	0.6	0.2	-0.5	0.4	0.2	0.1	-0.2	-0.3	0.4	0.6	0.0	0.1	0.0	<b>0.8</b>
West Midlands (Met.)	0.1	0.0	-0.8	-0.2	-0.3	-0.7	-0.2	-0.8	-0.2	1.0	0.7	-0.2	0.3	0.6	0.0	<b>-0.6</b>
Rest of West Midlands	0.3	0.0	-0.8	0.0	0.0	-0.6	-0.1	-0.2	0.2	0.6	0.5	-0.6	-0.9	0.3	0.1	<b>-1.2</b>
East of England	-0.3	0.1	0.2	0.0	-0.4	-0.8	0.2	0.1	-0.1	0.0	-0.3	0.3	0.0	-0.1	-0.2	<b>-1.3</b>
Central London	0.0	0.1	0.6	0.0	1.0	0.3	-0.1	0.9	2.3	0.7	0.7	0.3	0.1	-0.5	0.2	<b>6.5</b>
Inner London	0.0	0.0	0.1	-0.1	0.0	-0.2	0.3	0.0	0.1	-1.6	0.1	-0.2	-1.4	-0.7	0.2	<b>-3.3</b>
Outer London	0.2	0.2	0.1	-0.1	-0.3	-0.3	0.0	0.6	-0.3	-1.0	0.1	0.4	-0.2	-0.6	0.1	<b>-1.1</b>
South East	-0.3	0.0	-0.4	0.0	0.5	-0.3	-0.2	0.0	-0.2	-0.7	0.2	0.0	0.4	0.0	0.2	<b>-0.8</b>
South West	0.2	-0.1	0.7	0.1	-0.5	-0.3	0.0	-0.2	-0.2	0.1	0.0	0.0	-0.2	0.0	0.0	<b>-0.3</b>
Wales	-0.2	-0.1	0.0	0.1	0.1	0.9	-0.2	-0.2	0.1	0.5	0.1	-0.2	0.0	0.0	-0.1	<b>0.7</b>
Strathclyde	0.0	0.0	-0.1	-0.1	-0.1	0.5	0.3	-0.5	-0.5	1.0	-1.0	-0.2	1.1	-0.2	-0.1	<b>0.1</b>
Rest of Scotland	0.1	-0.1	-0.1	0.3	0.2	1.1	-0.4	0.0	-0.4	0.2	-0.9	-0.6	0.0	0.3	0.0	<b>-0.4</b>
Northern Ireland	-0.2	-0.2	1.1	0.0	-1.2	0.2	0.2	0.4	0.6	0.8	-1.6	1.2	0.8	0.3	-0.1	<b>2.2</b>

Note: The ordering of regions retains the LFS ordering with GORs of England approximately north to south followed by Wales, Scotland and N. Ireland.  
Industry key: A,B: Agriculture, etc; C: Mining, quarrying; D: Manufacturing; E: Electricity gas & water; F: Construction; G: Wholesale & retail; H: Hotels & restaurants; I: Transport, storage & communication; J: Financial intermediation; K: Real estate, renting, business activities; L: Public administration & defence; M: Education; N: Health & social work; O: Other community, social & personal; P,Q : Private households; extra-territorial organisations.

**Figure 1: Shift-share summary, by region and period of administration**



Note: Sub-regions are ranked in descending order by total growth, by period.

#### **4 Conclusion**

Shift-share analysis provides an ideal means of examining employment change over time. The method provides a neat arithmetic summary of outcomes with a decomposition of the regional impacts of changing industrial structure and changing spatial distribution of employment. The method is applied to recent UK workplace employment data over both the period of Blair and Brown premierships. Utilising data from the LFS, workplace employment is mapped on a large (21x17 cells) matrix by sub-region and industry. By effectively bringing UK shift-share data up to date, the paper is able to add empirical evidence to the debate around industrial restructuring and UK regional change.

The period of the Blair administration saw a prolonged and pronounced decline in manufacturing, thereby continuing a persistent trend established many years earlier (see Rowthorn, 2010 and 2000). During the era of the Blair administration an estimated net 1.4 million UK jobs were lost in manufacturing. However, the jobs lost in this sector are more than replaced by the expansion of the service sector. To this end there is a regional pandemic benefit, in terms of net new job creation, of the expansion of other parts of the economy, notably in the construction sector (F); real estate, renting, business activities (K); public administration & defence (L); education (M); and health & social work (N), with over 3.4 million net new jobs created in these industries alone. The latter period of the Brown administration witnessed the impact of the global recession, with an overall decline in job numbers. However, in terms of sectoral impact we see correlated effects with the earlier period, with the ongoing effect of de-industrialisation and switch to service sector employment dominating the negative impact on job numbers of the recession. Manufacturing again bears the brunt of job losses (with a further half a million estimated

net jobs lost in this sector during the recession). In contrast employment in the service sector, and especially in the sectors listed above, remains remarkably resilient, with net increases in employment numbers.

The regional impact of industrial restructuring over time is analysed in terms of the 'industry mix' component. These measures showed a strong commonality across regions, with variance across industries dominating variance within industry. Aggregated across sectors, the effects of the industrial restructuring benefitted London and the South East (central and inner London in particular) and especially during the period of the Blair government. The regions of the midlands, north of England and Wales are disadvantaged mainly due to their relatively high initial dependency on employment in manufacturing.

The residual component of the shift-share analysis, having accounted for effects of industrial restructuring, is the regional-shift. This shows the extent to which jobs have been redistributed across regions and therefore highlights implicitly changing regional comparative advantage. The results indicate, for both periods, that the magnitudes of the regional shift effects are approximately twice those of industry mix effects, indicating large net regional transfers of employment.

In total, summing across sectors, regional shift components favoured the provinces during the Blair administration, with London and the South East losing employment share to the regions. Scotland, Wales and much of the north of England benefitted from these changes, with net job creation across many industries and not just isolated to one sector. The employment dynamic in and around London was, however, particularly strong, with central London gaining most in the redistribution of employment away from surrounding Outer London (which performed notably badly), inner London and the South East region.

During the Brown administration, whilst the urban areas of the midlands and north lost employment share, the provincial and less well populated hinterlands were much less badly affected. However, most striking is continuing the regional-shift in employment share towards Central London (although not towards the wider region of London and the South East). This spatial trend correlates with and builds upon the employment gains of the earlier periods. Thus the increasing role of central London as an economic powerhouse, despite its relatively small size, is a striking feature that emerges from the analysis. The implied dynamic regional comparative advantage of this part of the capital suggests the importance of agglomeration factors around density of employment in growing sectors. It is also broadly supportive of the notion of the importance of 'global cities' (see Sassen, 1991).

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