Primate cities, the region effect and growth gradients: The Metropolitan effect on regional growth and regional disparities in Britain.

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Thematic 1- Complex Urban Systems and processes of cities' transformation

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The Original Title submitted was:

"London's impact on the economic structure of regional unemployment and employment: An analysis of British regions 1995-2015"

while the original title is still applicable to the first half of the presentation, given the inclusion of material on cities and an exploration of cities within regions in the latter part of the presentation it was felt,

"Primate cities, the region effect and growth gradients: The Metropolitan effect on regional growth and regional disparities in Britain".

might be a more appropriate title. Thanks to two reviewers of the intitial abstract for their comments.

Aims of the Presentation

- What is the effect on increasing distance from London on
    - Employment growth
    - Unemployment
    - Income

- Separate out industry mix and regional effects on performance – evidence derived using multifactor partitioning (MFP)

- Explore regional resilience - unemployment

- To what extent might the regional imbalances be dependent on intra-regional urban structures and related factors

Data

1972 - 2012 data from Gardiner et al (2013)

1995 – 2017 data collected from NOMIS for

- employment
- unemployment
- income
- regional population

- distance
- specialisation (use of Gini across 25 sectors from 1995 to 2016)
- Regions - 11 Standard Regions of Great Britain (NUTS 1)
- Urban Populations – use of Primary Urban Areas (PUAs)
- from www.centreforcities.org

Techniques

Use of Multifactor Partitioning (MFP), simple correlation and regression

For those unfamiliar with MFP we can suggest some further reading, but suffice it to say it is a big improvement on traditional shift share analysis that very effectively separates out region effects from industry mix effects and does not conflate either with national effects.

Regional Cities

- London
- Largest in Region
- Second Largest
- Third Largest
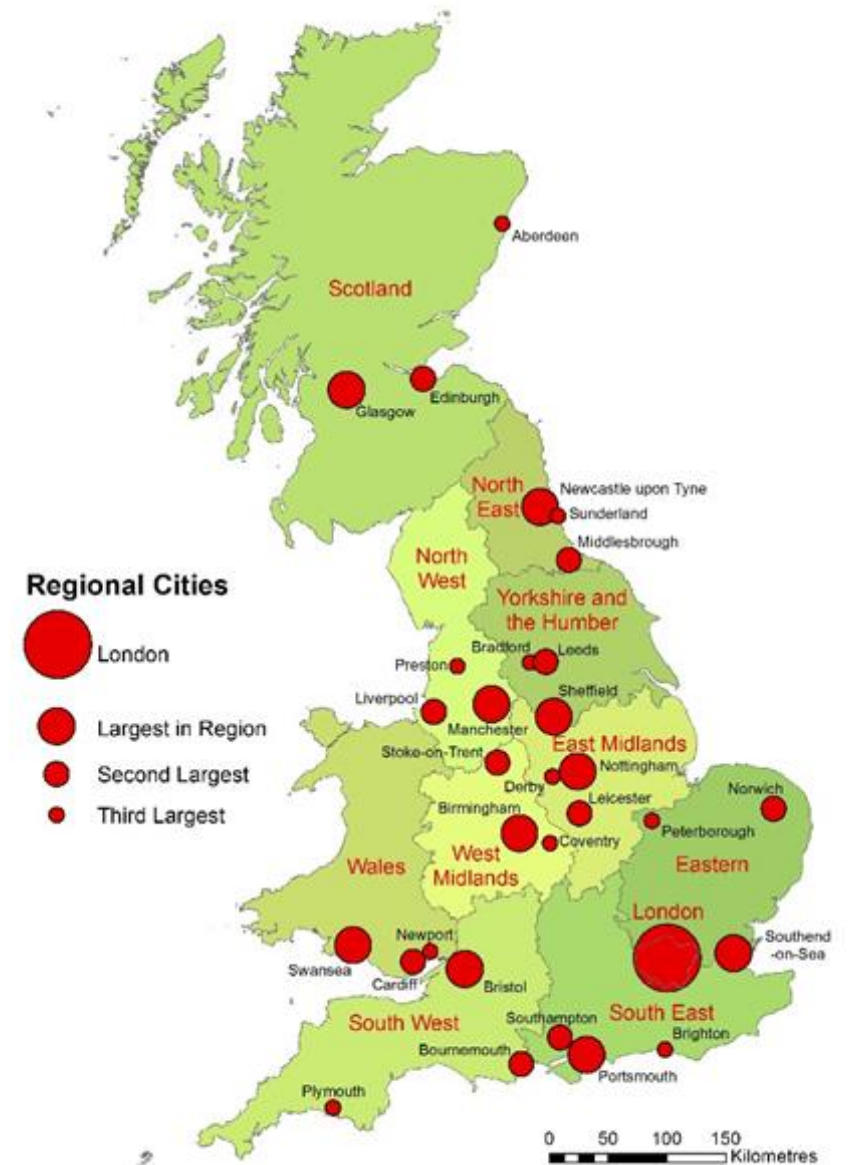
Thus…….

The Industry Mix Effect identifies the contribution of each region's particular mix of fast and slow growth industries to its overall growth performance, and therefore reflects the regional endowments, both physical and human, that are largely region-specific.

The Region Effect removes the disproportionalities in the industry-mix on regional growth performance. As such, the region effects are a generalised measure of inter-regional growth differences for each individual industry type.

Consequently,

the industry-mix effects underline the North-South disparities in regional employment growth and the region effect underlines the dominance of London on regional growth performance. The contribution of partitioning the employment growth effects is thus to identify the effects of the specific component of growth, and in particular the region effect, on employment growth with increasing distance from London.
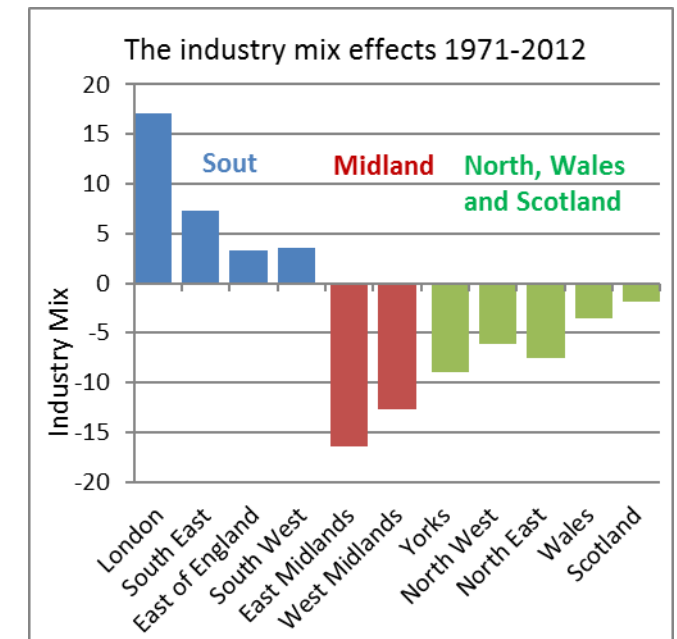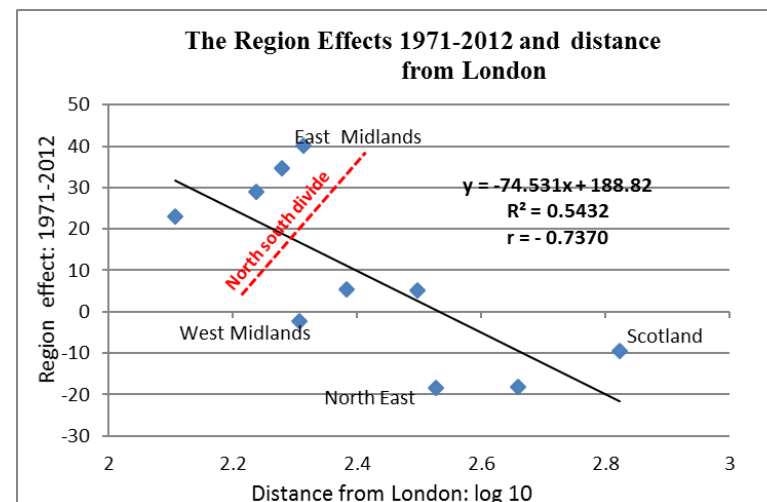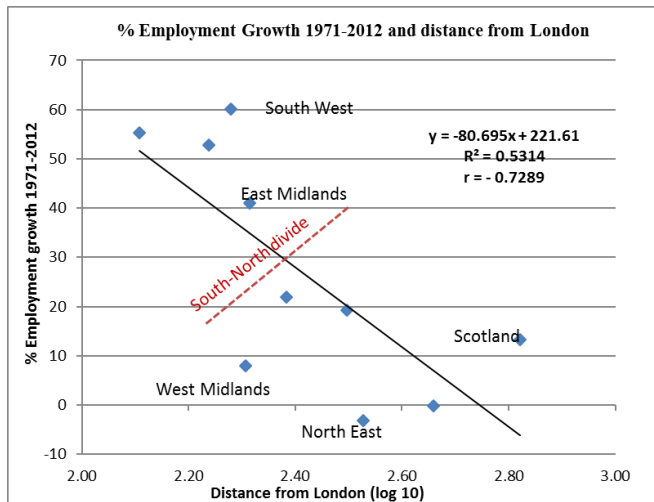
Table 1 The simple correlations between distance from London, employment growth, industry mix and the region effects: 1971-2012

|	Employment growth	distance from London	industry mix 1971-2012	region effect 1971-2012
Employment growth		-0.729	0.569	0.929
distance from London	-0.729		- 0.278	- 0.737

So ....

quite clearly employment growth is negatively correlated with distance from London and the regional effect echoes the distance effect – thus a North-South Divide is clear

Key difference between these two graphs is East Midlands which has much higher region effect than expected given its distance from London

% Employment Growth 1971-2012 and distance from London

y = -80.695x + 221.61
R² = 0.5314
r = - 0.7289

The Region Effects 1971-2012 and distance from London

y = -74.531x + 188.82
R² = 0.5432
r = - 0.7370

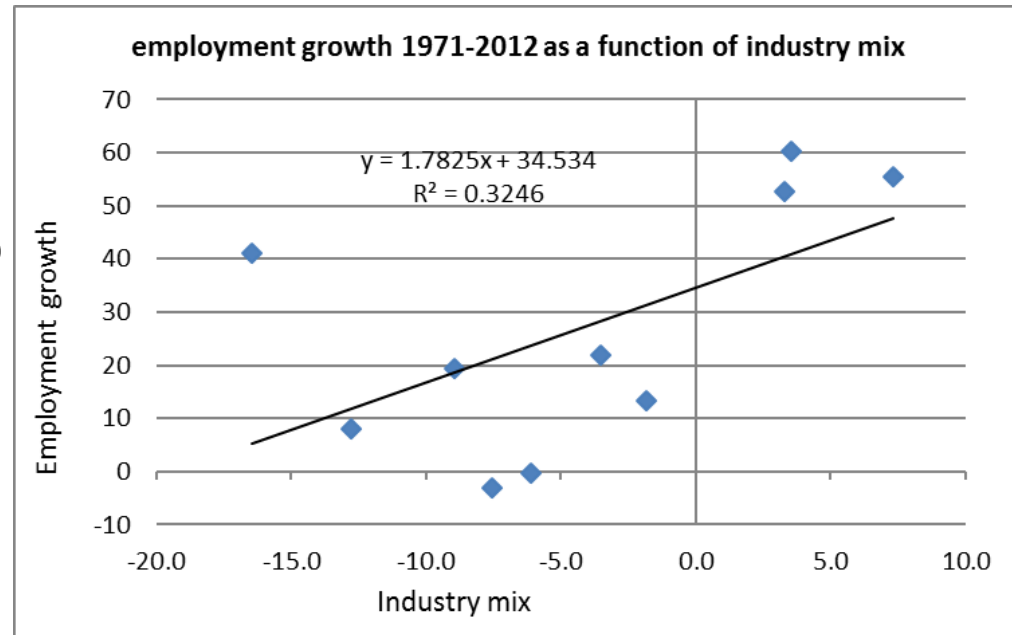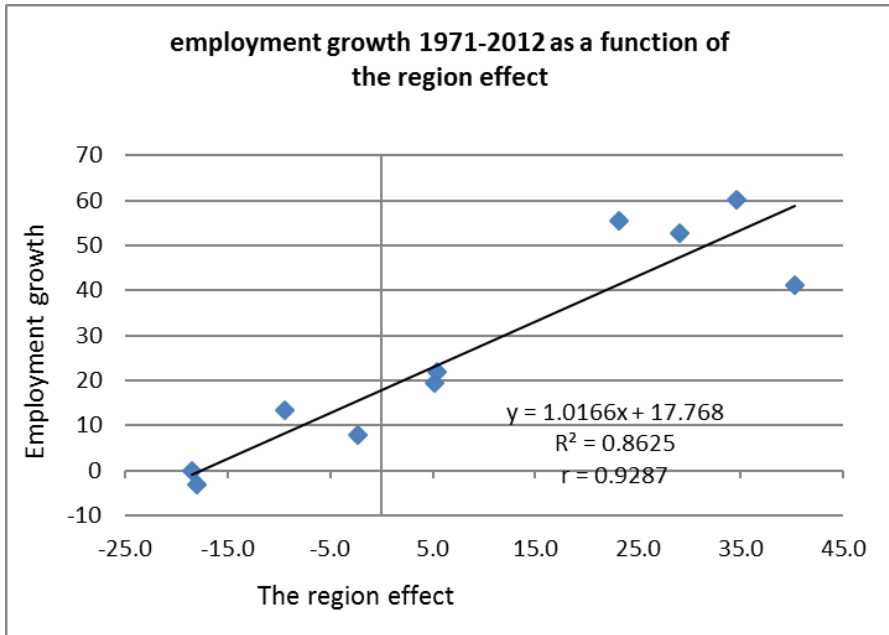The industry mix effects 1971-2012

The region and industry mix effects: 1971-2012
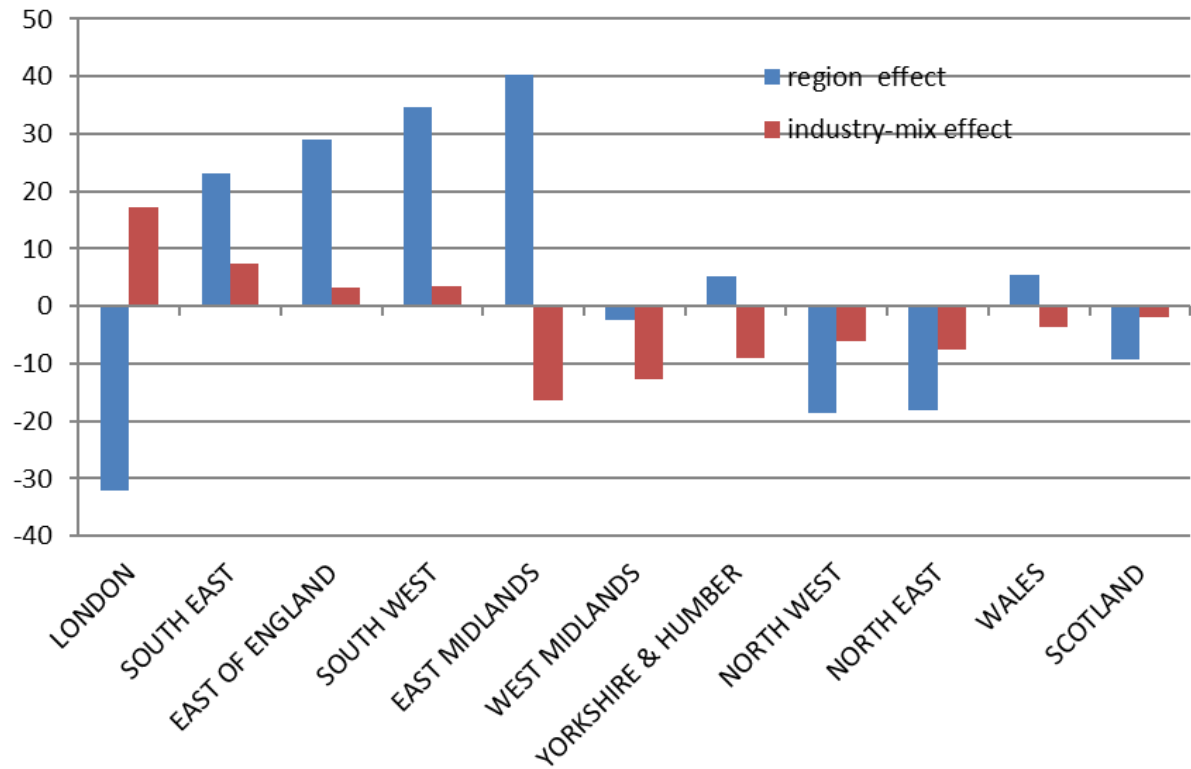
The relative importance of the industry-mix effect
And the region effect can be seen here at left.

The basis for the correlations mentioned on previous pages should be clear.

This is also demonstrated on the following slide....

employment growth 1971-2012 as a function of the region effect

Employment growth

$y = 1.0166x + 17.768$
$R^2 = 0.8625$
$r = 0.9287$

The region effect

employment growth 1971-2012 as a function of industry mix

Employment growth

$y = 1.7825x + 34.534$
$R^2 = 0.3246$

Industry mix

If looking at employment growth the region effect is greater than the industry effect

Let's turn to look at unemployment from 1992 - 2017

1992-2017 by quarter

Fig 4 Quarterly unemployment rates for three selected regions: 1992-2017
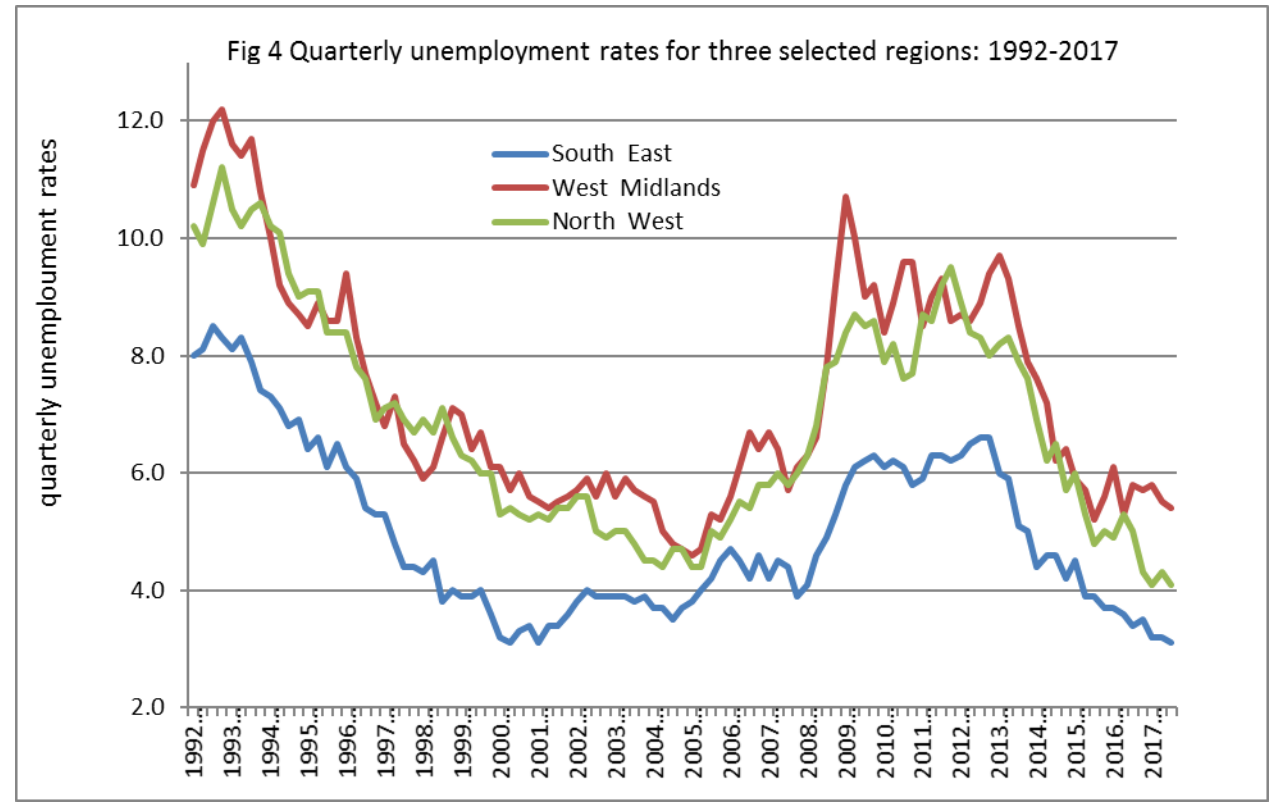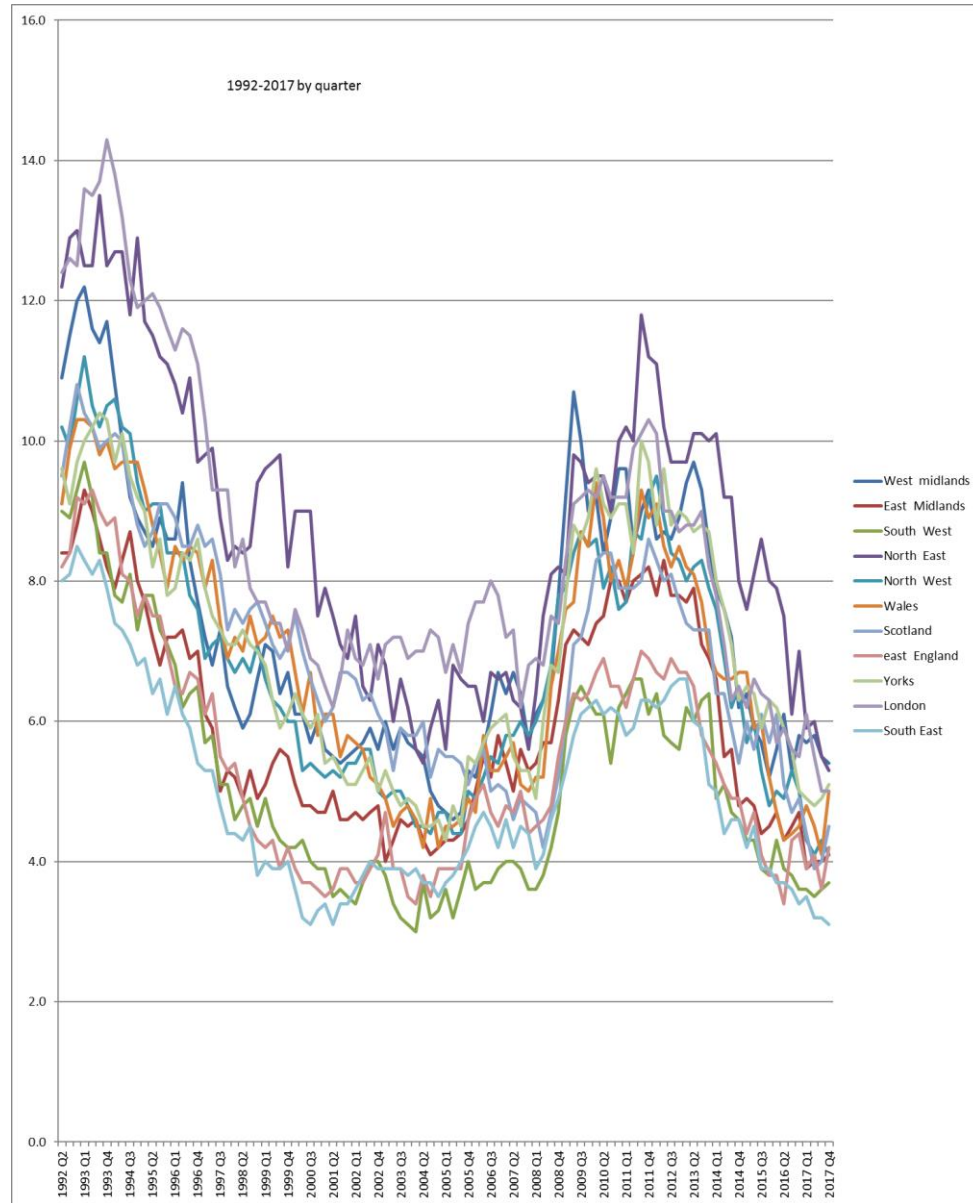
What we see when we look at regional rates of unemployment is that they move in tandem with the national picture over time.

What is important for the regional analysis here is not so much the rates for each region but how they relate to the national average over time.

Mean unemployment rate 1992-2017 as a function of Log 10 distance from London

mean regional unemployment

distance (log 10) of region from London

y = 3.8952x - 2.8589
R² = 0.5171
r = 0.7191

Decreasing mean unemployment rates with increases in the region effect

Mean unemployment rates 1992-2017

region effect 1971-2012

y = -0.044x + 6.9353
R² = 0.6743
r = -0.8211
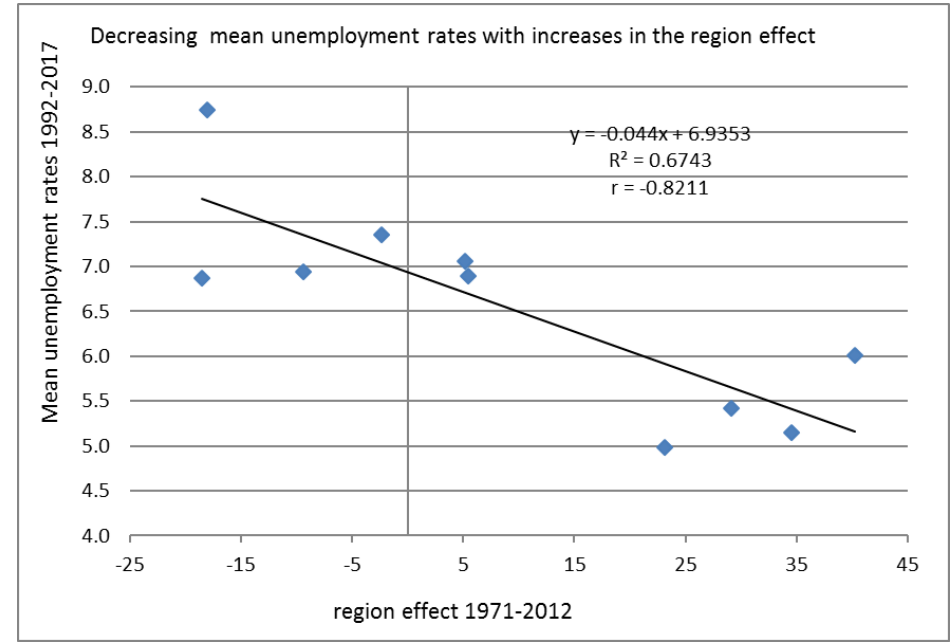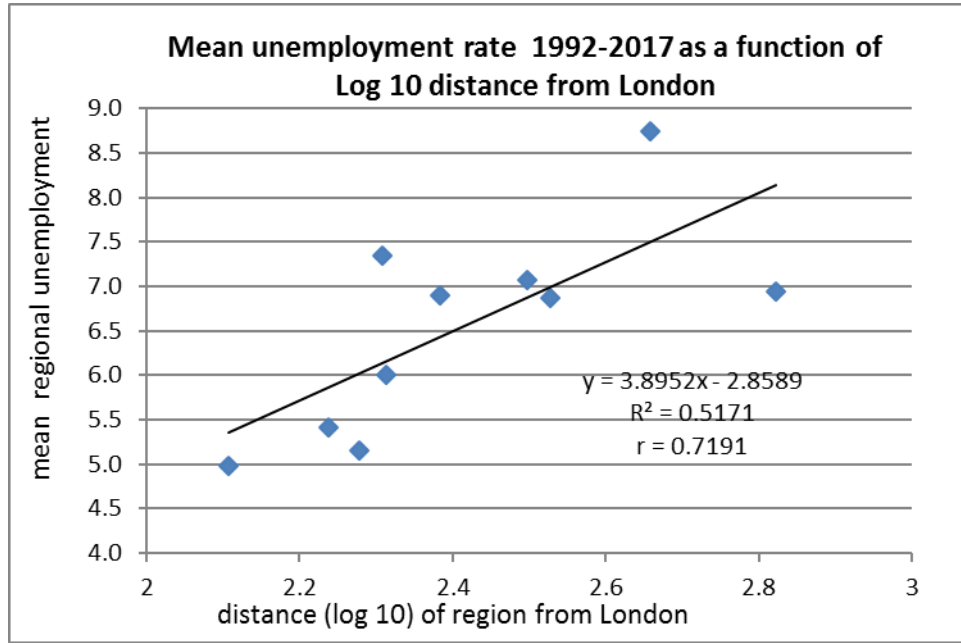
If we take a look at each Region the mean unemployment rate is highly correlated with BOTH distance from London and region effects, while there is no correlation with industry-mix.

More important than just showing these relationships, we can quantify them, in relation to regional impacts on unemployment.

Therefore, we plot regional unemployment against corresponding national unemployment, essentially measuring the relative deviation from the national rate. For each region we can see the regression equation, and in particular the regression coefficient e.g. 1.1853 for the North East

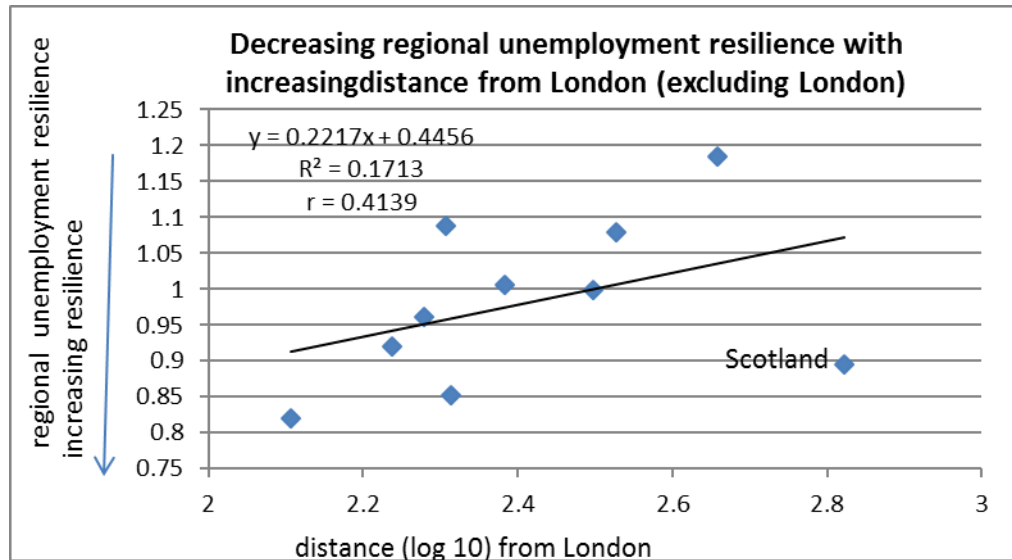M1 Fig 6 Relative unemployment rates for three selected regions
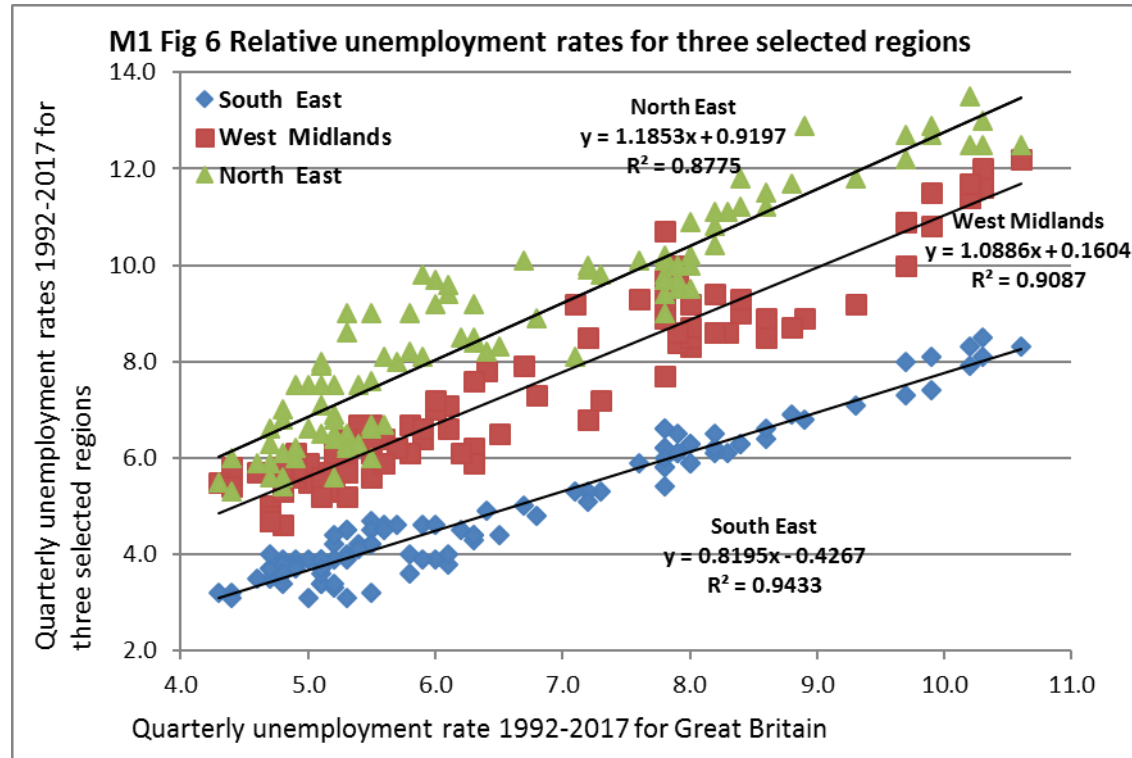
These relative unemployment rates have important attributes

- regional rates are relative to the national rate
- plotting regional rates against national rates fluctuations in national rate are removed
- measurement calibrates change in region to national rate
- The relative unemployment rate is thus an inverse index of regional resilience

Region	Unemployment Resilience
London	1.259
South East	.820
East	.920
South West	.961
East Midlands	.853
West Midlands	1.089
Wales	1.005
Yorkshire / Humber	0.999
North West	1.080
North East	1.185
Scotland	0.895

The more resilient a region is to economic recession and to national increases in unemployment, the lower will be the increase in the relative unemployment rate. A value of 1.00 indicates a neutral level of resilience: increases in unemployment rates will be proportional to increases in national rates. Relative unemployment rates below 1.00 indicate higher levels of resilience. Conversely lower rates indicate that that regional unemployment rates increase more than the national rates during periods of recession.

Decreasing regional unemployment resilience with increasing distance from London (excluding London)

$y = 0.2217x + 0.4456$
$R^2 = 0.1713$
$r = 0.4139$

regional unemployment resilience — increasing resilience

distance (log 10) from London

Scotland

When regional resilience is plotted against distance from London the correlation is 0.4139.

However, it is clear Scotland is an outlier and if removed from analysis r increases to 0.825 – implying a strong link between unemployment resilience and distance from London.

In addition (even if Scotland is included) there is a strong correlation between unemployment resilience and the region effect (r = 0.725) where as the industry mix effect is not significant.

What becomes apparent is that there has been very little change in these relative values over time - the suggestion being that regions hardest hit by recession in the past are the least likely to be resilient in the future. Indeed there appears to have been a widening of disparities across the country over time.

Lets move away from the data and consider what factors might help explain regional change and resilience and be used as policy tools to advance balanced growth

1. the importance of services to the economy

2. the role of the public and private sector

3. the role of governance of regions

These are often suggested but in many senses these might be considered related to either industry-mix (1 and 2) or national effects (3) because of centralisation in the UK.

Given the region effect and distance effect and their importance, as evidenced above, what other factors might we consider.

What if we consider the URBAN HIERARCHY / Role of Cities?

What if we consider the URBAN, or urban factors?

Most economic theory tells us that cities are the drivers / motors / engines of economic activity. They are centres of innovation and accumulation leading to agglomeration and wealth generation.

- Can we identify aspects of urbanism, urbanisation, or urban hierarchies and structures to inform a better understanding of regional performance within their regions?

- Towards this end some simple analysis is conducted that may throw light on the regional problem in Britain.

Proportion of Regional Populations in 3 largest cities 2016
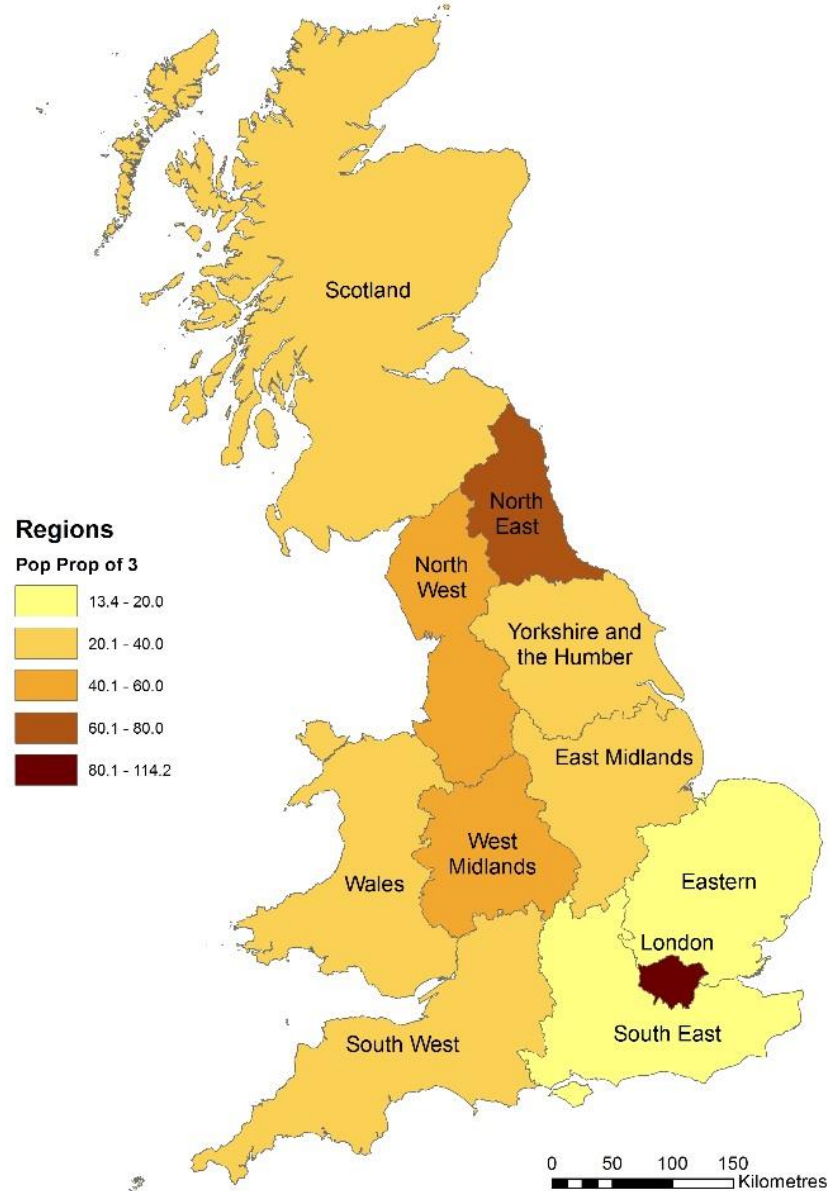
Ratio of Largest City to Third Largest, Ratio of Largest City to Second Largest, and Proportion of Regional Population in 3 Largest Cities

	1-3 ratio	1-2 ratio	% POP in 3
London	n/a	n/a	114.2
Southeast	1.5	1.4	14.1
East	1.8	1.3	13.4
Southwest	2.8	1.5	26.9
East Midlands	2.6	1.3	30.2
West Midlands	7.1	6.6	55.9
Wales	1.6	1.1	31.8
York Humber	1.6	1.1	39.7
Northwest	6.7	3.9	47.9
Northeast	3.1	1.8	60.7
Scotland	4.3	2.0	32.0

Ideas to be considered:

- In keeping with the earlier regional analysis of employment and unemployment one can see that regions with smaller proportions of population in their largest city or cities seem to perform better than those with large proportions in their largest cities

    e.g. North East, or North West, or West Midlands (large cities – poor performance)

- Does this imply urban size is important, or the urban system (perhaps the Polycentricity of PURs is important) ?

- London is a region in itself and its high value on the map shows its under-boundedness as a region.

- Perhaps lack of other large cities near London is a result of London's shadow effect ? (O'Donoghue 2014) and London's borrowed size (Phelps et al 2001) is driving those economies.

- A recognition that Governance has been identified elsewhere as important to regional performance means these larger cities of Manchester, Birmigham, etc. are getting mayors and autonomy from London which might allow for greater REGION EFFECT to emerge? In light of evidence here is that a good thing??

- Might that greater autonomy for regions be the reason why Scotland and Wales seem to perform better than expected relative to their peripherality?

Exploring regional size, employment change, industry structure, income, urban character whilst demonstrating the influence of London

Pearson Correlations for selected pairs of variables 1995-2016

Variable 1	Variable 2	Ex London	In London	Comment	
Regional employment 2016 (Size)	Regional Gini	-0.741 (.014)	0.026 (.939)	opposite	*Greater size = less specialisation, except London*
Regional Employment Growth 1995-2016	Regional Gini	0.033 (.929)	0.732 (.01)	opposite	*Regional Growth not linked to industry-mix, except London*
Regional employment 2016 (Size)	Median Annual Gross Regional Income	0.799 (.006)	0.739 (.009)	same	*Size of region and income stongly related across all regions*
Regional Employment Growth 1995-2016	Median Annual Gross Regional Income	0.004 (.991)	0.875 (.000)	opposite	*Regional growth not related to income, except London*
Proportion of Population in 3 Largest Cities*	Regional Employment Growth 1995-2016	-0.742 (.014)	N/A		*Regional Employment Growth negatively correlated with regions with the largest cities*
Largest to Third Largest City* Ratio	Regional Employment Growth 1995-2016	-0.621 (.055)	N/A		*Regional Employment Growth negatively correlated with regional primacy*

Cities* - Primary Urban Areas – www.centreforcities.org

Conclusions

- Region effects are stronger than Industry-mix effects
- Regional disparities are strongly linked to distance from London
- Regional Resilience appears to be embedded – region effect
- Regional policy for past 60 years has not reduced disparity – over emphasis on industry-mix and national effects
- The distribution, size and network of urban places may be important to regional performance

Solutions ????

- Focus on Region Specific solutions – it's the REGION EFFECT
- Focus on Governance – Good Governance of Cities, but more importantly REGIONAL governance with teeth and fiscal responsibilities. Major decentralisation of authority out of London
- Focus on Polycentric Urban Regions and balancing urban size/hierarchy distributions across and between regions
- Regional interaction needs to be increased to blur regional lines and weaken influence of London, perhaps through infrastructure development, but also through differential regional financial incentivization.
- Regional problems need Regional solutions, BUT that must include consideration of the URBAN STRUCTURE of the REGION/NATION