



The Economic Performance of Britain's Cities: Patterns, Processes and Policy Implications

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Structural Transformation, Adaptability and
City Economic Evolutions

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About the project:

Structural Transformation, Adaptability and City Economic Evolutions is an ESRC-Funded Research Project under the ESRC Urban Transformations Initiative. This project is a partnership of the University of Cambridge, University of Southampton, Aston University, Newcastle University, and Cambridge Econometrics. Centre for Cities have provided support on events and communications for the research.

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All views expressed in this report are those of the authors. All mistakes are the authors' own.



1. Introduction: Aims and Scope of the Study

Why the Focus on Britain's Cities?

This booklet contains brief summaries of the main findings of a major grant-funded project (£860,000), conducted under the ESRC Urban Transformations Programme, on various aspects of the economic evolution and performance of Britain's cities since 1971. The motivation for this project was two-fold. First, over the past two decades, cities have assumed increasing recognition worldwide for their importance as arenas of economic growth and development, and the contribution they make to national economic prosperity. Yet in the British case, we know relatively little about the evolving economic performance of our cities. Second, at the same time, central Government has rediscovered the entrenched problem of spatial imbalance that has characterised the national economy for some considerable time, and highlighted the need to 'power up' the cities and city-regions outside London and its surrounding hinterland as one way of redressing this imbalance. These two issues provided much of the motivation for our project.

However, conducting research on Britain's cities immediately confronts two problems: how best to define our cities as meaningful geographical-economic units; and the need to overcome the lack of detailed and consistent official economic time series data on cities. Thus, a major first step was to overcome these two problems. In our project, cities are defined in terms of travel-to-work areas. While not perfect, TTWAs do have a certain functional meaning. Regarding data, a major effort of our project has been to construct annual data series on employment, output, labour productivity, skills and wages, by sector (25, 45, 82 and 229 sectors as and when possible) for 85 cities, for the period 1971-2015. These cities account for more than 80 percent of national output and employment. This novel and unique data set, the only one of its kind for the number of cities and time period covered, allowed us to investigate a number of aims. At the same time, five case study cities were investigated in more detail, especially in relation to their policy and institutional structures.



Aims and Objectives of the Study

The research has had several interrelated aims:

- How have British cities differed in their growth paths since 1971, and what are the geographical patterns of these differences?
- Given that the past five decades have witnessed major shifts in the structure of the national economy, how far do the growth paths of British cities reflect the uneven progress of these structural changes? Put another way, how have British city economies adapted over time?
- What other factors have influenced the growth paths of British cities?
- To what extent is the UK's 'productivity problem', of slow productivity advance, itself a problem that has a city dimension? How have cities differed in terms of productivity growth over recent decades, and what has caused these differences?
- How have skills developed across British cities? Much has been made (especially in relation to US cities) about the importance of skills to city economic performance. How far do patterns of city economic performance reflect differences in skill development?
- How resilient are British cities to major economic shocks? Since 1971 there have been four major recessions. How have cities reacted to and recovered from these disruptions? Does a lack of resilience have permanent negative consequences for long-run city growth?
- For a selection of case-study cities, how have policy regimes and institutions differed over the study period, and is it possible to ascertain what effects these may have had on city economic performance?

Relevance for Policy

All of the papers summarised in this booklet have been published, or are due to be published, in leading academic journals. At the same time, while the project was not intended to produce detailed policy recommendations, our findings do have relevance for the policy agenda that is building around the importance of a place-based approach to industrial policy, the moves by central Government to devolve limited fiscal and policy delivery powers to certain combined authorities and metro-regions, and strategic initiatives by some individual cities themselves.



Our work has attracted the attention of BEIS, HM Treasury, MHCLG; the Core Cities and Key Cities Groups, for both of whom we have produced consultancy reports using our data base; the Industrial Strategy Commission, and the European Commission, which is working on the importance of resilience for regional policy.

It is our hope to be able to attract some new funding in order to update the data base and produce further work on the performance of British cities in the post-crisis period, and if possible, to monitor the impact of Brexit.

Further reading

The sections of this booklet draw on the following papers, all available from the team:

(2017) Growing Apart? Structural Transformation and the Uneven Development of British Cities, *Cambridge Journal of Regions, Economy and Society*.

(2018) Reviving the Northern Powerhouse and Spatially Rebalancing the British Economy: The Scale of the Problem, in Berry, C. and Giovannini, A. (Eds) *Developing England's North: The Political Economy of the Northern Powerhouse*.

(2018) The City Dimension of the Productivity Growth Puzzle: the Relative Role of Structural Change and Within-Sector Slowdown, *Journal of Economic Geography*.

(2019) In Search of the Skilled City: Skills and the Occupational Evolution of British Cities, forthcoming in *Urban Studies*.

(2019) The Resilience of Cities to Economic Shocks: A Tale of Four Recessions and the Challenge of Brexit, forthcoming in *Papers in Regional Science*.

Other Working Papers from the project can be found at: www.cityevolutions.org.uk.



2. Constructing the City Data Base

Defining city boundaries - functional versus administrative trade-off

Despite the growing interest of policy and academia in cities as economic hubs, with an ever-increasing proportion of populations living in urban areas, there exists no common (global) agreement of what defines a city boundary and the activity within it.

Different authors and institutions, in different studies, use different definitions. In the UK there is no single consistent or official definition that is used as the basis for the collection of economic data series on cities, nor as the basis for public policy interventions. This makes analysis based on the basis of robust and reliable data, especially over time, far from straightforward.

The ultimate aim is to define a city in terms of its functional boundary, whereby the boundary represents an economically meaningful and consistent area. Concepts such as the Functional Urban Region¹ and more latterly the Functional Urban Area (FUA)² are examples of this approach, and while they are well-defined on the basis of demographic boundaries (community flows and population grids) they are very labour-intensive to calculate and because they are so dependent on Census information cannot be readily used for long time series analysis.

In contrast, administrative city boundaries are much more readily available (published by national or supra-national statistical agencies such as the ONS and Eurostat) and thus offer a relatively quick method of defining an urban area, albeit with a degree of imprecision as the ideal city boundary has to be approximated by less accurate building blocks.

Concepts such as the Primary Urban Areas (PUAs) are essentially a hybrid definition (i.e. combining both functional and administrative features) for while the definition of the PUA is grounded in Census data which establishes the geography of the Built-Up Area³ as the starting point, they are limited to the use of whole Local Authority Districts (LADs) as their building blocks, which can lead to issues of under or over-bounding.

1 Originating with Hall, P.G. and D. G. Hay (1980) *Growth Centres in the European Urban System*, London: Heinemann Educational and taken further by Cheshire and Magrini in various publications (e.g. Cheshire, P.C. and S. Magrini, (2006) 'Population Growth in European Cities: weather matters - but only nationally', *Regional Studies*, 40, 1, 23-37.).

2 A concept designed jointly by the European Commission and OECD. See http://ec.europa.eu/eurostat/statistics-explained/index.php/Archive:European_cities_%E2%80%93_the_EU-OECD_functional_urban_area_definition.

3 <https://webarchive.nationalarchives.gov.uk/20160108030634/http://www.ons.gov.uk/ons/guide-method/geography/beginner-s-guide/census/built-up-areas---built-up-area-sub-divisions/index.html>



For this study, the Travel-to-Work-Area (TTWA) was chosen as the preferred definition of city boundary. A concept dating back to the 1950s, TTWAs are also defined on census commuting patterns, and represent labour market areas where the majority⁴ of the resident population also work in the same area. The TTWA can thus be claimed to better represent and define areas in economic terms, although again the principle disadvantage is in terms of data availability as they are typically tied to the Census year on which they are calculated (the most recently being 2011).

Solving the data availability problem – constructing a TTWA database

The main aim of the data work has been to construct a dataset comprising population, employment and output (constant price GVA), and more latterly other variables such as occupations and wages, for a set of Travel-to-Work Areas with sufficient time dimension to allow for analysis of long-term economic development.

This is an important development because the ability to analyse city and regional development over long periods of time is greatly hampered by the lack of availability of a consistent and detailed dataset, and while more recent data are available they do not allow the evolution of economic-geography patterns to be observed. In addition, a fine level of sectoral disaggregation (45 sectors the starting point, then expanded to 82 sectors, and since 1991 to 249 sectors) was desired in order to investigate the role played by the economic structure of TTWAs in shaping their development.

Using Cambridge Econometrics' existing Local Authority District (LAD) database, already defined at 45 sectors, it was first possible to push back the existing 1981 starting point to 1971 using data from BRES, the Census of Employment and the ABI. Historical boundary changes for regions and local authorities are adjusted for, as part of this process to ensure consistency.

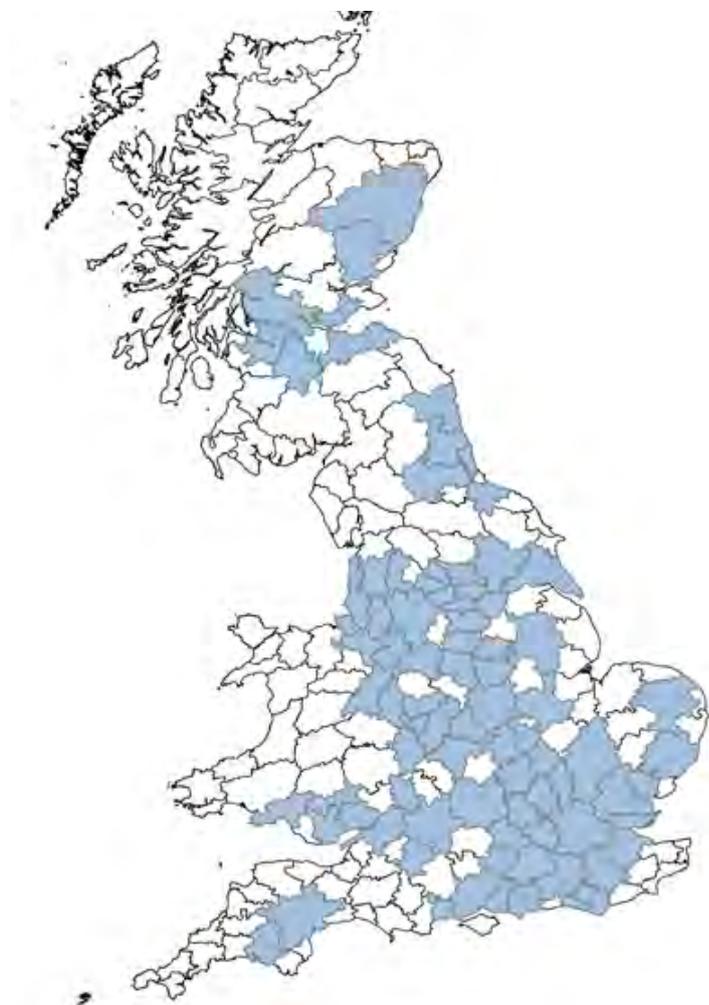
The process of matching LADs to TTWAs was undertaken using map imagery and the large urban agglomerations within each TTWA in order to judge the proportions of LADs that should go in each TTWA. Some were straightforward, others less so. An error margin of +/-5% was used to judge whether the combined proportions of LAD populations were sufficiently close to the TTWA population and density in 2011 (the census and base year for the TTWA definition being used).

⁴ The threshold is usually 75%, although it can go as low as 66.7% for areas where the working population exceeds 25,000 (see <http://webarchive.nationalarchives.gov.uk/20160105160709/http://www.ons.gov.uk/ons/guide-method/geography/beginner-s-guide/other/travel-to-work-areas/index.html>).

Choosing a cut-off point (which TTWAs to study)

The full set of 228 TTWAs was considered too many for city-based analysis, particularly as many of them are quite small and/or do not contain urban centres of any significance. Analysis thus took place to determine a suitable cut-off point based on population size of the TTWAs in 2014⁵, and on the basis of a 200,000 minimum threshold the top 85 TTWAs⁶ were selected. The figure below shows a map of the TTWA coverage, which taken together account for over 83% of employment and 86% of output in Great Britain in 2014.

Figure 2.1: The 85 City TTWAs (based on the 2011 definition) used for the project



⁵ 2014 was chosen because the data construction started at an early stage in the project when 2015 data were not available.

⁶ 6 TTWAs in Northern Ireland were not considered because the CE LAD database does not cover this region, and so the process of data extension and matching was not possible.

Arriving at a finalised city database

The key variables contained in the data base and which have formed the foundations for the research project are listed in Table 2.1.

Table 2.1: Main Data Series for 85 British Cities

Variable	Period covered	Sectoral disaggregation
Total employment	1971-2015 annually	45, 82 and 249
Total GVA (2011 prices)	1971-2015 annually	45, 82 and 249
Labour productivity	1971-2015 annually	45, 82 and 249
Wages	1971-2015 annually	12 and 45
Skills (Occupations)	1971-2015 annually	25
Patents	1977-2012 annually	8 classes
Population	1971-2015 annually	Total and working age

The database has been subsequently refined and is capable of further annual updates, relying as it does on LAD building blocks. Opinions on the usefulness of this TTWA-based city data series depend somewhat on one's perspective of what a city should represent. Parr (2007),⁷ when discussing definitions of city boundaries, identifies four alternatives:

- the Built City (the immediate urban area with clear physical presence),
- the Consumption City (where most goods and services are supplied from),
- the Employment City (the wider employment catchment area⁸), and finally
- the Dependent City (the broader territory required to support employment and other city-based needs).

All these perspectives on city space have their own role to play but can lead to quite different findings and conclusions when it comes to economic scale and performance. Parr summarises well by stating “Clearly, there is no “all-purpose city”, and the type of city adopted will depend on the nature of the research question under consideration”. On reflection, our definition can best be thought of as the third type of city, namely the Employment, or Workforce City.

⁷ Parr, J. B. (2007) Economic Definitions of the City: Four Perspectives, *Urban Studies*, Vol 44 Issue 2.

⁸ The Workforce City is most closely aligned to the one used in this paper.



3. Divergent Growth Among Britain's Cities

Structural Transformation and City Growth

In the period since the oil crisis of the early 1970s, very considerable changes have taken place in the structure of the British economy. Britain has lost much of its industrial base and experienced rapid growth in the service sector. While structural change has affected virtually every aspect of the British economy, perhaps one of the most significant impacts has been on the economic growth of its cities, particularly its large conurbations that owed much of their rapid expansion throughout the 18th and 19th centuries to Britain's industrialisation. Many of Britain's largest cities have struggled to adjust to a post-industrial economy. As cities have lost manufacturing jobs, they have experienced periods of high, often long-term unemployment, and in more recent years, while there have been more job opportunities, these have often been relatively poorly paid, and thus contributed to increased levels of income inequality across British society.

Despite the importance of structural change on the growth trajectories of cities, it is perhaps somewhat surprising that there is relatively little in-depth analysis of the phenomenon with the last comprehensive analysis being some 30 years ago. In our research we began by examining the relationship between structural transformation and economic (output) growth across British cities over the last half-century.

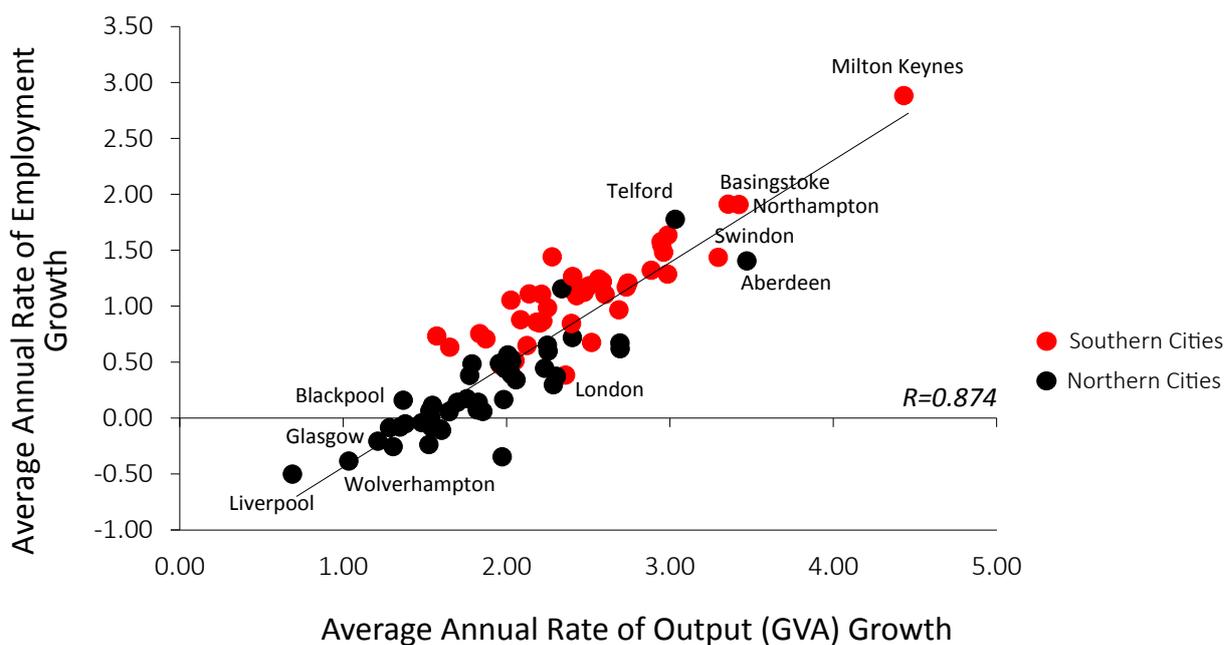
City Growth Evolutions

To examine the patterns of change across British cities, we focused on cumulative differential growth, whereby, starting in the base year of 1971, we subtracted from each city's growth rate in each year the corresponding national (Great Britain) rate and cumulate these differences over time. The overall performance of the 85 cities, measured in terms of their differential growth in output and employment over 1971–2015, is shown in Figure 3.1.

A number of features emerge. It is clear that the differential growth of both output and employment across cities has been substantial. Furthermore, the patterns for output and employment are closely correlated: those cities that have experienced the fastest rates of

growth of employment also tend to be those that have recorded the fastest rate of growth of employment and vice versa. Some cities, such as Milton Keynes, Northampton, Telford, Crawley and Swindon, have experienced average growth rates in their GVA and employment far exceeding the national average (and totalling to a cumulative differential of over 30–40% over the period). Other cities, such as Liverpool, Glasgow, Newcastle, Birmingham and Sheffield, have grown well below the national rate in both output and employment. Still other cities have tracked national growth. Notwithstanding the high correlation between output and employment growth, however, some cities show a much slower performance in employment than in output, such as Sunderland, Middlesbrough, Manchester and Huddersfield. Still other cities seem to experience much stronger employment growth compared to GVA growth, such as Colchester, Chelmsford, Plymouth and Southend.

Figure 3.1 Output Growth and Employment Growth across British Cities, 1971–2015



Note: Southern cities defined as those in the following regions: London, South East, East of England, South West and East Midlands. Northern cities defined as those in the West Midlands, Yorkshire-Humberside, North West, North East, Scotland and Wales.



Another feature is that many of the fastest growing cities have been in the southern half of Britain (roughly south of a line between the Severn and Humber) and most of the slowest growing cities have been in the north. Notable exceptions to the latter group are Aberdeen (which has benefited from the North Sea oil industry), Telford (a New Town in Shropshire), Leamington Spa and Crewe.

We categorized the cities into three distinctive groups; those cities that had grown faster than the nation, which we termed cities ‘pulling away’ (Group I); those cities that had grown slower than the national benchmark, which we termed ‘falling behind’ (Group III); and those cities that had ‘kept pace’ with the growth of the nation (Group II)⁹. Table 3.1 shows which cities are in which group. Figure 3.2 shows the evolution of the growth of GVA relative to the nation for the groups from 1971 until 2015. The relatively fast-growing Group I cities had an average growth rate of 2.76%, but some cities within the group did better than that, achieving almost 4.5%. The overall average growth of Group I cities exceeded that of London by a significant margin, as well as that of the non-urban TTWAs. The group grew over a third faster than the Group II that tracked the national rate. Group II had relatively little dispersion within it. Group III grew at around half the rate of Group I at 1.42%, and there was wide group dispersion, with the weakest performer growing at half the group average.

Table 3.1 Groups of British cities defined according to their relative GVA growth trajectory using half a standard deviation (unweighted) to distinguish above average and below average.

Group I (27 cities)	‘pulling ahead’	Milton Keynes, Northampton, Basingstoke, Swindon, Telford, Leamington Spa, Crawley, Peterborough, Chichester, Tunbridge Wells, Mansfield, Reading, Guildford, High Wycombe & Aylesbury, Derby, Crewe, Norwich, Chesterfield, Bournemouth, Exeter, Cambridge, Slough & Heathrow, Lincoln, York, Southampton, Eastbourne, Ipswich
Group II (33 cities)	‘keeping pace’	Trowbridge, Dunfermline & Kirkcaldy, Wakefield, Shrewsbury, Halifax, Blyth & Ashington, Colchester, Kettering & Wellingborough, Oxford, Stevenage, Gloucester, Doncaster, Leeds, Bristol, Nottingham, Chelmsford, Falkirk & Stirling, Luton, Leicester, Worcester & Kidderminster, Chester, Southend, Sunderland, Barnsley, Warrington & Wigan, Huddersfield, Brighton, Edinburgh, Bedford, Preston, Durham & Bishop Auckland, Bradford, Manchester

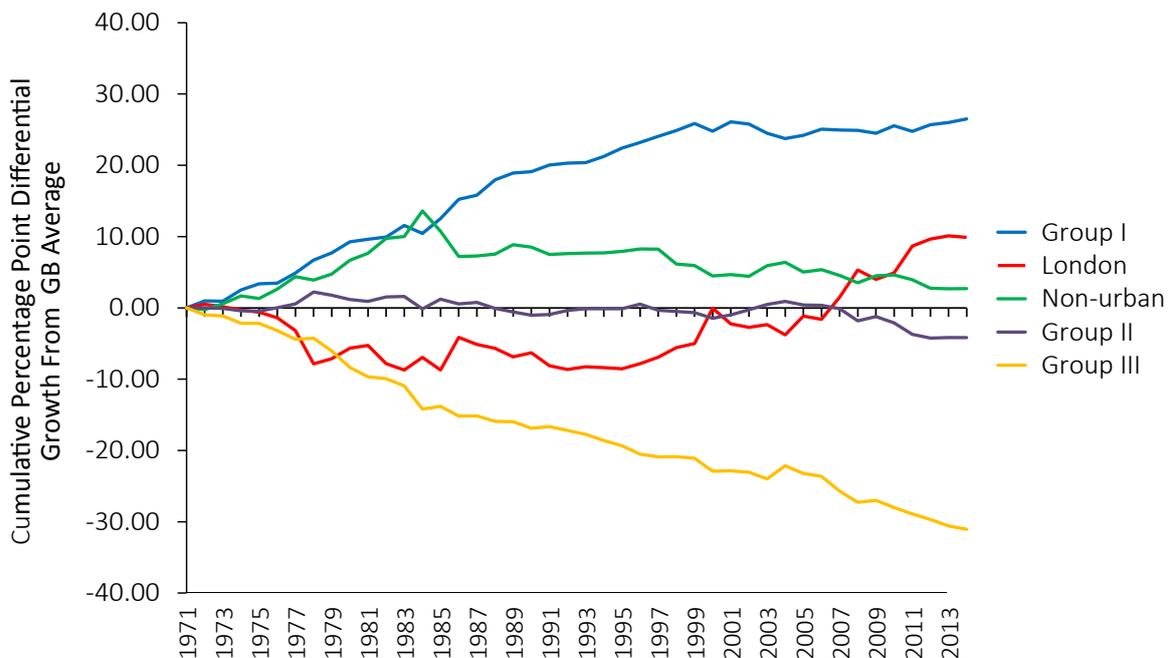
⁹ To test how robust the categories were we undertook extensive sensitivity analysis. This sensitivity testing showed that using four alternative ‘distances’ from the mean the results remained robust.



Group III (23 cities)	'falling behind'	Portsmouth, Coventry, Cardiff, Hull, Newport, Medway, Merthyr Tydfil, Motherwell & Airdrie, Middlesbrough & Stockton, Sheffield, Blackburn, Plymouth, Newcastle, Birmingham, Dudley, Birkenhead, Blackpool, Stoke-on-Trent, Dundee, Swansea, Glasgow, Wolverhampton, Liverpool
London		London
Aberdeen		Aberdeen
Non-urban TTWAs		TTWAs which are not classified as cities in our analysis.

The cities in Group I have thus been characterised by very strong overall growth in output throughout the period of study, though this seems to have levelled off somewhat in the last 15 years of the period under investigation. This group includes Milton Keynes, Northampton, Telford, Peterborough, Reading, Cambridge and Southampton. Several of these cities were promoted as New Towns and assisted by British spatial policy to become centres of growth. The New Town approach was to facilitate a planned approach to economic development, whereby a Development Corporation was established with extensive powers relating to land assembly and the provision of infrastructure in order to promote economic development. The evidence suggests that they may have been quite successful in this respect. Group II has tracked the growth of the nation quite closely and includes cities like Oxford, Leeds, Bristol, Nottingham, Leicester and Manchester. Group III comprises 23 cities that have more or less consistently grown well below the national rate. This group comprises many of the oldest industrial areas and includes Cardiff, Middlesbrough, Sheffield, Newcastle, Birmingham, Swansea, Glasgow and Liverpool.

Figure 3.2 Development of Cumulative Differential Percentage Growth of Output Relative to Great Britain: London; Group I ('Pulling ahead'), Group II ('Keeping pace') and Group III ('Falling behind'); and Non-urban TTWAs.

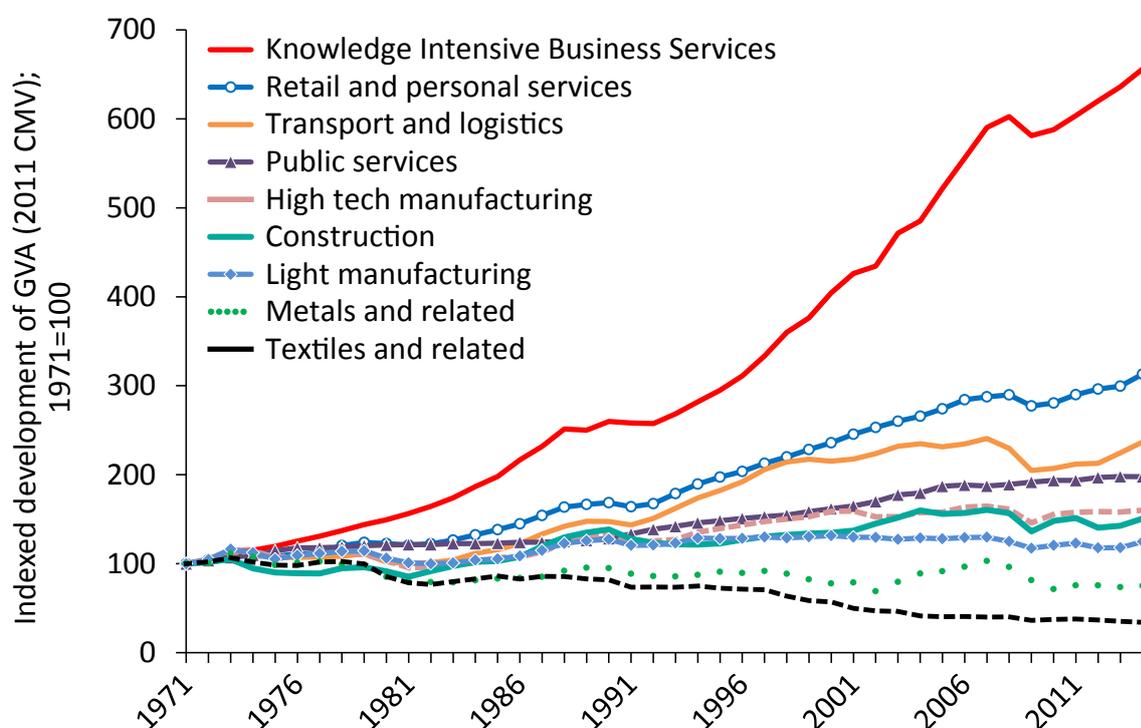


London shows a particularly interesting growth trajectory throughout the study period. After a period of relative decline up until the mid-1980s, it then ‘turned-around’ and has grown faster than the national average since. It is also of interest to note that the TTWA residual group has tended to grow slightly above the national average over the study period, in line with the relatively better performance of near accessible areas around the cities in the post-war period.

Structural Change in British Cities

The growth path of a given city is the outcome of a complex and evolving interaction of ‘external’ (national and indeed global) factors and city-specific factors and conditions. We can think of a city’s economy as being an ‘ensemble’ of activities—a structural ensemble—that is constantly changing as a result of this interaction. Such a structural ensemble can be examined and decomposed in different ways. Our analysis has taken industrial sectors as the primary units of a city’s structural ensemble. Figure 3.3 shows the pattern of sectoral growth in the British economy over the period 1971-2014.

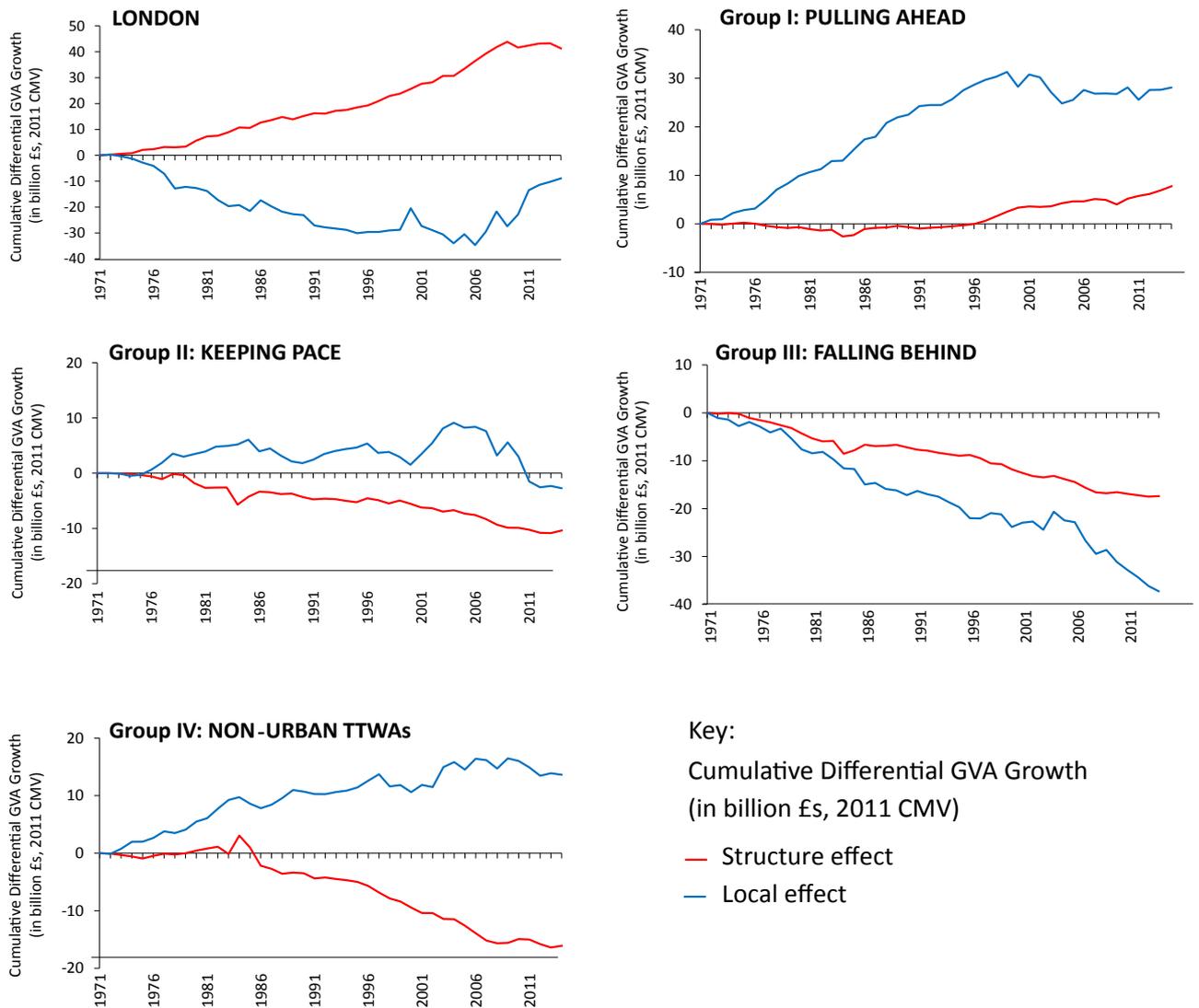
Figure 3.3 Sectoral Growth across the British Economy 1971-2014



We adopted a dynamic shift-share decomposition procedure. Using the dynamic version of the technique, and thus decomposing city changes in output on a year-by-year basis, we were able to investigate the contribution that changes in economic structure have made to each city group's output growth differential over time. We focus on the contribution of the structure effect and local effect to the positive or negative gap in performance compared to national growth. Figure 3.4 shows the results.

Structural transformations in the national economy have played out quite differently across British cities, shaping to a considerable extent their divergent growth trajectories over the past five decades. The cities in Group I (mainly cities in the South of England) and London—which have been pulling ahead—have benefitted substantially from structural transformation and have seen strong growth on the back of high-growth sectors, especially KIBS.

Figure 3.4 The Contribution of Economic Structure and Local (Competitive) Effects to Cumulative Differential Output Growth across City groups, in GVA (GVA £billion, 2011 current market value), based on 82 sectors.





In contrast, the falling-behind cities in Group III (mainly cities in the North of England, Wales and Scotland) have seen decline or little growth in the traditional mainstays of their economy (mainly in manufacturing) and, at the same time, have been insufficiently able to grow and attract high-value private service activities. A third group of cities—Group II (those that have more or less kept pace with the national rate of growth—also have had to cope with the negative effects of structural change (though on average not quite to the same extent), but fared much better, and managed to make a relatively successful transition to a post-industrial economy, albeit with deep new patterns of inequality and labour market divisions. Non-urban TTWAs have on the whole had to face less of the negative impacts of change in the economic structure; moreover, they actually seem to have profited to some extent from some manufacturing moving out of cities. Furthermore, the growth in private and public services in such areas has in general been on a par with the average for the nation.

However, structural factors cannot in themselves account for the strong growth of cities in Group I, and many cities in Group II (and the non-urban TTWAs) also managed to deal with structural transformation better than Group III. Moreover, these factors are also insufficient to explain the very lacklustre performance of London until the turn of the century, with a sudden turn-around in its fortunes thereafter, as well as the full extent of the lagging growth in Group III cities.

These results imply that the economic trajectories of cities are the complex and uneven outcomes of three fundamental sets of processes, all of which are interactive and potentially shaped by their policy and institutional contexts. The first are those structural changes in output and employment shares, which we have analysed here in depth. They centre on what we might term between-sector changes and refer to the rise of some industries and the decline of others. Our analysis has demonstrated the importance of these processes in some cities and has allowed us to understand the extent to which post-industrial transition produces growth-reducing structural change in some categories of city.

A second set of processes concerns within-sector changes and includes the way in which different parts of the same industry change and evolve over time. They highlight the way in which different firms within the same industry may have different productivity and innovation capabilities and track records. Cities host firms that are classified as belonging to the same industry but are actually quite different in their capabilities, employment, business models and strategies; and these ‘within-sector’ effects will also contribute to divergent economic performances. Our findings on the importance of ‘local effects’ in some types of cities may well indicate in part that these ‘within-sector’ effects also have a significant and growing spatial dimension. There are certainly many theoretical arguments that support and envisage this, as



they suggest that globalisation and new supply chains and divisions of labour are widening differences between firms within industries and creating new types of specialisations in terms of functions, tasks and capabilities rather than entire sectors. Different rates of entrepreneurship and firm demographics, as well as investment and foreign ownership, may also be reinforcing these spatial variations.

However, a third set of processes centring on the development of cities' local supply factors is also interacting through time with both of these two types of industrial change. We know that there are important differences in the capabilities of cities to offer firms an attractive business environment through the supply of both appropriate 'hard and soft' infrastructure and the development of a local labour force sought by knowledge-intensive and tradeable industries. As we have argued elsewhere, local areas start with an inherited pattern of land use, a resource base and institutions that were tailored to another era, and the legacy of the past weighs heavily on their ability to adjust to new economic futures. Thus, the Group III cities tend to be among the oldest industrial cities with infrastructure, labour forces and a constrained land use pattern to match.

Issues for Policy

How cities deal with structural transformation over time, and the concomitant changes in conditions and opportunities for their economic growth, are clearly major issues for society and the formulation of policy. Indeed, in Britain, as government devolves economic powers from central to local government, it is important that those tasked with managing city economies understand the basic mechanisms that lie behind change, and what may be the scope for intervention to assist the process in a way that enhances local economic growth. Policymakers need to know more about the sectors that are declining, those that may be experiencing successful upgrading or 'turning around' and those that are new and growing. This knowledge can help them to understand more about how to assist their economies to adapt and adjust their structures in response to both the challenges and opportunities of a rapidly changing globalised market place.



These findings have a number of implications:

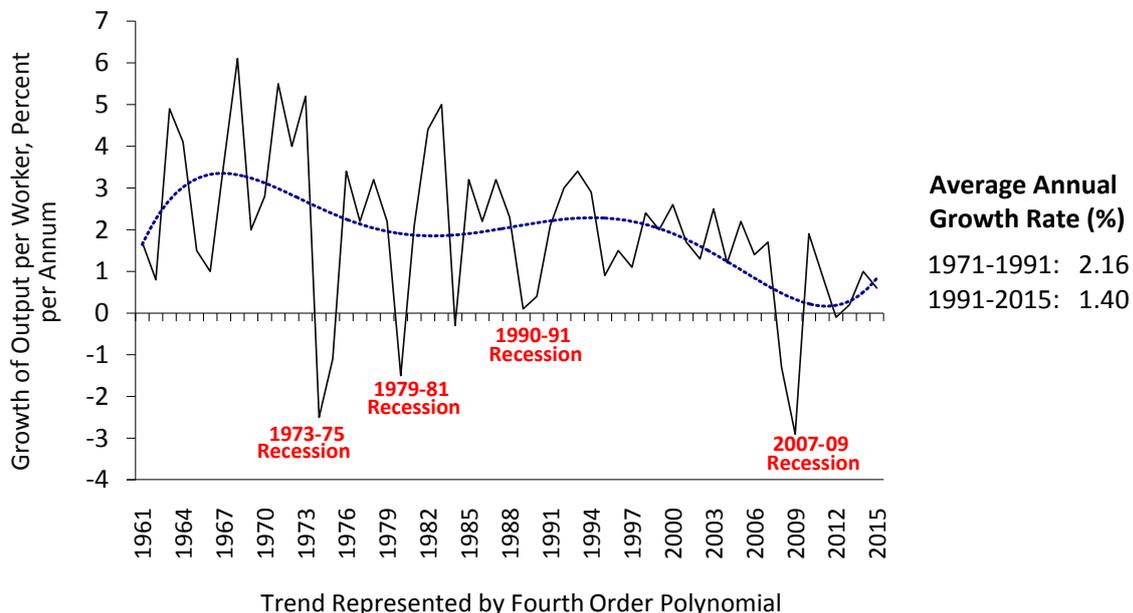
- Within-sector changes and local supply factors are also important in explaining the divergent growth across cities in Britain. Hence policy should not only focus on the distribution of sectors across the spatial economy of Britain, but should also consider the divisions of labour and differences in performance of firms *within* these sectors in different cities and regions.
- The process of structural change may have had more indirect effects, and may have interacted with the within-sector changes and development of local supply factors in complicated ways. Our fast-growing Group I cities contain post-Second World War New Towns characterised by plentiful and planned land assembly, up-to-date infrastructure and labour with skills more appropriate to the new age. In contrast, the Group III cities tend to be among the oldest industrial cities with infrastructure, labour forces and a constrained land use pattern to match. The legacies of these cities have frequently constrained and filtered the development of growth of service sector firms, as well as the provision of a skilled and educated labour force that is well suited to knowledge-intensive firm growth. Hence there may well be a type of spatial differentiation and sorting in which the emergence and growth of knowledge-intensive and high-productivity firms is shaped by the degree to which their past legacies allow some cities to be more valued by these firms and their employees.
- While there is considerable scope for policy initiatives to modify and improve these local supply factors and characteristics, to adjust the outcomes of these long-term cumulative processes will require very considerable, sustained, and comprehensive efforts.

4. The City Dimension of the Productivity Problem

The Productivity Problem

Considerable attention has focussed on the national productivity problem or puzzle, that is the stagnation in productivity growth since the financial crisis of 2007-08. In fact, while productivity growth fell sharply in the recession following the crisis, the rate of productivity growth has been trending downwards for much longer, arguably since the early-1990s, or even earlier (Figure 4.1). This is not a problem unique to the UK, but can be observed for several OECD countries.¹⁰

Figure 4.1: Labour Productivity Growth in the UK Economy, 1961-2015



¹⁰ Measuring productivity is not straightforward. Data limitations restrict our analysis to labour productivity, measured as GVA per employed worker. We are not able to estimate total factor productivity for British cities from our data. In addition, GVA does not capture non-market activities.



There has been much debate around the possible causes of this longer-term decline.

Some attribute the apparent decline to measurement problems, to the fact that technological advances and shifts simply do not show up in conventional measures of productivity; others contend that the problem is real and that technological progress no longer produces the gains in GDP that it once did. Yet another explanation points to the fall in business dynamism over the past two to three decades reflected in lower new firm formation rates. Still others suggest that the slowdown derives in part at least from an over-regulation of product and labour markets, while others focus on misallocations and mismatching of skilled and educated labour. Finally, others attribute the slowdown to the structural shift from manufacturing to a services-dominated economy, in that the scope for productivity growth in many services is argued to be much more limited than in manufacturing.

Labour Productivity Growth Paths of British Cities

Against this context, our research has sought to identify how productivity growth in the UK, and especially the slowdown referred to above, though a national problem, is also a geographical issue. In fact, considerable differences in labour productivity exist across cities, and have done for some time. Figure 4.2 plots city labour productivity levels in 2015 against the corresponding levels in 1971. Two striking features stand out. First, there is a clear divide between the majority of northern cities, which have productivity levels below the national average in both years, and southern cities, most of which have above average productivity in both years.¹¹ Second, the majority of the Core Cities - most of which are in northern Britain – fall into the former group. Third, by 2015 London has clearly emerged as the productivity leader.

While there is an obvious persistence or stability in the divide, some relative movement among the cities is also apparent, suggesting differential growth paths over time. In fact, a significant shift in the geography of productivity growth has occurred between the 1971-1991 period and the period since (Figures 4.3 and 4.4). Prior to the early-1980s, northern cities tended to experience higher rates of productivity growth than southern cities, and the negative slope in Figure 4.3 indicates a degree of ‘catch-up’ in productivity levels of the former with the latter.

¹¹ Northern cities are those in the following regions: West Midlands, Yorkshire-Humberside, North East, Scotland, North West, Wales. Southern cities are London and those in the South East, East of England, East Midlands and the South West regions.

Figure 4.2: Labour Productivity across 85 British Cities, 1971 and 2015

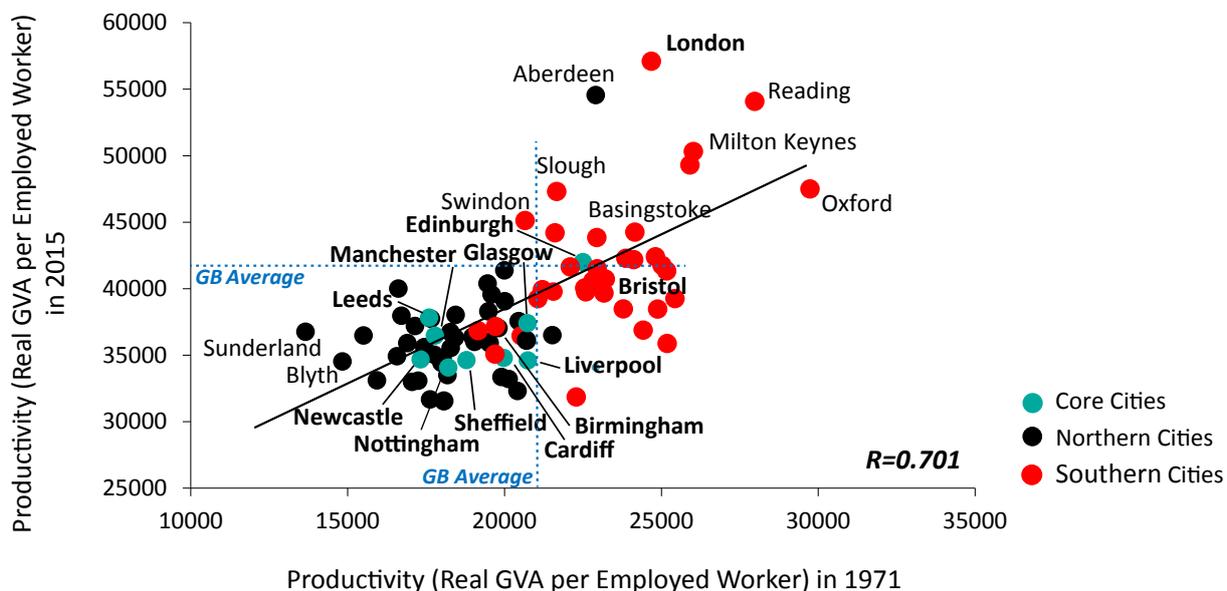
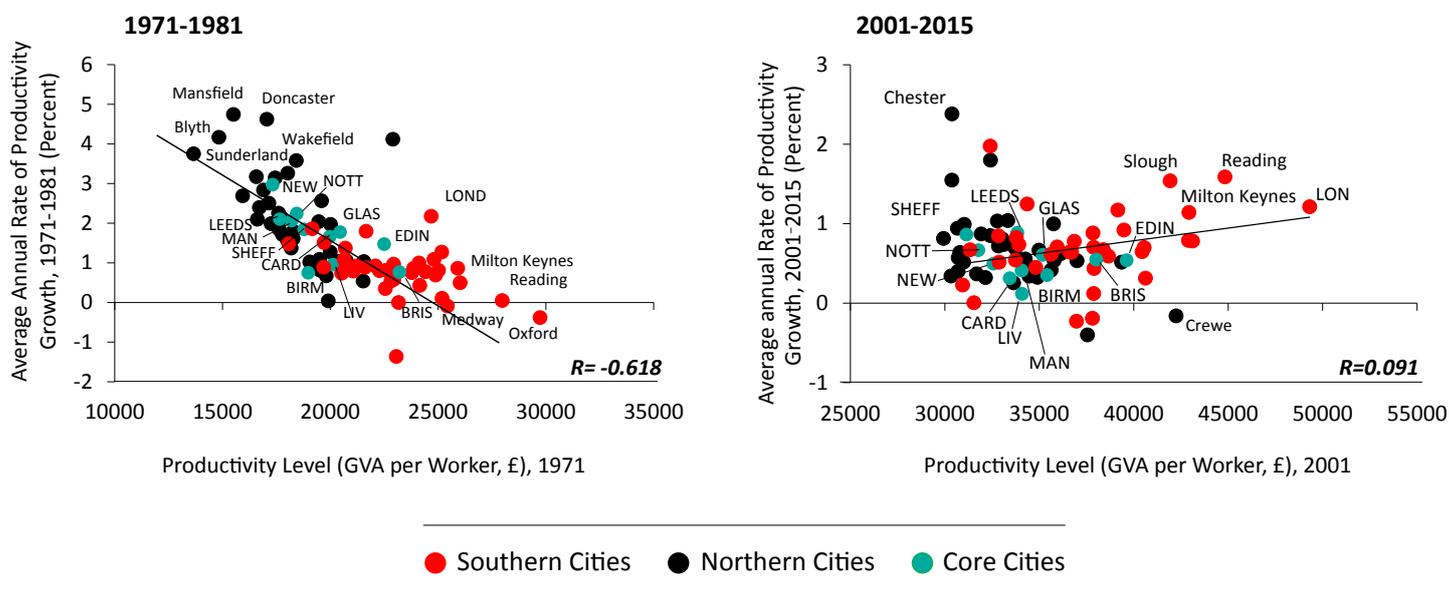
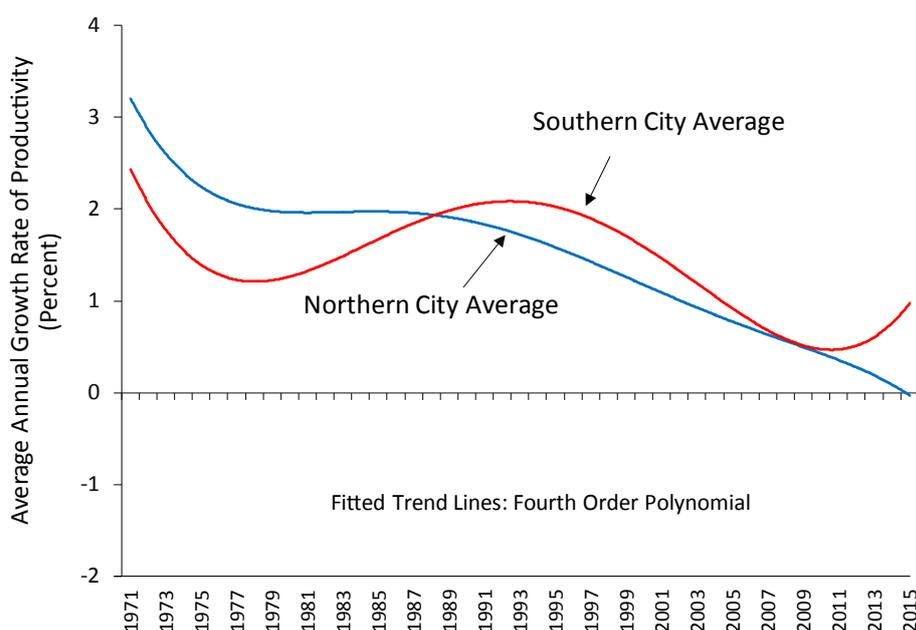


Figure 4.3: The Changing Geography of Productivity Growth across British Cities, 1971-81 and 2001-2015



But since 2001-2015, this relationship has disappeared: the pattern of productivity growth across cities became more mixed, and the catch-up in productivity levels by northern cities ceased, so that most southern cities have retained their higher productivity. If we plot the trends of the productivity growth rates of the two groups of cities, the cessation of the growth leadership (and catch-up) of the northern cities after the early-1980s is all too apparent.

Figure 4.4: Trend Productivity Growth in Northern and Southern Cities, 1971-2015



Structural Change and City Productivity Growth

As noted above, some authors attribute the slowdown in productivity growth in the advanced economies over recent decades to the structural shift from manufacturing to services. Table 4.1 gives support to this argument, although it should be borne in mind that there may be problems in measuring productivity accurately in some service activities. With the caveat in mind, this Table suggests that while productivity growth has slowed in most sectors in recent decades, the decline has been most pronounced in manufacturing, while at the same time the share of manufacturing in total employment has fallen consistently since the beginning of the 1970s.

Table 4.1: Employment Share Change and Productivity Growth in Major Economic Sectors, Great Britain, 1971-2015

Sector	Change in Employment share		Average annual rate of change in labour productivity	
	1971-1991	1991-2015	1971-1991	1991-2015
Metals and Related	-2.71	-1.24	3.75	2.03
Textiles and Related	-2.5	-1.36	4.31	3.46
Light Manufacturing	-3.41	-2.89	3.56	2.47
High Tech Manufacturing	-4.41	-2.58	5.92	4.98
Utilities	-0.57	-0.17	6.58	1.65
Construction	0.67	-1.23	0.43	0.84
Transport and Logistics	-1.05	-1.2	2.32	2.42
Retail and Personal Services	5.06	2.09	0.92	2.06
Knowledge-Intensive Business Services	6.19	6.53	2.53	2.34
Public services	4.21	2.96	0.87	0.47

These shifts in employment have had the effect of reducing the degree of specialisation in almost all cities (Table 4.2). Or put another way, British cities have become increasingly similar in their employment structures over the past 40 or so years.

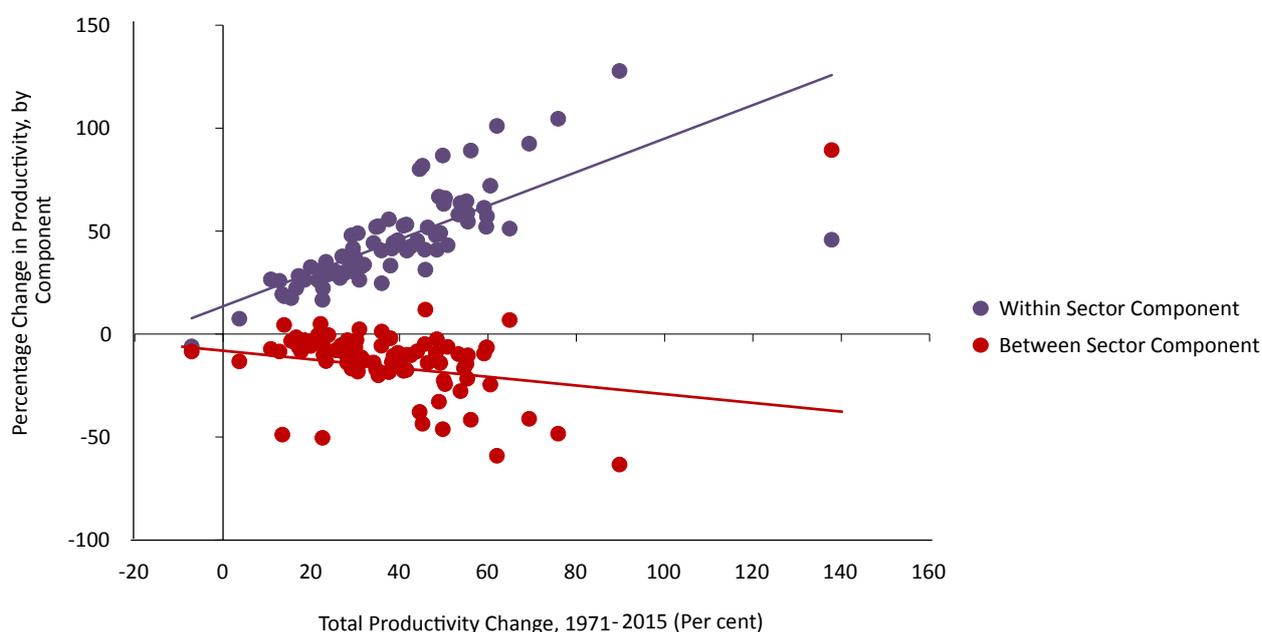
Table 4.2: Krugman Indices of Employment Dissimilarity (Specialisation)

City	Top 10 most specialised cities			Bottom ten least specialised cities			
	1971	1991	2015	City	1971	1991	2015
Sunderland	0.717	0.417	0.385	Chelmsford	0.43	0.239	0.169
Mansfield	0.711	0.44	0.296	Southend	0.423	0.393	0.224
Halifax	0.686	0.43	0.407	Worcester	0.418	0.309	0.264
Swansea	0.679	0.321	0.352	London	0.411	0.387	0.387
Merthyr Tydfil	0.677	0.409	0.381	Leeds	0.408	0.270	0.227
Oxford	0.664	0.325	0.301	Newcastle	0.369	0.258	0.252
Kettering	0.659	0.419	0.349	Southampton	0.368	0.249	0.184
Wolverhampton	0.656	0.419	0.269	Slough	0.352	0.332	0.375
Blackpool	0.647	0.518	0.399	Cardiff	0.34	0.213	0.233
Blackburn	0.634	0.41	0.348	Glasgow	0.328	0.209	0.224

Note: Calculated at an 82 sector-level of disaggregation

To assess the impact of these structural changes on city productivity paths, we follow authors such as Rodrik and Kruger in decomposing total productivity change into a component due to employment shifts *between* sectors (structural change), and a component due to productivity changes *within* sectors. (Figure 4.5).¹² Two key features stand out. First, the between-sector (structural change) component is frequently negative, which is consistent with the shift of employment from higher productivity growth sectors into slower productivity growth sectors. However, second, in most cities the within sector component of productivity change, which is positive across cities, outweighs the structural change component. That is, productivity growth differences across cities are primarily due to differences in within-sector productivity growth. This finding mirrors that found in analyses of differences in productivity growth among countries (for example in the work of Rodrik). It is also perhaps not surprising, given that cities have become less sectorally specialised, that is, more sectorally similar, over time.

Figure 4.5: Decomposition of City Productivity Growth, 1971-2015, into Between-Sector (Structural) Change and Within-Sector Change



Note: For any city the sum of the Between-Sector and Within-Sector components of productivity change, measured on the vertical axis, is equal to Total productivity change, measured on the horizontal axis.

¹² Kruger, J. J. (2008) Productivity and structural change: a review of the literature, *Journal of Economic Surveys*, 22, pp. 330–363; McMillan, M. S., Rodrik, D. (2011) Structural Change and Productivity Growth, Working Paper 17143. Cambridge: National Bureau of Economic Research.

Correlates of City Productivity Growth

Given that factors other than differential structural change is not a primary factor behind city differences in productivity growth, Table 4.3 summarises the findings for a series of additional possible correlates. Several features are of note. The cessation of productivity convergence after the end of the 1980s is confirmed, as is the shift from manufacturing to KIBS as a source of productivity advance. Agglomeration (city employment density) and city size (population) appear to have played a positive role in the 1970s and 1980s, but not since. This tends to raise a question over the emphasis often given to city size and agglomeration effects in current discussions around local industrial policy. The share of a city's employment in high-skill occupations seems now to exert a positive influence on city productivity growth. While these correlations are of course only suggestive – a more advanced modelling approach is needed to disentangle the effects of these and other factors – what does stand out from Table 4.3 is that accounting for city differences in productivity growth in the most recent period appears to have become more complicated.

Table 4.3: Correlates of City Productivity Growth, by Sub-Period

	Productivity Growth, 1971-1991	Productivity Growth, 1991-2015
Productivity, Base year	-0.79**	0.01
Manufacturing Employment Share, Base Year	0.45**	-0.03
KIBS Employment Share, Base Year	-0.37*	0.23**
Public Employment, Base Year	-0.24*	-0.20*
Krugman Specialisation, Base Year	0.15	0.16
Agglomeration, Base Year	0.23*	0.08
City Size, Base Year	0.24*	0.05
Accessibility, Base Year	0.08	0.07
Patents (per Mill Pop), Base Year	-0.3	0.17
High Skill Employment, Base Year	-0.45*	0.26**

* Significant at 10 percent level, **Significant at 5 percent level



Issues for Policy

These and other findings from this part of the research project have a number of policy implications:

- The productivity growth slowdown in the UK pre-dates the financial crisis of 2007-8, dating possibly back to the early-1990s. This suggest some deeper systemic processes at work.
- While almost all cities have experienced the slowdown, it has particularly affected northern cities, which were the productivity growth leaders in the 1970s and 1980s. As a consequence, while northern cities achieved some catch-up with southern cities in terms of productivity over the 1970s and 1980s, most southern cities have continued to enjoy higher labour productivity than northern cities.
- The shift from manufacturing to services has played some part in the slowdown, though estimates of labour productivity may be under-estimated in some services.
- Within-sector productivity change appears to be more important than between-sector shifts (structural change) in shaping the pattern of productivity growth across cities. This may reflect the fact that functional or task specialisation (within sectors) is more important than sectoral specialisation per se. However, it is difficult to assemble city data on this aspect of city economic structure.
- Explaining productivity growth and the differences in growth across cities has become more difficult.
- However, cities with a higher proportion of their employment in KIBS, and in high skill occupations do seem to have higher productivity growth.
- City size and associated agglomeration effects no longer appear to play a role in influencing a city's productivity growth.



5. Urban Occupational Change: In Search of the Skilled City

The Rise of the Skilled City

There is widespread recognition that skills and human capital are central, and indeed increasingly important, to the process of post-industrial urban economic growth. However, there has been a lack of empirical research into how the geography of occupations with different skills levels has changed. The how, where and why of skills and occupational changes in Britain have remained somewhat murky. In this context, urban research and policy has tended to rely on a number of claims and stylised propositions about the growth of skilled cities and their conditions. Most of which have been based on findings from American cities. In this project we examined three of these stylised claims to ascertain how far they also apply to British cities. The first, and most basic, is that more skills and human capital generate stronger economic growth. The second is that already skilled cities are becoming ever more skilled, or as Glaeser and Berry (2006) put it ‘smart cities are becoming smarter’.¹³ The third is that agglomeration drives high skill growth so that larger cities tend to have stronger concentrations of, and faster growth in, high-skilled, cognitive occupations.

Measuring Skills and Occupations in Cities

Research on the urban geography of skills in the UK has been held back by the lack of detailed data, and the difficulties of measuring skills. The skilled city literature often uses percentage of population educated to degree level, but this educational measure has been widely criticised. The project therefore used occupation profiles and followed the UK Commission for Employment and Skills’ classification of the standard occupational groups into four skill levels (Table 5.1). We focused on Level 4.

13 Glaeser, E. and Berry, C. (2006) Why are Smart Places Getting Smarter? Harvard University Policy Briefs 2006-2.

Table 5.1: A Summary of Skill Levels based on SOC10 groups

A Summary of Skill Levels	
Skill Level 1	Equates with general education, short periods of work-related training, includes postal workers, hotel porters, cleaners and catering assistants
Skill Level 2	Occupations require a good general education plus a longer period of work-related training or work experience. These include machine operation, driving, caring occupations, retailing, and clerical and secretarial occupations.
Skill Level 3	Requires a period of post-compulsory education, e.g. technical occupations, trades occupations and small businesses. Educational qualifications at sub-degree level and/or a significant period of work experience are typical.
Skill Level 4	Includes 'professional' occupations and high level managerial positions in corporate enterprises or national/local government. Require a degree or equivalent period of relevant work experience.

Source: Dickerson et al. (2012, p.72-75)¹⁴

Using a detailed translation from Standard Industrial Classification to Standard Occupational Classifications, we calculated, assessed and checked employment data by sector for each year to produce Travel to Work Area (TTWA) employment by occupation for 1981-2014.

High Skilled Occupations and Urban Economic Growth

To assess whether high skills have led to faster city economic growth, we examined the relationship between total employment growth in a city 1981-2015, and the percentage of its employment in high skill Group 4 occupations in 1981, using a regression that controlled for several other city-specific determinants. These were: the log of employment as an indicator of city size (EMP81); the density of employment as an indicator of agglomeration (AGGLOM81); the shares of employment in manufacturing (MANSH81) and in knowledge intensive business services (KIBSSH81) (as indicators of economic structure); the level of productivity (PROD81); and, the degree of specialisation (or dissimilarity from the national industrial structure) measured by the Krugman Specialization Index (KSI81). We also added potentially significant variables: regional dummies (SE, SW, etc.) and a capital city dummy (CAPCIT) and a New Town dummy (NWDUM).

¹⁴ Dickerson, A. Wilson, R., Kik, G. and Dhillon, D. (2012) Developing Occupational Skills profiles for the UK: A Feasibility Study UK Commission for Employment and Skills, Evidence Report 44, www.ukces.org.uk

Table 5.2 Regression Analysis on Employment Growth, 1981-2015

Variable	Coefficient	Std. Error	t-Statistic
CONSTANT	2.291223	0.905366	2.530715
HSKILLSSH81	0.023178	0.007938	2.919951
EMPL81	-0.127834	0.076444	-1.672257
AGGLOM81	-0.208975	0.059066	-3.537970
KSI81	-0.757835	0.465487	-1.628047
PROD81	0.034014	0.015395	2.209449
NEDUM	-0.423869	0.161632	-2.622440
NWDUM	-0.208209	0.115581	-1.801415
SCDUM	-0.653933	0.128807	-5.076830
WADUM	-0.457059	0.168791	-2.707837
CAPCIT	0.385966	0.210539	1.833231
NEWTOWN	0.570858	0.118864	4.802611

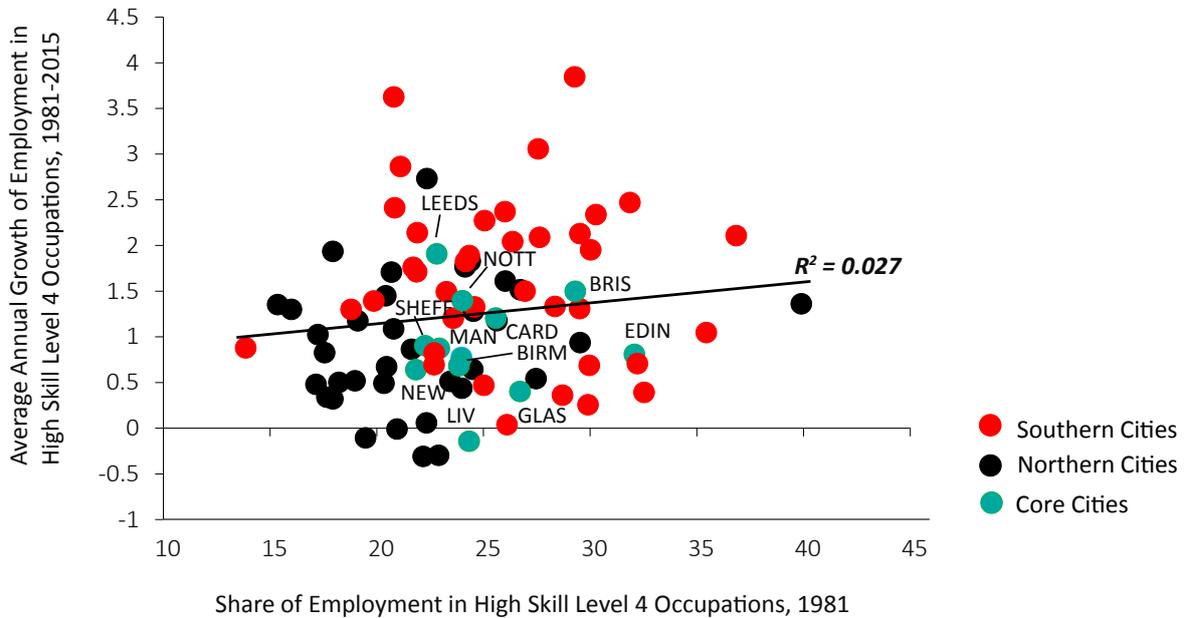
$R^2 = 0.706$ Adjusted $R^2 = 0.662$ No Obs=85

The results (Table 5.2) show that a city's employment growth has been strongly and positively affected by its relative share of high skilled workers. This effect is stronger here than in other comparable studies (e.g. Simon and Nardinelli 2002). However, this is not due to the agglomeration of high-skilled workers in large and dense cities. In fact, the results indicate that smaller and lower density labour market areas grew employment faster than larger and higher density ones. The more productive areas in 1981 also grew most strongly in employment over the 1981-2015 period. Cities in the North East, North West, Wales and Scotland on average had less employment growth than in the other areas, taking other factors into account. In contrast, there was a strong positive effect from New Town status.

Occupational Divergence Across Cities

Is it the case then, that cities with more skilled employment profiles are growing fastest in terms of their accumulation of skilled labour, so that they are reinforcing their skills advantage over other cities? Figure 5.1 shows the relationship between share of total employment in high skill (Level 4) occupations in 1981 and the growth of this occupation group between 1981 and 2015. There is only a very weak positive relationship. Some cities that had relatively low levels of highly skilled occupations in 1981 have seen strong growth in these skilled jobs, and conversely, other initially high-skilled cities have seen only slow growth. However, differences between cities in the north and south of the country are evident.

Figure 5.1: Growth in high skill occupations (Level 4) 1981-2015 against share of employment in these occupations in 1981, for 85 British cities



Note: R^2 values refer to regression of High Skill Employment growth 1981-2015, on High Skill Employment levels in 1981, for Northern and Southern cities as separate groups

The most skilled cities have high-skill rates that are now around twice (near 140% of the national average) those of the least skilled cities (around 70% of the national average) (Figure 5.2). But, unlike in the US, there is little evidence of any new ‘great divergence’. Indeed, if anything, there is a very slight trend towards convergence. TTWAs with low levels of low skill employment have tended to see a faster increase in these types of jobs.

Once again, agglomeration, proxied here by employment density (employment per km squared), has not been a key driver of high-skill growth (Figure 5.3). The range of performance for low-density cities has been wide, and the fastest growth in employment in high skilled occupations has been in some relatively low-density cities.

Our results also show that growth has been faster in both high and low skill occupations in cities closer to London. The regional labour market appears more significant than size or density of a city.



Figure 5.2: Relative Share of Employment in High Skill Level 4 Occupations in Most and Least Skilled Cities, 1981-2015, GB=100

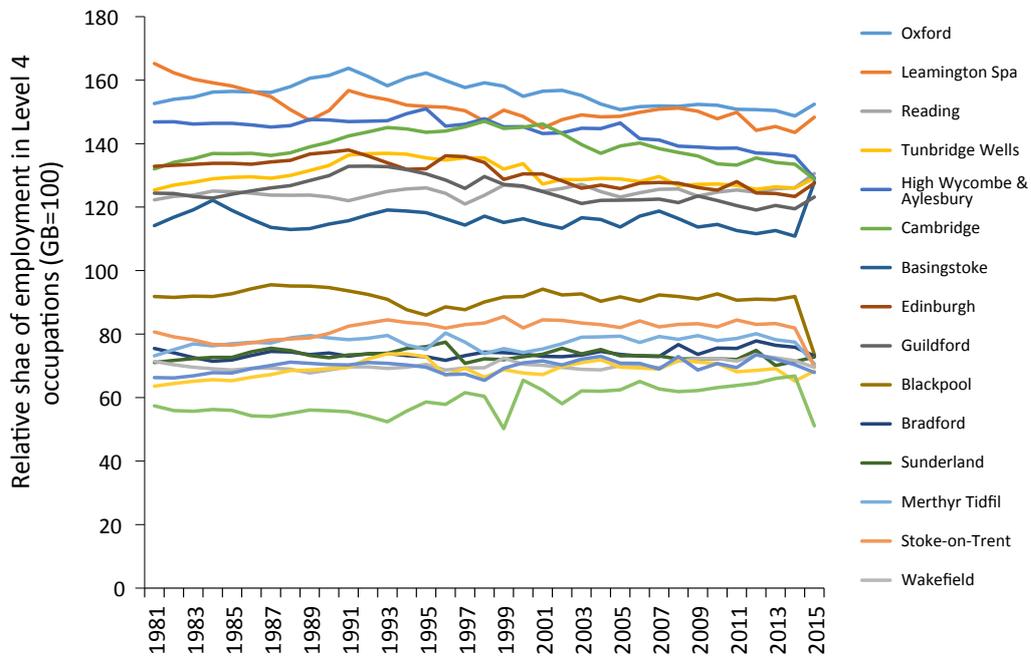
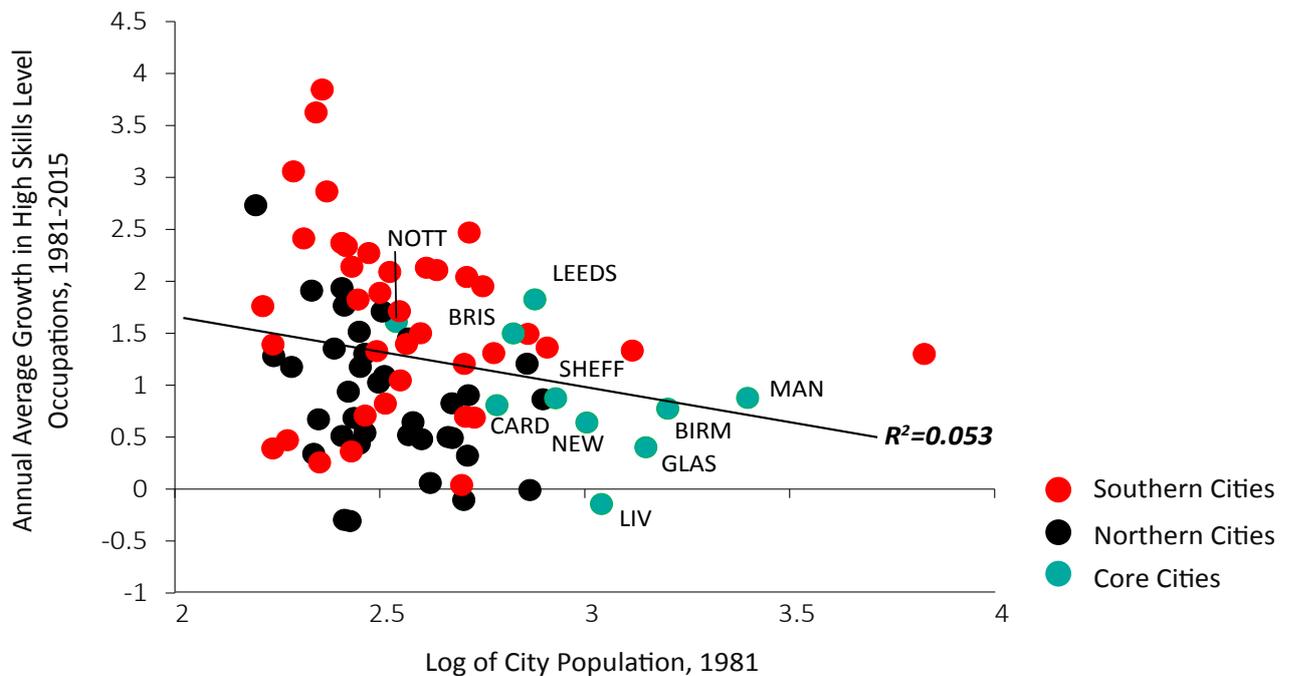


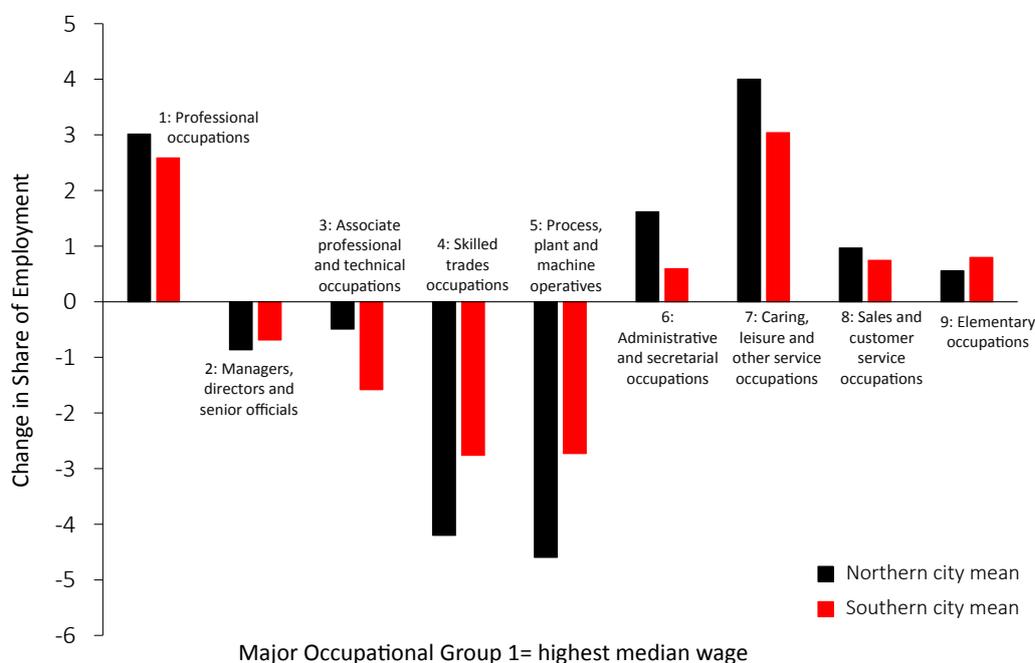
Figure 5.3: City High Skill Employment (Level4) growth against City Employment Density in 1981



Occupational Polarisation in British Cities

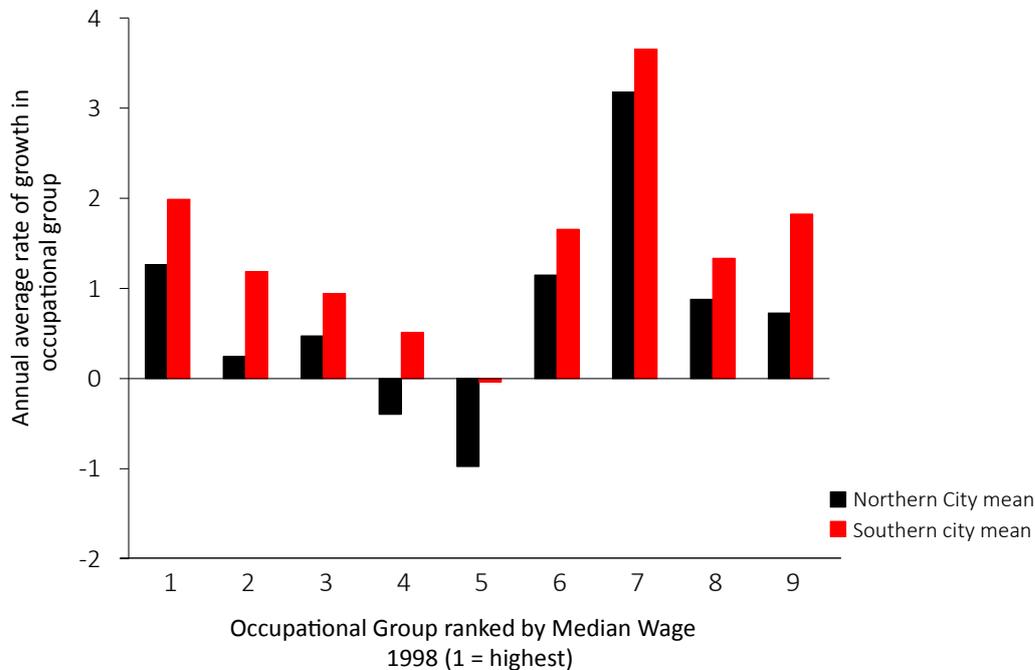
Our dataset also allowed us to examine the geography of job polarisation in urban Britain. In order to do so, we ranked the nine major occupational groups ranked by the median hourly wages level in 1998. Figure 5.4 shows how the shares of these groups in total employment changed over the period.

Figure 5.4: Change in Share of Employment in Major Occupational Groups in Northern and Southern Cities, 1981-2015



The fastest employment growth has been in the Group ranked 7 (caring, leisure and other service occupations) followed by highest ranked professional occupation group (Figure 5.5). Nationally, the middle-wage occupation groups ranked 4 (skill trades) and 5 (process, plant and machine operatives) have either stagnated or declined. Again, there are significant differences between northern and southern cities. For the professional group, growth in northern cities has been slightly lower than in southern cities, and much lower in the manager and senior officials group. The most significant contrast is in the middle of the distribution; while employment growth in middle wage occupations in southern cities has been low, in northern cities it has been negative. Job polarisation, then, appears more pronounced in northern cities. While professional employment and the demand for high skills have grown in most cities, the reduction in middle-skill occupations appears more spatially uneven.

Figure 5.5: Change in employment in occupational groups ranked by median wages in northern and southern cities, 1981-2015



Policy Implications

- There is a strong relationship between the growth of more highly skilled occupations and total employment across these cities, reinforcing accounts of the recursive relationship between skilled labour accumulation and city economic growth.
- We found no evidence of a new ‘great divergence’ in skills between cities in Britain. Skilled cities do not automatically reinforce their advantage. The results do show a substantial and persistent gap between the most and least skilled cities, a gap that has a clear north-south dimension.
- Beyond London, there is little evidence that agglomeration has been a key driver of the growth in skilled occupations. In general, smaller and lower density labour market areas in the south of England, have grown skilled employment faster than larger and higher density ones.
- This appears to be driven by two forms of high-skilled growth; central city *and* growth in high connectivity, smaller urban environments. Policy needs to focus on supporting both forms.



- Occupational polarisation has been more marked in northern cities. While these cities have had faster growth in their share of employment in high skill occupations, their relative, and in many cases absolute, decline in medium-wage jobs has been stronger. There is a strong risk of training people for disappearing jobs.
- City skills policy faces the challenge of better connecting with other local economic development strategies, devising complementary and co-ordinated interventions to raise the supply and demand for skills.
- Occupational change and skill shortages need to be examined locally, in places shortages will be tightly defined. The place dimension of skills change needs to be taken more seriously, as it is missed by generalized propositions about the 'skilled city'.

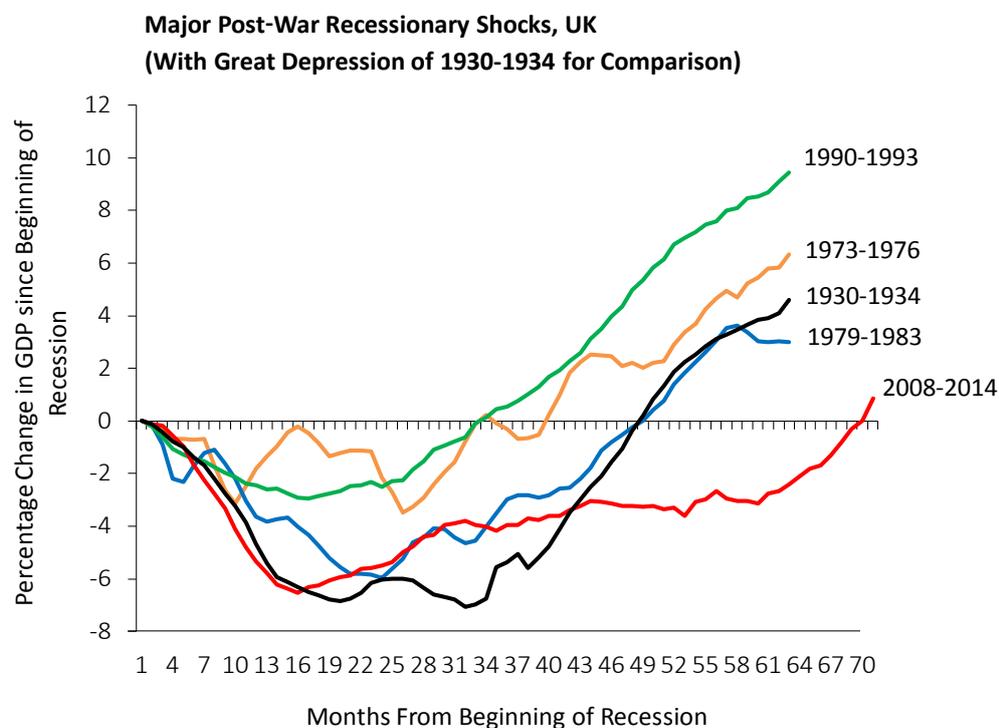
6. The Resilience of Cities to Economic Shocks

Economic Growth as a Shock-Prone Process

As the financial crisis of 2007-2008 demonstrated only too clearly, economic growth is a shock-prone process, repeatedly punctuated periodically by major disruptions. The ability of city economies to withstand and recover from such shocks – their *resilience* – is thus key to understanding their growth paths over time. As such, resilience should be central to policy discussions concerning economic growth and raising the performance of lagging cities.

Over the period covered by our project, the UK economy has experienced four major recessionary shocks (Figure 6.1). Arguably, the UK is about to experience another major disruption associated with Brexit. How resilient are British cities to shocks?

Figure 6.1: Economic Shocks to the UK Economy: A Tale of Four Recessions



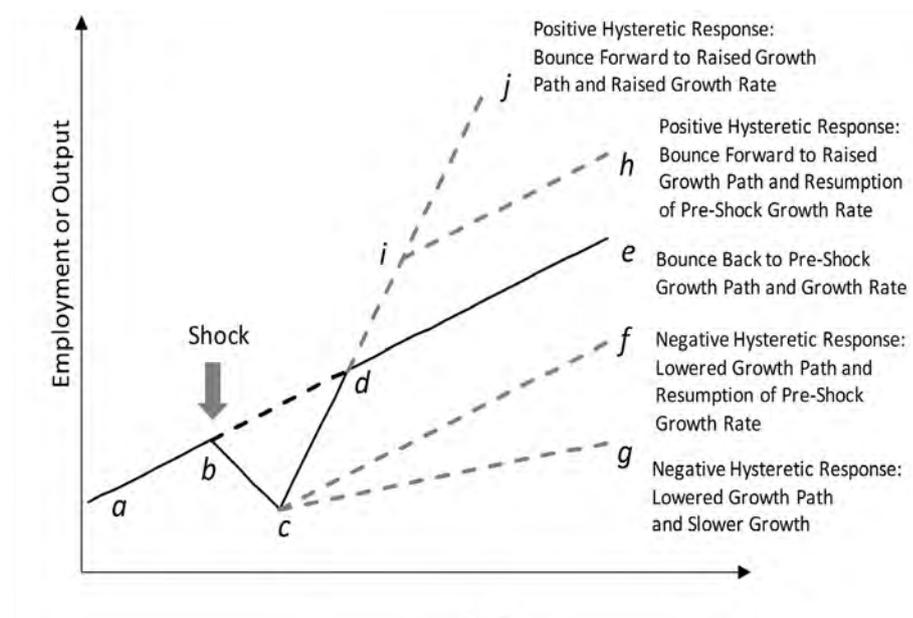
What is Resilience?

The notion of resilience has spread through numerous disciplines over the past few years, during which time the idea has acquired at least three meanings (Table 6.1). Of particular interest is whether a shock has a permanent (hysteretic) impact on a city's economic growth path (Figure 6.2). A city may be so severely impacted by a shock that its industrial base is so reduced that it is unable to fully recover, and the city emerges on a lower growth path (a case of negative hysteresis). Alternatively, in some cases, a shock may induce a process of adaptive reorientation of a city's economy, enabling it to emerge on a strengthened trajectory (positive hysteresis).

Table 6.1: Three Meanings of Resilience

Conception	Economic Interpretation and Focus
Resilience as 'Bounce Back'	Shocks produce self-correcting processes that return economy to pre-shock position or path. Focus is on speed of bounce back. Shocks assumed to be transient, with no long-term effects
Resilience as 'Absorptive Capacity'	Size of shock economy can absorb without major changes in structure or identity. Focus is on stability of structure and functionality. If shock exceeds absorptive threshold, economy may be pushed to alternative (less favourable) position or path (negative hysteresis)
Resilience as Adaptive Evolution ('Bounce Forward')	Capacity of economy to reorientate and transform structure and function in a positive direction so as to emerge on more favourable path. Focus on adaptation to restore certain core performances (eg growth, full employment)

Figure 6.2: Stylised Possible Reactions of a City Economy to a Shock



Resilience of British Cities to Four Recessory Shocks

It is useful to distinguish two aspects of resilience: *resistance* to a shock (the depth of the negative reaction), and *recoverability* (the speed, extent and nature of recovery from the shock). Here we measure these for each city relative to the reaction of the national economy (which in effect is thus the counterfactual), that is

$$RESIS_c^{t,t-k} = \frac{\Delta Y_c^{Contraction} - \Delta E(Y_c^{Contraction})}{|\Delta E(Y_c^{Contraction})|}$$

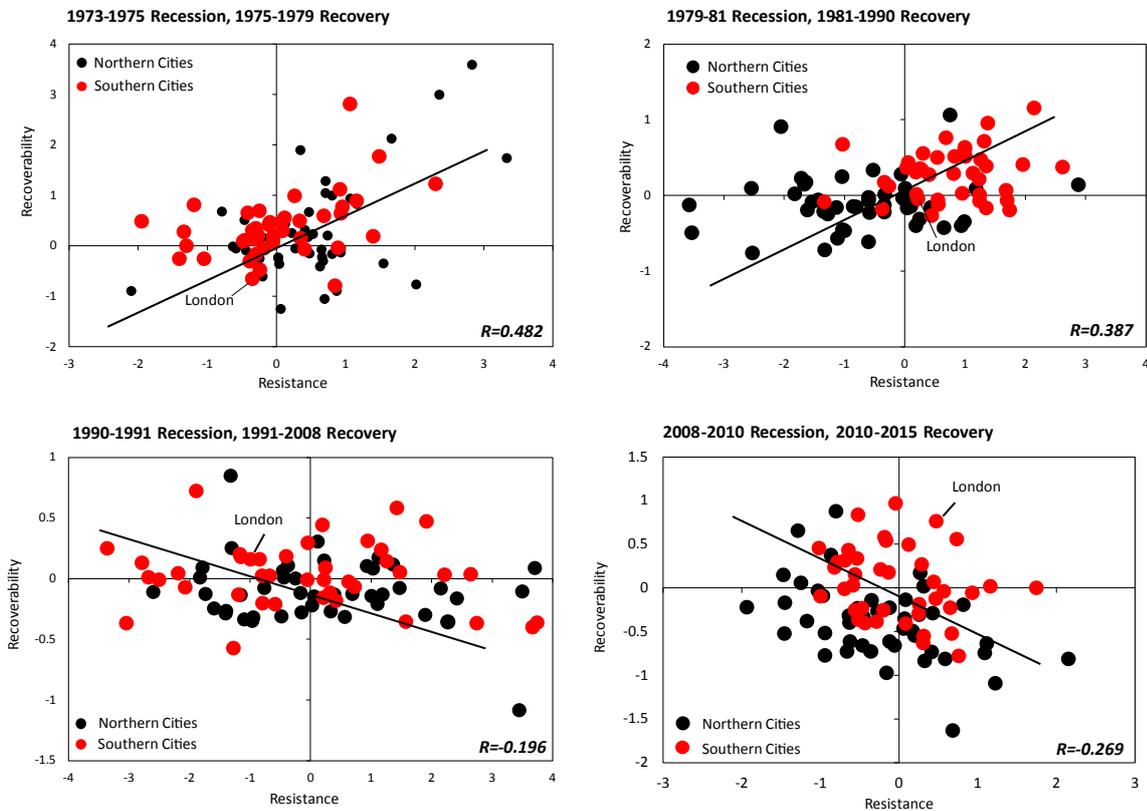
$$RECOV_c^{t,t-k} = \frac{\Delta Y_c^{Expansion} - \Delta E(Y_c^{Expansion})}{\Delta E(Y_c^{Expansion})}$$

where $\Delta E(Y_c)$ is the 'expected' change of output in city c during a recession or recovery of length k years, given as

$$\Delta E(Y_c^{t,t-k}) = \left(\frac{Y_{GB}^t - Y_{GB}^{t-k}}{Y_{GB}^{t-k}} \right) * Y_c^{t-k}$$

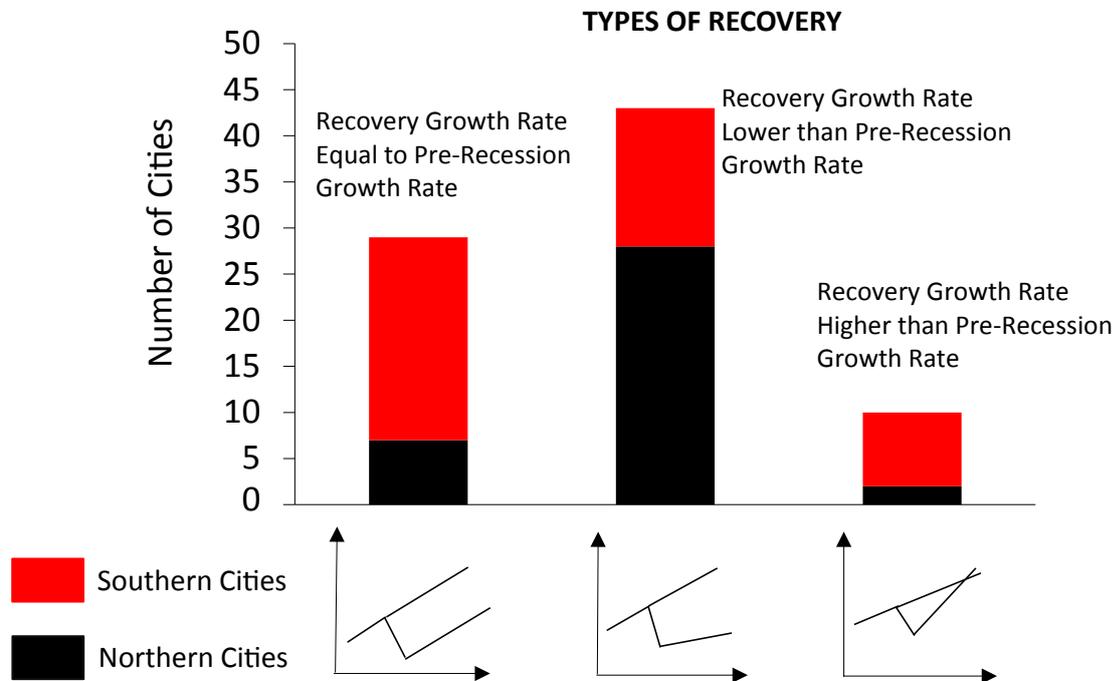
and Y_{GB}^t is the national (Great Britain) level of output in year t . The results are shown in Figure 6.3.

Figure 6.3: The Output Resilience of British Cities to Four Major Recessions



Two important features are apparent. First, a distinct shift is evident in the relationship between resistance and recoverability across cities, as between the recessions of 1973-5 and 1979-81 on the one hand, and those of 1990-91 and 2008-10 on the other. In the first two recessions, the more resistant a city to recession, the more likely it was to recover more rapidly and successfully. In the last two recessions, this relationship had disappeared, and cities that were more resistant to recession were not necessarily those that had better recoverability. But, second, in the past three recessions (1979-81, 1990-91 and 2008-10) many southern cities have tended to be more resilient in terms of superior recoverability than their northern counterparts. This is especially evident in terms of the different patterns of recovery in the most recent recession. Figure 6.4 shows how a higher proportion of northern cities emerged on a lowered growth path of the sort a-b-c-g depicted in Figure 6.2.

Figure 6.4: City Recovery from the Great Recession of 2008-2010



Determinants of City Resilience

Several possible determinants of economic resilience have been proposed in the literature. Table 6.2 shows the results of cross-section regressions using some of these factors; the dependent variable is the city resistance and recovery indices for each recession as depicted in Figure 6.3 above.

Table 6.2: Regression Analysis of Factors influencing City Resistance to and Recovery from Four Recessions

WITH RESISTANCE	1973-1975	1979-1981	1990-1991	2007-2009
Constant	8.629**	1.355	3.457	-0.47
Manuf Empl Share	-0.03	-0.052*	-0.220**	-0.042
KIBS Empl Share	0.077	-0.053	-0.270*	-0.094*
Public Sector Emp Share	-0.191**	0.06	-0.165*	0.008
Specialisation	0.798	1.894	3.247	1.804
Export Empl Share	-0.072*	-0.034*	0.101	0.036
High Skill Share of Empl	-0.126*	0.095	-0.016	0.025
Productivity	-0.006	-0.119**	0.331**	0.014
Population Size	0	0.001	-0.007	0.001
Population Density	-0.001*	-0.003	0.009	0.008
Patents (per Mill Pop)	ND	ND	-0.002	0.001
Distance from London	-0.002	-0.002	0.004	-0.009*
Adj. R-Squared	0.124	0.218	0.138	0.098
F-Statistic	2.326	3.605	2.342	0.962
WITH RECOVERABILITY	1975-79	1981-1990	1991-2007	2009-2015
Constant	6.995**	1.375	1.964**	0.803
Manuf Empl Share	-0.091**	-0.032**	-0.009	0.003
KIBS Empl Share	-0.136**	-0.033*	0.014	0.015*
Public Sector Emp Share	-0.112**	-0.057**	-0.041**	-0.02
Specialisation	2.004	1.127*	-0.348	0.711
Export Empl Share	-0.141*	-0.006	-0.009	0.032*
High Skill Share of Empl	0.105	-0.047**	0	0.003
Productivity	0.044	0.013	0.041**	-0.024
Population Size	-0.001	-0.002	-0.001	0.002*
Population Density	-0.002	-0.003	-0.001	-0.003
Patents (per Mill Pop)	ND	ND	0.003**	0.001
Distance from London	-0.002*	-0.0010**	-0.008	-0.003**
Adj. R-Squared	0.251	0.318	0.336	0.246
F-Statistic	4.144	5.352	5.326	3.725

ND = No data



The list of potential determinants in the table is certainly not complete. For example, net migration is not included (because of data estimation difficulties). Migration can influence resilience in different ways. On the one hand, cities that are hard hit by a major economic downturn may experience a net outflow of workers, in search of better job prospects elsewhere; this can act as a ‘pressure valve’, alleviating increases in unemployment. On the other hand, a sustained net inflow of skilled educated workers into a city may steadily increase the city’s resilience, in that a skilled workforce tends to be more adaptable and more productive. Other research suggests that the personality and behavioural traits of a city’s population may influence its resilience, in that a more out-going, self-confident and entrepreneurial culture is likely to foster a more resilient attitude in the face of shocks.

The findings in Table 6.2 indicate that it is more difficult to explain city differences in resistance to recessionary shocks than their recoverability from them. Second, the factors that appear to be important have varied from recession to recession. For example, while structural factors seem to have influenced recoverability from the first two recessions, they seem to have played much less of a role in the two recent recessions – possibly reflecting the convergence in structure across cities noted in Chapter 3 and 4 above. Higher productivity increased city resilience in the recessions of 1979-81 and 1990-91, but had no effect in the first and most recent downturns. Factors to do with city size and agglomeration effects do not seem to influence city differences in resilience, although there is some evidence that distance of cities from London reduces a city’s recoverability.

The Brexit Shock and the Cities

Brexit will almost certainly disrupt the economy. However, estimating its impacts across British cities is extraordinarily difficult, and can only be speculative. Predictions of the national impact have varied widely, from a reduction in output of 8-10% by 2030 to an increase in output of 4% by that date. A key problem is that, at the time of writing, we do not know what precise form Brexit will take, what sort of deal will be agreed with the EU, whether the economy will have to resort to WTO rules, and so on. In addition, there are no reliable data on trade for British cities. And additionally, estimates of impacts will depend on the sort of model and assumptions used.

In our exploration of the issue we have used the national sectoral impact estimates from Cambridge Econometrics’ E3ME global macro-econometric model under different scenarios. These national sector by sector estimates were then applied to the sectoral structures of each city. Thus, a basic (and necessary) assumption is that the impact on a of Brexit on British cities is determined solely by differences in sectoral composition across cities; no allowance is

made for the possibility that a given sector will be impacted differently in different cities. This simplification should be borne in mind.

Figure 6.5 shows the impact of Brexit under three outcome scenarios: Single Market, Customs Union, and No Deal (Hard Brexit, WTO rules). As expected the impacts increase the less favourable the outcome, being most severe for the Hard Brexit case. At the same time, the dispersion of impact across cities also increases the worse the Brexit scenario, especially for output. While some studies of the impact of Brexit across the UK predict that northern regions will be worst hit, others predict a more mixed geographical picture, with some southern localities as badly impacted as northern localities. As Figure 6.6 shows, our results suggest that, for our 85 cities, there is no relationship between the extent of impact (for a Hard Brexit) and distance from London. What our studies of the resilience of cities to recent major recessionary shocks suggests (Figure 6.3), however, is that even if southern cities are severely impacted by a Brexit shock, they are likely to recover more rapidly and successfully from it.

Figure 6.5: Estimated Output and Employment Impacts of Brexit on British Cities: Three Scenarios

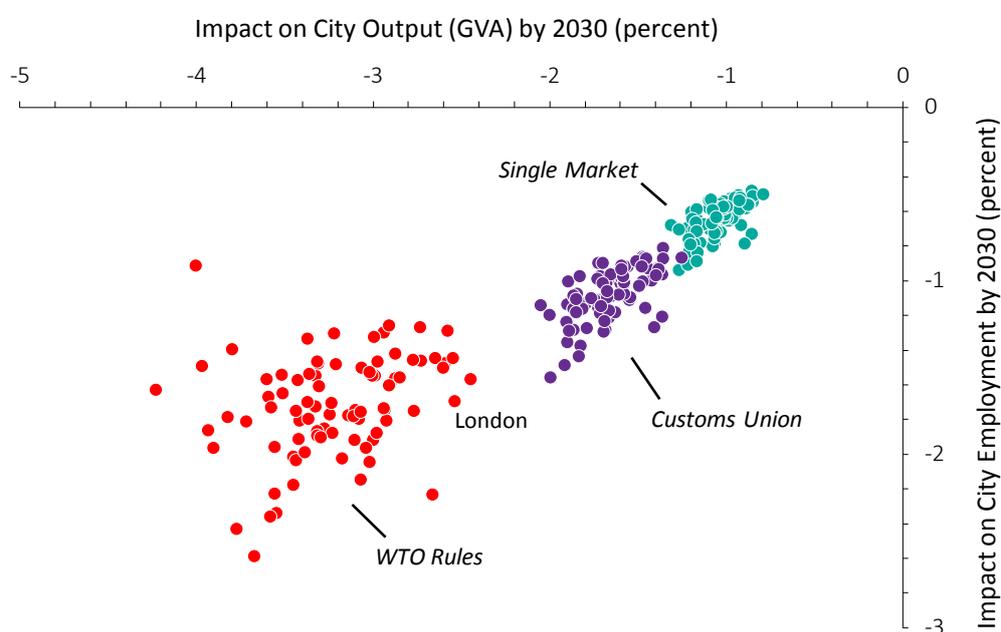
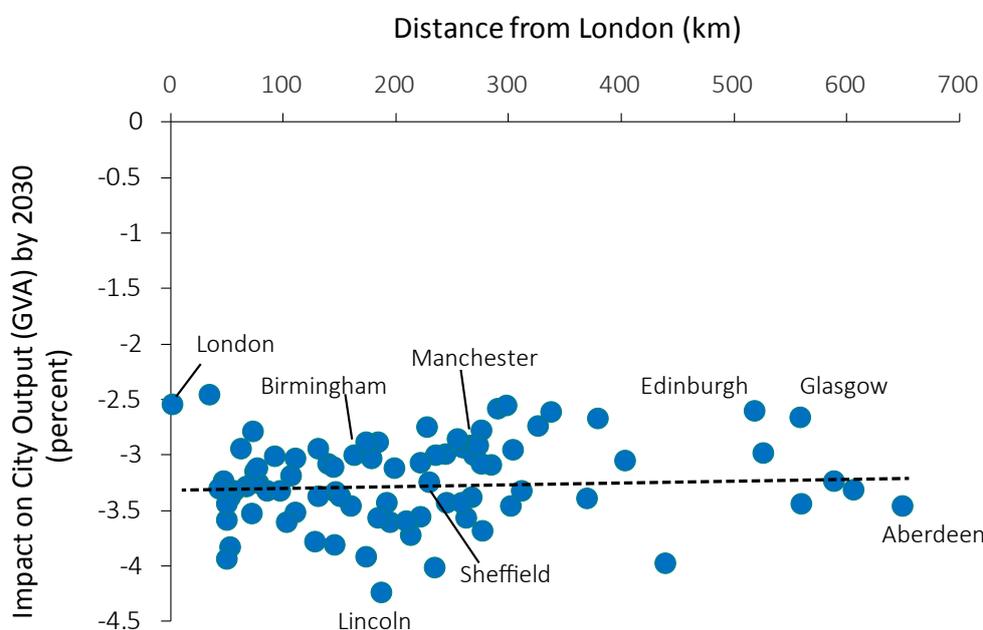


Figure 6.6: Impact of Hard Brexit (WTO Rules) by City and Distance from London



Issues for Policy

Our analyses of city resilience to economic shocks suggest a number of issues for policy:

- Discussions of differences in the long-run economic growth paths of British cities need to take explicit account of city differences in resilience to shocks, both as an explanatory factor and as a consideration for policy
- Part of the explanation for the divergent growth paths of British cities resides in their differences in resilience to major recessionary shocks
- Most southern cities appear to be more resilient than northern cities, particularly in terms of recoverability from shocks
- Indeed, a shift in the geographical dynamics of resilience seems to have occurred after the late-1980s, in that the relationship between resistance to and recovery from recession has changed. Differences in the ability of cities to recover from major shocks has become more important than differences in resistance to those shocks.



- Estimating the impact of Brexit on Britain's cities is fraught with difficulties, and necessarily can only be speculative. Our findings suggest that the possible impact will be varied across the UK, with no marked divide between more southern cities and more northern ones.
- However, our analyses suggest that given the greater recoverability of most southern cities from previous major recessionary shocks, even if severely impacted by Brexit, southern cities are likely to recover more successfully.
- Policies aimed at improving the growth performance of northern cities should seek to improve their resilience to future recessionary and other economic shocks.
- City resilience seems no longer to be shaped by sectoral structure. This, as in the case of productivity growth differences, quite probably reflects the decline in sectoral specialisation across British cities, and the convergence in their sectoral structures. What may be important, however, though we could not explore this because of data limitations, is a city's functional specialisations, including its position and role in supply chains and networks. Productivity also appears to play a role, mainly as a factor influencing city resistance to shocks.
- City resilience is built up over time, as part of a city's mode of growth, and is a path dependent process. A dynamic and successful city economy tends to breed an underlying climate of business confidence, so that even if the city is hard hit by a shock, businesses are less likely to retrench, and investment and jobs may be maintained, in the belief that the city will sooner or later resume its previous growth path, thereby helping to bring about the very resilience that underpins that confidence. The converse is true for a city that has a sluggish or stagnant growth path. How long-run growth shapes resilience and how resilience shapes long-run growth is thus an issue that merits detailed research.



7. The Roles of Governance and Policy

Governance and policy for city economic development

It is commonly presumed that with ongoing globalisation, it is crucial to provide a favourable and attractive environment to anchor economic activities and support their competitiveness. Equally, cities are believed to act as central nodes in the globalized economy, concentrating dynamism which drives economic growth within nations. In such a context, there is a vital role for governance and policy to foster and guide economic development across cities and regions. Indeed, the roles of governance and policy in economic development have received a great deal of attention since the 1990s; both in academic debates as well as in actual policymaking.

Meanwhile, there have been considerable reforms in the governance of subnational economic development in the United Kingdom in recent years, with Local Enterprise Partnerships replacing Regional Development Agencies in England, and ongoing devolution initiatives across the country including City and Growth Deals, Combined Authorities and metro-mayors. In addition, several cross-regional programmes have been set up, such as the Northern Powerhouse, the Midlands Engine, and the Cambridge-Oxford corridor. This follows on from an earlier round of reorganisation in the late 1990s and early 2000s, when more powers and resources were devolved to Scotland and Wales, and attempts were made to introduce a regional layer across England. In terms of policy, a significant recent development has been the publication of the Industrial Strategy, which will – among other things – be implemented through a series of Local Industrial Strategies.

In our research, we have examined the roles of governance and policy in city economic development in Britain since the early 1970s, by conducting five in-depth city case studies of Birmingham, Bristol, Glasgow, Middlesbrough-Stockton and Peterborough. This permits a *meso-level* assessment of the role of governance and policies: that is, an assessment of broader sets of arrangements and policy programmes being enacted for longer time-periods. It should be noted that this is different from the micro-level evaluation of individual institutional arrangements, policies and projects at specific points in time, which is more commonly practiced (e.g. by the What Works Centre for Local Economic Growth).



Selection of case study cities

The five cities were chosen because they provide a cross-section of the experience of British cities:

- The cities cover the range of economic performance over the period from 1971 to 2015: with Peterborough performing well above the national average (in terms of output and employment growth), Bristol keeping pace with the national level, and Birmingham, Glasgow and Middlesbrough-Stockton falling behind. The latter three cities were of particular interest because they were faced with the greatest economic development challenges and were the focus of sustained governance and policy initiatives.
- The experiences of larger and more prominent cities (Birmingham, Bristol and Glasgow) were contrasted with two smaller cities on either side of the spectrum of economic performance.
- There were some notable differences in the governance arrangements and policy regimes across the selected cities. Glasgow has operated in a different institutional and policy context in Scotland compared to the cities in England. Peterborough differs from the other cities because it was designated a 'New Town' in 1967 and had a development corporation with associated powers and resources between 1968 and 1988.

Below are the main findings from five city case studies. The full reports for the case studies can be accessed at: www.cityevolutions.org.uk/research.

Different cities have faced differences in the scale and nature of economic development challenges

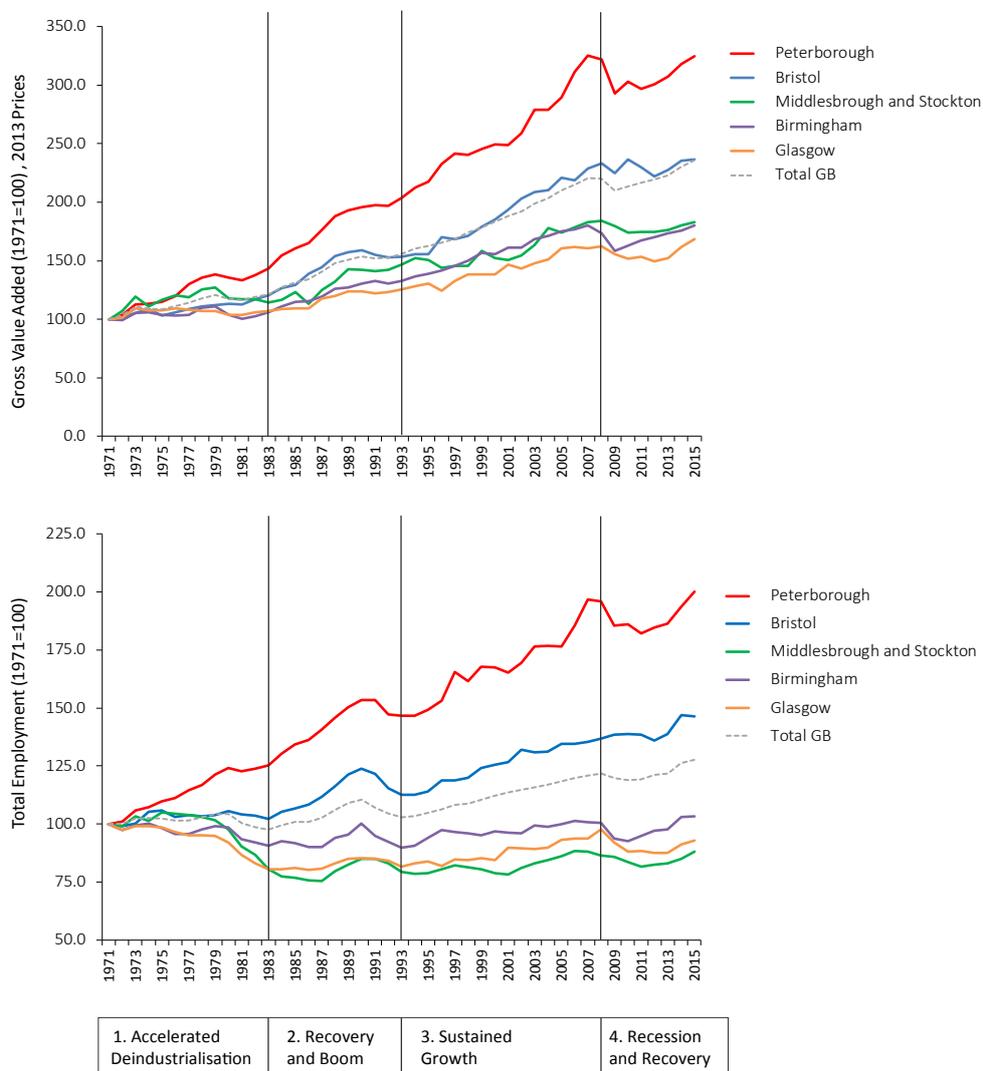
The case cities were selected on the basis of differences in economic performance between 1971 and 2015. Figure 7.1 shows the trajectories in output and employment across the 5 cities during this period. The period was marked by several distinct episodes of expansion and contraction. The cities experienced these episodes differently and, as a result, faced a different scale, nature and rate of economic challenges over time.

The first of these episodes up to 1983 was 'accelerated de-industrialisation'. It is characterised by relatively poor overall economic performance and the effects of two recessions, first from 1973 until 1975 and then from 1979 until 1983. Glasgow, Birmingham and Middlesbrough-Stockton were hit especially hard, although their trajectories vary. Glasgow was already on a trajectory of low output growth and employment decline before the 1970s, and experienced a further worsening of these trends from 1979 until 1983. Birmingham experienced a relative boom period after the Second World War but stagnated in the 1970s and experienced a



downturn in the early 1980s. Middlesbrough-Stockton went through a boom in the first half of the 1970s as new investments in heavy industry and in transport and energy infrastructure flowed into the area. This ended abruptly, however, and by the late 1970s the area underwent a very steep contraction. Bristol suffered from reductions in manufacturing output and employment but was less affected and coped better. Peterborough was virtually unaffected, except for several years of stagnation from 1979 until 1983.

Figure 7.1: Episodes in Economic Evolution of Case Cities, 1971-2015, GVA and Employment





By the early 1980s, Birmingham, Glasgow, Middlesbrough-Stockton and, to a lesser extent, Bristol faced serious challenges as their traditional economic base was disintegrating and they struggled to attract new economic activities for economic renewal and growth. Peterborough meanwhile was confronted by a different adaptive challenge of continuing its expansion. The performance of the cities in subsequent episodes reflects the varied levels of success in overcoming these challenges and in engaging with new opportunities and threats. In the episode of ‘recovery and boom’ (1983-1993), growth picked up in especially Peterborough as well as Bristol; while recovery in Birmingham, Glasgow and Middlesbrough-Stockton was less buoyant. This episode ends with the 1990-1993 recession. This pattern of differential pathways and divergent development between the five cities is further reinforced in the next episode of ‘sustained growth’ (1993-2008). Although this episode reveals growth across all five cities, expansion in Bristol and Peterborough is considerably faster, and the performance of Birmingham, Glasgow and Middlesbrough-Stockton is below the national average. This differential experience indicates the enduring struggles in these cities to find new roles for themselves in the ‘post-industrial’ economy. The most recent episode of ‘recession and recovery (2008-date) encompasses the global financial crisis and Great Recession and the subsequent recovery. While the immediate impact of the recession is less marked in Glasgow, Birmingham and Middlesbrough-Stockton compared to Bristol and Peterborough, the speed of recovery seems distinctly faster in the latter two cities.

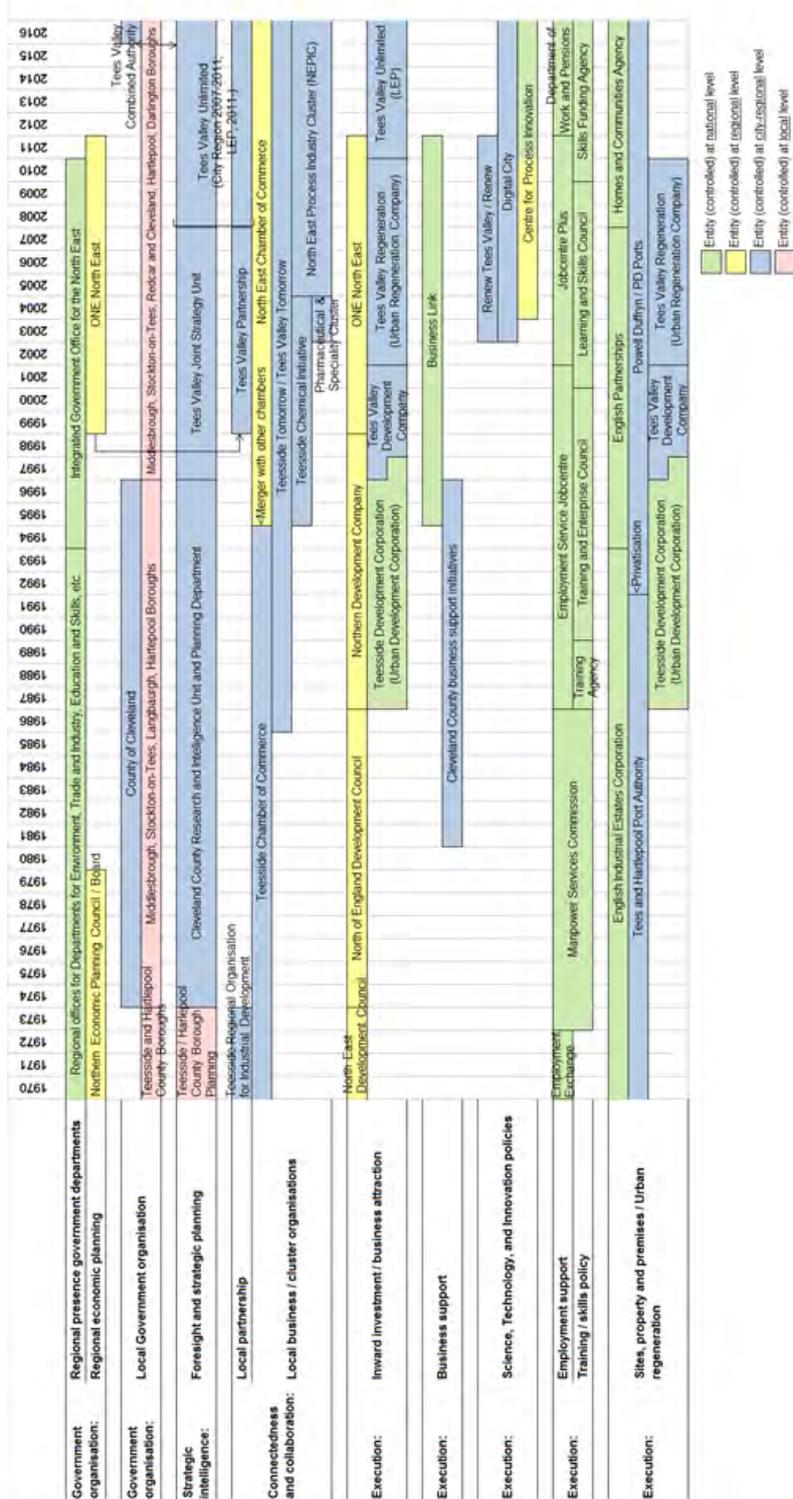
The problem of churn and fragmentation in the evolution of governance arrangements and policies

The national policy context for city economic development comprises several policies directly related to territorial development across the UK including sub-national economic development and spatial policy. But there are also a number of ‘spatially-blind’ policies which are of great importance for the growth prospects of places across the country: industrial policy, labour market and welfare policy, and macro-economic policies. Taken together this set of policies have undergone several shifts in the past five decades. Table 7.1 below provides an overview of the main initiatives of different governments in these policy domains since the 1970s.

Table 7.1: Major Shifts in National Policies Across Different Governments since the 1970s

	'Spatial Keynesianism' (up to 1979)	Thatcher and Major governments (1979-1997)	Blair and Brown governments (1997-2010)	Cameron and May governments (2010-date)
Subnational economic development policy	Regional planning Regional policy	'Localism' (but very restricted)	Regional Development Agencies in England Devolution to Scotland, Wales and Northern Ireland	Local Enterprise Partnerships City and Devolution Deals Metro-mayors in Combined Authorities Regional Growth Fund
Spatial policies	New Town policy	Urban policy	Urban regeneration and neighbourhood renewal	Place-based dimension to New Industrial Strategy
Industrial policy	Government ownership and specific support for strategic industries R&D-spending in selected industries	Privatisation, and abolition of support for specific industries	Focus on innovation (including some cluster-based policies)	New Industrial Strategy with attempt to integrate various policies to stimulate innovation and productivity growth
Labour market and Welfare policy	Expanded welfare state Centralised and corporatist institutions for employment support and training	Contraction of welfare state Deregulation of labour market	Continuing flexibility of labour market. Conditional welfare arrangements. Investments in training and skills-development.	Continuing flexibility of labour market. Further restrictions and cut-backs in welfare.
Macro economic policies	Aim for full employment Stimulating / restraining demand to manage business cycles	Aim to reduce inflation Capital controls abolition Fiscal austerity	Looser monetary policy Fiscal expansion	Fiscal austerity Quantitative easing

Figure 7.2: Evolution of Governance Arrangements for Economic Development for Middlesbrough-Stockton





These shifts are evident in the evolution of governance arrangements and economic development policy initiatives leading to considerable churn and fragmentation. This is true for arrangements at the national level, such as central government departments and their regional offices, as well as various non-departmental executive agencies, for example, those responsible for labour market and skills policy, business support, and the management of public assets especially land and property.

This continual reorganisation is evident at the sub-national level too as governance arrangements and policies have been subject to frequent restructuring. Moreover, the territorial focus of subnational economic development policy has changed frequently from regionalism to localism, back to regionalism, then localism and most recently to city-regionalism.¹⁵ Layered on top of this, there have also been several large-scale reforms of local government in England and Wales, and Scotland, since the 1970s: first around 1974 and then again around 1996 with the Greater London Council and 6 metropolitan counties (including the West Midlands) abolished in 1986. Figure 7.2 shows how this propensity for churn has generated a fragmented evolution of governance arrangements at national, regional, city-regional and local levels for the Middlesbrough-Stockton area. There are many similarities with the development of arrangements for Birmingham and Bristol; while the governance arrangements for Glasgow and for Peterborough and their evolution are different. But in all cases, *churn and fragmentation* have been key issues, generating costs and absorbing time for economic development policy-makers in a constantly shifting institutional and policy landscape.

This lack of continuity and stability in governance arrangements and policies, together with their fragmentation across various spatial levels (local, city-regional, regional and national), generated considerable challenges in organising an integrated, co-ordinated and sustained approach to city economic development. Especially during the height of the recessions in the late 1970s and early 1980s, arrangements for collaboration between relevant actors and across spatial levels were lacking. During this crucial episode, there were effectively few means through which to bring the various actors and government entities together to deliberate, discuss and decide on strategies and measures to support the city economies undergoing structural economic change and requiring adaptive interventions. This was the case for Middlesbrough-Stockton (Figure 7.2) as well as Birmingham, Glasgow and Bristol.¹⁶ Such partnership arrangements did emerge over time in these cities especially in the 1990s and early 2000s, and have helped support the

¹⁵ Andy Pike, Louise Kempton, David Marlow, Peter O'Brien, and John Tomaney (2016) *Decentralisation: Issues, Principles and Practice*. Centre for Urban and Regional Development Studies, Newcastle University: Newcastle.

¹⁶ Peterborough benefitted from its development corporation over this period with its broad remit and co-ordinating role across policy areas.



development of more integrated and balanced approaches to city economic development. In some cases, dedicated entities have provided strategic intelligence on the city economy – including analysis, foresight exercises, policy option appraisal and evaluations – as part of efforts to promote adaptation and new development pathways.

The focus on urban regeneration and development of the central core

Table 7.2 provides a schematic representation of the evolution of focal points across various fields of economic development policy for the case cities. It illustrates that the policy mix has gradually expanded over time to incorporate a wider range of different policies. However, the policy mix was marked by certain predispositions which largely shaped the policy responses to the economic and social challenges caused by accelerated deindustrialisation and its aftermath.

Table 7.2: Evolution of Focal Points in Economic Development Policy for Case Cities

	Inward investment / business attraction	Science, Technology, Innovation (STI)	Enterprise / business support	Employment support	Training / skills policy	Sites, premises and infrastructure	Housing / urban regeneration	Events and place branding
Up until early 1980s	•			●	•	●		
Early 1980s – mid-1990s	●	•	●	●	•	●	●	•
Mid-1990s – 2010	●	●	●	•	●	•	●	●
Since 2010	●	●	●	•	●	•	•	●

Size of the bullet indicates relative importance; no bullet indicates an absence of policy within the particular field.

First, from the late 1970s onwards, a key focal point for economic development policy was urban regeneration, neighbourhood renewal and the remediation and conversion of former industrial sites. Significant funding was invested under a plethora of programmes and initiatives under the broad umbrella of ‘urban policy’. This focus appealed to cities because, first, it led to visible improvements in the short-term and sought to improve the image and attractiveness of cities for people, firms and investments. Second, through their planning and development powers, city authorities and (city-)regional bodies were able to exercise some control or even lead initiatives whereas in other policy fields they were much more dependent on national government. Initially, the programmes and initiatives for regenerating and developing strategic locations and neighbourhoods in cities were guided by property-led



regeneration through physical interventions aiming to stimulate new economic activities and generate wider social benefits.¹⁷

From the 1990s onwards, an emphasis on generating positive ‘trickle-down’ benefits from policy interventions was gradually incorporated into a broader city-centre focused approach to urban economic development policy. ‘City centrism’ prioritises the development of central cores in cities and seeks to create scale, density, critical mass and ‘external economies of agglomeration’ in thick labour markets, specialised goods and services suppliers, and knowledge spill-overs that drive productivity improvement and growth.¹⁸ The priority is city centres and spreading their benefits to other people and places elsewhere in the city and surrounding regions. In addition to the physical improvement and redevelopment of city centres, this approach involved the attraction of certain types of economic activities to central locations (especially financial services, other business services, creative and digital industries), investments in infrastructure between cities - and later also within city-regions - to offset the negative effects of agglomeration, as well as policies to assist the attraction and formation of human capital. City economic development strategies and policies in Glasgow, Birmingham and Bristol demonstrate this city-centre focused approach. But this thinking also importantly guides the cross-regional initiatives of the Northern Powerhouse and London Stansted Cambridge Corridor, which affect the policy agendas for Middlesbrough-Stockton and Peterborough.

Governance arrangements and policies have accommodated economic change in cities, but have had little impact on shaping the extent and nature of this change

The governance arrangements and policies for city economic development appear to have a rather limited impact on the speed and character of economic growth across the cities. This is the result of several factors. First, the large scale and rapid manifestation of the challenges that some of the cities faced in the late 1970s and 1980s conditioned their ability to respond. The difficulties and relative failure in adapting the city’s economic base and available assets and skills in ways that could have helped Middlesbrough-Stockton, Glasgow and Birmingham to prosper in the ‘post-industrial’ economy have effectively underpinned these cities’ enduring struggles to find, generate and connect to new development paths. Second, the broader national policy context (in terms of macro-

¹⁷ Fred Robinson and Keith Shaw (1994) ‘Urban Policy under the Conservatives: In Search of the Big Idea?’, *Local Economy*, vol. 9, no. 3, pp. 224-235.

¹⁸ See Andy Pike (2018) ‘The Origins of City Centrism’ and ‘The Limits of City Centrism?’, posted on City Evolutions blog; www.cityevolutions.org.uk/the-origins-of-city-centrism respectively www.cityevolutions.org.uk/the-limits-of-city-centrism



economic policy, labour market policy and industrial policy) has at times worked against efforts to promote new growth pathways in these cities. In contrast, these policies have had overall rather more positive effects for Bristol and Peterborough. And third, ongoing instability in national policy has led to constant churn in governance arrangements and policies for city economic development that has impeded longer-term and more strategic, integrated and co-ordinated approaches.

Nevertheless, economic development policies that have had some positive impacts across the cities are evident. For example, sustained efforts in Glasgow to attract and grow financial and business services in its city centre have had some success. In Birmingham, initiatives to support the reorientation of suppliers in the automotive sector before and after the demise of Rover have supported new growth in advanced manufacturing around the city. In Middlesbrough-Stockton, attempts to develop the knowledge base and enhance innovation in the process-industries have generated new dynamism and prospects in repositioning for low carbon technologies and the 'circular economy'. But large-scale investments in urban regeneration and redevelopment appear to have had little effect on the extent and nature of economic development across cities. There is little evidence to suggest that these investments have created additional growth or have supported the attraction and expansion of additional higher-value activities. Instead, these efforts appear to have merely accommodated trends already taking place across the case cities, both in terms of the rate of growth over the years, and the composition of this growth.

The potential focus and prioritisation of further 'city centrism' thus require further reflection given their potential to further deepen existing patterns of unequal growth within and across British cities. Some fresh and imaginative thinking is needed to adapt the city centre and agglomeration-focused model better to build upon its benefits in ways that generate more socially and spatially inclusive forms of growth across cities.



Issues for policy

The findings have implications for current and future governance arrangements and policies for city economic development in the context both of current initiatives, and with prospective developments in mind (such as the Local Industrial Strategies, the LEP Review, and a potential Devolution Framework). The main implications are:

- The different economic development challenges across different cities call for governance arrangements and policies that are '*place-sensitive*' and tailored to particular local circumstances and needs. Current initiatives to devolve resources and powers and support place-based approaches formulated and implemented within the place in question align with this perspective but need to go further. A more meaningfully place-sensitive approach requires further decentralisation of powers and resources in a wider range of policy areas – such as health, infrastructure, skills and welfare – to provide a broader set of tools for city policy-makers to address and shape economic change. Equally, assessment and evaluation of the effectiveness of such decentralised approaches is needed in parallel.
- To avoid the disruption and costs of constant institutional and policy change, continuity and stability in the governance and policy framework is critical to enable strategies to be set and refined and the policy-mix *sustained* for at least 10-15 years – a critical timeframe given the scale and complexity of the challenges British cities face. This means that – whenever feasible – new arrangements and policies should build upon and enhance existing strategies, policies and geographies.
- Ongoing and uneven economic evolution demands *adaptable* strategies to improve the capacity of cities to cope and respond to economic change and develop new development paths. Building upon a degree of continuity and stability, such strategic and longer-term approaches enable refinement and adaptation of the city policy mix and institutional arrangements to withstand, bounce-back from and prepare for disruptive economic change in resilient ways.
- The governance and policy mix needs better alignment, co-ordination and complementarity between different policy fields and geographical levels (national, city-regional and city). Such an approach would enable a more holistic, rounded and *balanced* approach to city economic development through a considered policy mix covering the full range of policy levers.



- Recognising that city governments alone struggle to influence economic evolution in cities, governance arrangements need to enable and incentivise collaboration and joint working between key actors in the public, private and civic sectors for the economic development of cities and their regions. Critical to this is maintaining capacity and resources for the generation of economic intelligence, strategic analysis, foresight, and policy development to shape long-term institutional and policy development with a place-sensitive focus.
- Breaking with the traditional trade-off between growth or equity and seeking to exert more influence upon the extent and nature of economic change, city economic development policy faces the challenge of fostering more socially and spatially *inclusive* forms of growth. Tackling this issue requires, firstly, fresh thinking and innovation to build upon and move beyond solely city-centre focused growth strategies better to inter-relate with people and places in the wider city-region and beyond so as to generate more socially and spatially inclusive forms of growth across cities. Secondly, existing supply-side oriented policies (e.g. on re- and up-skilling) need to be connected and sequenced with complementary and supporting demand-side policies aiming to raise demand for labour in a city economy, increase labour demand for specific groups, and/or improve the quality of employment. This might come, for example, via identifying and targeting key sectors, upgrading supply chains, fostering demand-led skills development, building closer employer engagement and partnership focused upon priority sectors, and introducing stipulations for training, skills and other conditions through public procurement processes.