



City Links: Integration and Isolation

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Summary

Much of the literature on modern cities concentrates on the city as an individual entity and seeks policy remedies within this context. In reality, city economies are open, and the development of modern cities in particular have been both driven and shaped by their relationship with other urban areas. Thus it is as important to understand the economic, infrastructure and labour market links between cities as within the cities themselves. City-specific policy interventions should be matched with a wider suite of policies designed to facilitate inter-city connectivity.

This paper explores the issue of connectivity between large and medium sized-cities, with specific relation to its role in driving the out-performance of the Greater South East over the cities of the North of England. It begins with a broad explanation of why city links matter and how they drive economic performance. It then seeks a dynamic understanding of these links through a comparison of two case studies – the mutually supportive relationship between London and Reading in the South East, and the as yet under-exploited links between Manchester and Burnley in the North West.

Key Points

- **Large cities can play a central role in driving the economic performance both of their wider regions and the smaller cities within them;**
- **A synergistic relationship, such as that which exists between London and Reading, allows the smaller city direct access to the markets, skills and specialisations of its larger neighbour, in turn giving it the opportunity to develop its own specialised growth momentum;**

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- **As the examples of London-Reading and Manchester-Burnley show, regional city relationships have developed in different directions as the cities themselves have reacted to changing economic geography;**
- **The key considerations in understanding and supporting synergistic growth are the spatial realities of the cities' relative location, the strength of their infrastructure links, and the ability of the smaller city to develop its own specialisations to complement those of its hub city.**

Policy Recommendations

In order to develop mutually beneficial linkages between core cities and their neighbours, government agencies should take into account the following:

- **National government, and especially the Treasury and the Department for Transport, should consider going beyond the conclusions of the Eddington Transport Study (2006).** While improving the capacity of existing infrastructure and tackling urban bottlenecks is critical, there is also a case for investment in new infrastructure linking more isolated towns to regional economic hubs.
- **Regional and pan-regional agencies, such as the Northern Way and RDAs, should promote large urban centres as hubs for growth by channelling resources into key regional assets like transport infrastructure to ensure that the benefits of core city growth are widely disseminated across the region.** This is especially important in the case of Manchester and Leeds.
- **All cities, large and small, should take advantage of Regional Single Strategies, Multi-Area Agreements and Local Area Assessments to identify areas for collaboration and align their economic development strategies.** In particular, smaller cities should focus on developing specialisations which complement rather than compete with those of the regional hub.

“National government, and especially the Treasury and the Department for Transport, should consider going beyond the conclusions of the Eddington Transport Study”



Introduction

Much of the literature on modern cities concentrates on the city as an individual entity and seeks policy remedies within this context. In reality, city economies are open, their labour markets and firms interact with other urban areas which in turn shape and drive their economies. Some people choose to commute or move for work purposes. Firms make decisions about where to locate based on their trading relationships with suppliers and customers and the availability of labour that matches their needs.

Increasing interactions between people and firms in neighbouring (or effectively connected) cities provide the typical economic benefits derived from the concentration of economic activity – also known as ‘agglomeration’ benefits. For example, they allow firms to operate on a larger scale, capitalising on a wider and deeper pool of workers, suppliers and customers. Generally, large, dense urban markets help create more specialisms, can trigger productivity gains and foster innovation activities.

The policy relevance of these economic relationships between core cities and smaller cities and towns is clear. The future economic prosperity of many small cities and large towns depends on working with and complementing the economies of adjacent large cities. New policy instruments introduced by the Sub-National Review, like Regional Single Strategies and Multi-Area Agreements, now give cities the opportunity to foster collaboration across city boundaries.

Thus, it is as important to understand the economic, infrastructure and labour market links between cities as within the cities themselves, and to match city-specific policy interventions with a wider suite of policies designed to facilitate inter-city connectivity.

This paper explores the issue of connectivity between large and medium sized-cities and why some cities are more effectively linked than others, with specific relation to its role in driving the out-performance of the Greater South East over the cities of the North of England. It begins with a broad explanation of why city links matter, and how they drive economic performance. It goes on to seek a dynamic understanding of these links through a more detailed analysis of the available literature and evidence. It then explores relationships between core and surrounding cities through two contrasting case studies – the mutually supportive relationship between London and Reading in the South East, and the as yet under-exploited links between Manchester and Burnley in the North West.

“It is as important to understand the economic, infrastructure and labour market links between cities as the cities themselves”



Beyond Cities' Assets: Why City Links Matter

There is no question that there are still significant and long-standing differences in economic performance between cities in the Greater South East and the North. Most common explanations of regional economic performance take stock of assets. These include the types of firms (sectoral mix and comparative advantage), people and their skills, knowledge institutions and innovation, quality of place and infrastructure.

Box 1: Summary of Cities' Key Assets

- **Firms:** business investment, firms' sectoral mix and specialisation or comparative advantage, their export base and innovation activities.
- **People:** the skills and characteristics of the workforce and resident population.
- **Infrastructure:** the quality of physical infrastructure – from housing stock and amenities to local transport and international airports.
- **Governance structures:** the policy-making environment at regional and local level.
- **History and path dependency:** cities' current stock of assets - firms, people, infrastructure and governance structures – cannot be understood without looking at their historical legacy.

Understanding how asset mixes differ between cities and regions and how this helps explain relative economic performance is certainly a necessary starting point. However, in this report we use a dynamic approach, which is often underemphasised and requires us to think differently about city economies. It focuses on how cities' mobile assets – firms and people – interact and how these agents make decisions about their locations beyond administrative boundaries. In fact, the list of assets that different cities have is an outcome of decisions.

Box 2: Defining Economic Links

By **economic links** we mean the economic relationships or interactions between cities that arise out of decisions made by people and firms responding to economic market and pricing signals. We focus on people and firms links.

People links: people decide to change jobs and migrate to a new location or commute to a new place of work

Firms' links: firms choose where to locate based on their trading relationship with customers and suppliers and the available pool of labour.

The concept of 'agglomeration', widely used in urban economics, is key to understanding why firms choose to locate in cities, and can help explain how economic relations between cities affect their success. Put simply, agglomeration economies are the wider benefits arising from the geographical concentration of people and businesses. Generally these benefits include increasing productivity - firms operating in a wider market can choose from a more diverse and larger offer of labour, suppliers and customers.

“We use a dynamic approach, which is often underemphasised and requires us to think differently about city economies”



Productivity benefits can also derive from knowledge spillovers generated by the interaction with suppliers and other firms in the market (Graham 2006). Knowledge spillovers and technology transfers are especially relevant for knowledge-intensive business sectors (see page 10).

Recent research for the Northern Way (IPEG et al 2008) illustrates that growth in the Northern regions largely relies on the long-term contribution of their core cities - mainly Manchester (North West), Leeds (Yorkshire and the Humber) and Newcastle (North East) - supported by a few smaller centres (Chester and Warrington in the North West and York in Yorkshire and the Humber). This emerging urban hierarchy in the North and the concentration of economic activity in a few large urban centres is consistent with agglomeration theory. Agglomeration in the Greater South East appears to work more efficiently than in the North. Over time economic benefits from London appear to have spread to smaller cities and towns nearby, at the same time the latter have contributed to sustaining London's growth. Why has the South East outperformed the North?

“Agglomeration in the Greater South East appears to work more efficiently than in the North”



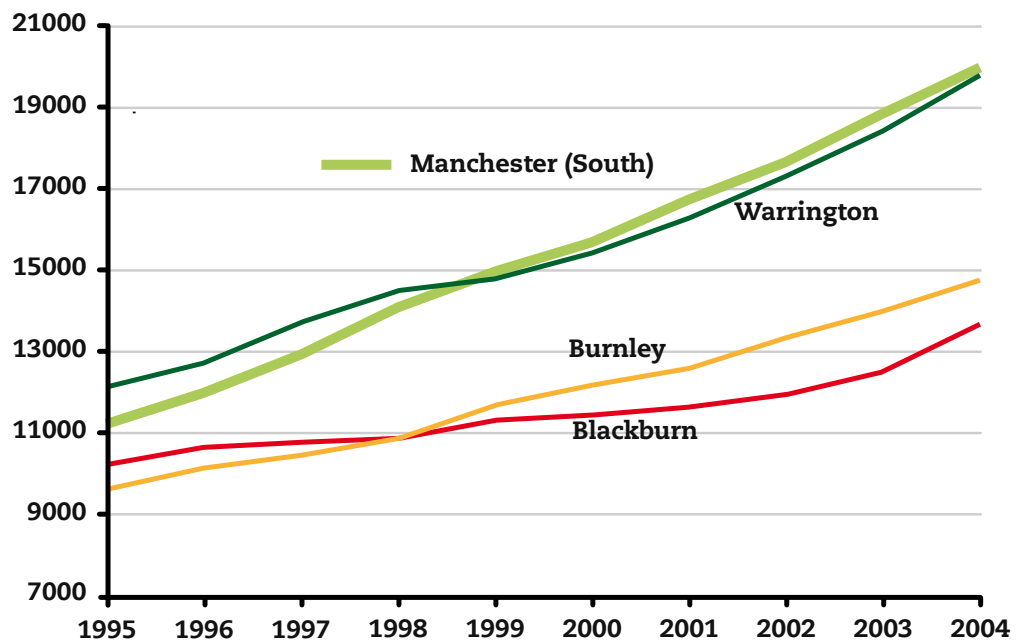
Spreading Growth from Major Cities to their Surrounding Areas

This section examines the different growth patterns and characteristics of the economic relationships between core cities and medium-sized cities in the North and the South. It describes the behaviour of firms and labour markets in the different regions, suggesting that the specific characteristics of mobile assets in the Greater South East have facilitated the spread of agglomeration benefits throughout the region.

Data on economic output offers a good starting point. Gross Value Added (GVA) figures suggest that growth in the Northern core cities has often not translated into improved performance in surrounding urban areas, while London and smaller cities and towns in the Greater South East show a more even pattern of growth.

In the case of the North West, for example, it is clear that there is a growing gap between places like Manchester South and Warrington and other areas such as Burnley and Blackburn.

Chart 1: North West GVA per capita (£), 1995-2004



Source: ONS, Selected areas, NUTS3 level (labels approximate NUTS3 to urban areas, see Appendix A for more details).

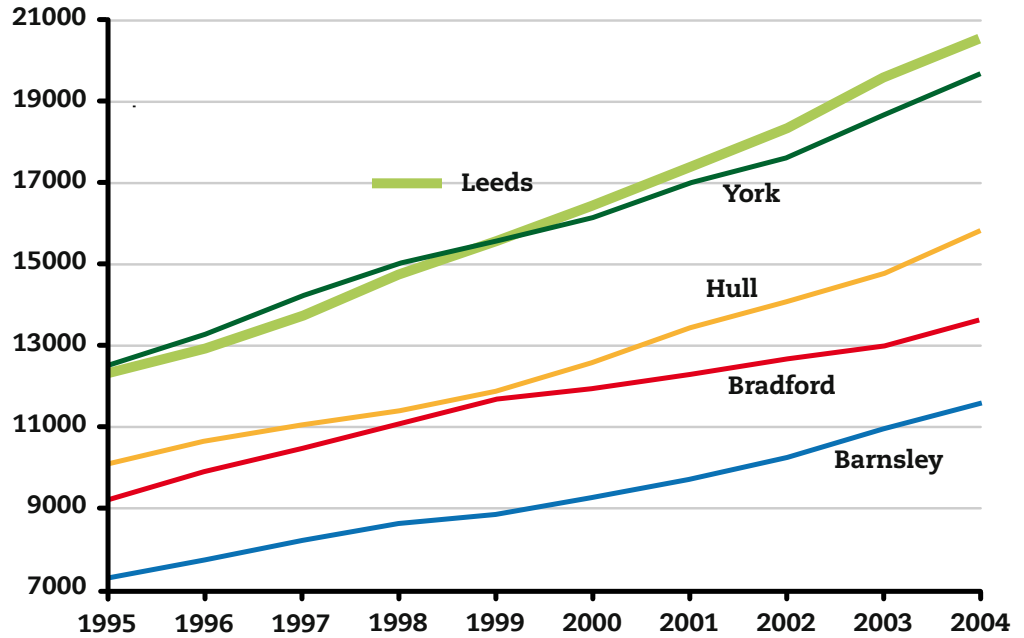
A similar pattern emerges in Yorkshire and the Humber (Chart 2). Leeds and York have been growing at a faster pace than other cities in these two regions, like Hull, Bradford or Barnsley.

“It is clear that there is a growing gap between places like Manchester South and other areas”



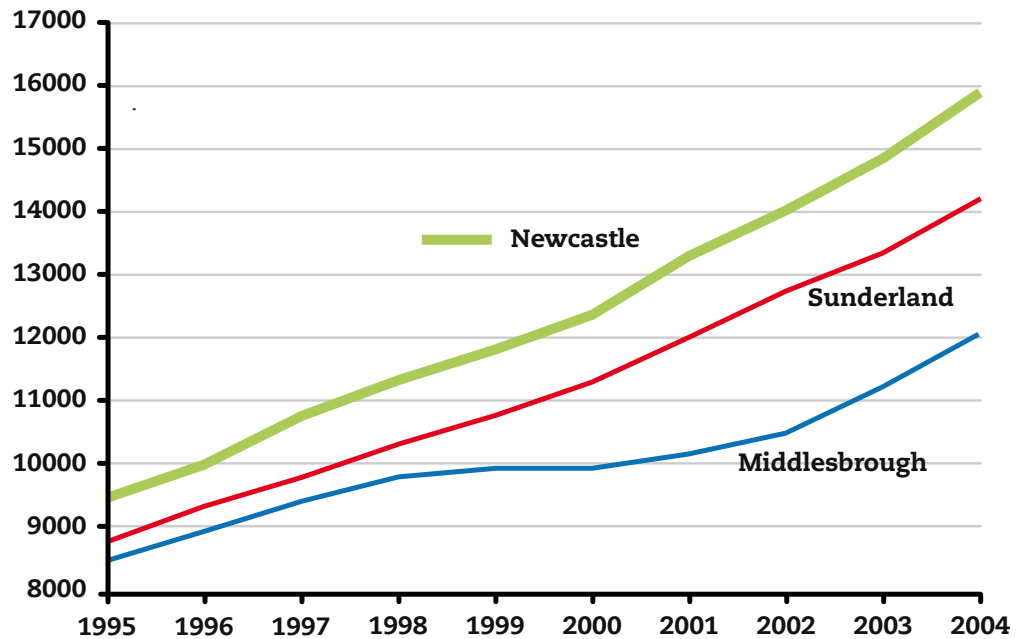
In the case of the North East (Chart 3), Sunderland appears to have benefited from the growth of its close neighbour Newcastle, but Middlesbrough has continued to lag.

Chart 2: Yorkshire and the Humber GVA per capita (£), 1995-2004



Source: ONS, Selected areas, NUTS3 level (labels approximate NUTS3 to urban areas, see Appendix A for more details).

Chart 3: North East GVA per capita (£), 1995-2004



Source: ONS, Selected areas, NUTS3 level (labels approximate NUTS3 to urban areas, see Appendix A for more details).

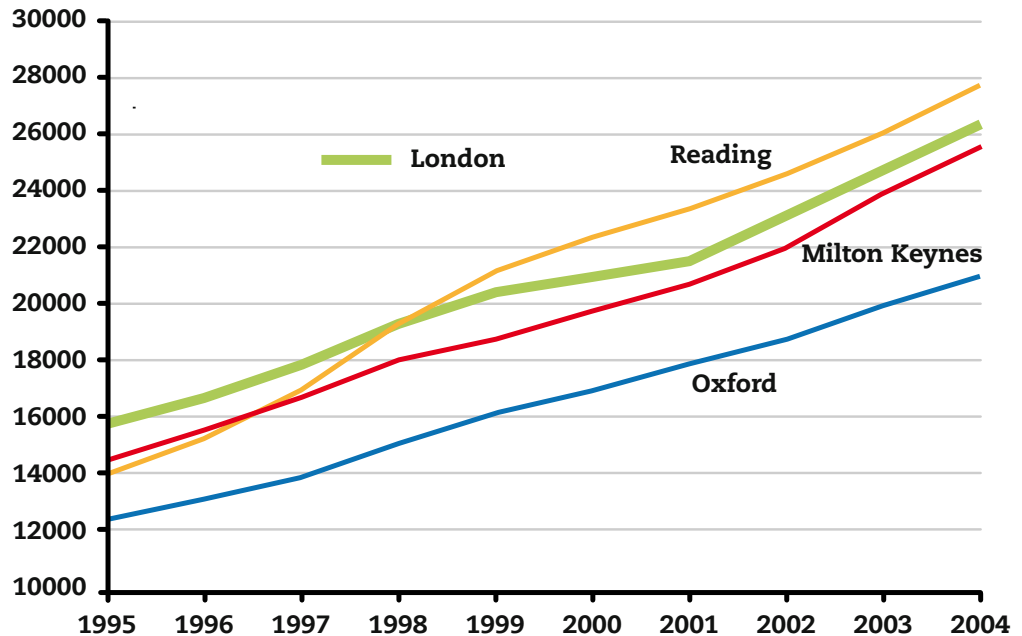
The Centre for Cities will be considering some of these link issues in its 2008 research programme, which will focus on out and underperformance in a selected sample of cities.

“Sunderland appears to have benefited from the growth of its close neighbour Newcastle, but Middlesbrough has continued to lag”



The growth pattern for the Greater South East is much more uniform. Many of London's neighbours appear to be growing at a similar pace to the capital (Chart 4).

Chart 4: Greater South East GVA per capita (£), 1995-2004



Source: ONS, Selected areas, NUTS3 level (labels approximate NUTS3 to urban areas, see Appendix A for more details).

“The level of innovation within firms affects the extent to which they benefit from the concentration of economic activity”

Firms: Sectoral Mix, Innovation and Supply Chains

The literature suggests that service sectors and highly innovative firms are most likely to benefit from agglomeration economies. Although the evidence on business location decisions, firms' supply chains and headquarter/branch interactions is not sufficiently developed, it suggests that the Greater South East has an advantage over the Northern economy through specialisation in those sectors that benefit more from agglomeration economies.

According to economic theory, the importance of agglomeration benefits varies by sectors. For example, the benefits from the concentration of activity have been found to be typically higher for business services than for manufacturing sectors (Graham 2006). This may be explained by the different types of activities these sectors perform: while services require more face to face interaction, the latter relies more on the production and distribution of goods.

In addition, manufacturing supply chains have been subject to outsourcing to emerging economies to a larger extent than services, although the latter are increasingly affected.

The level of innovation within firms also affects the extent to which they benefit from the concentration of economic activity. For highly innovative firms 'knowledge spillovers', and the ability to choose from a wider pool of skilled workers are important even if premises costs are higher – all by-products of 'agglomeration'. Conversely, when firms conduct more routine functions these factors are less relevant and cost considerations are prioritised.

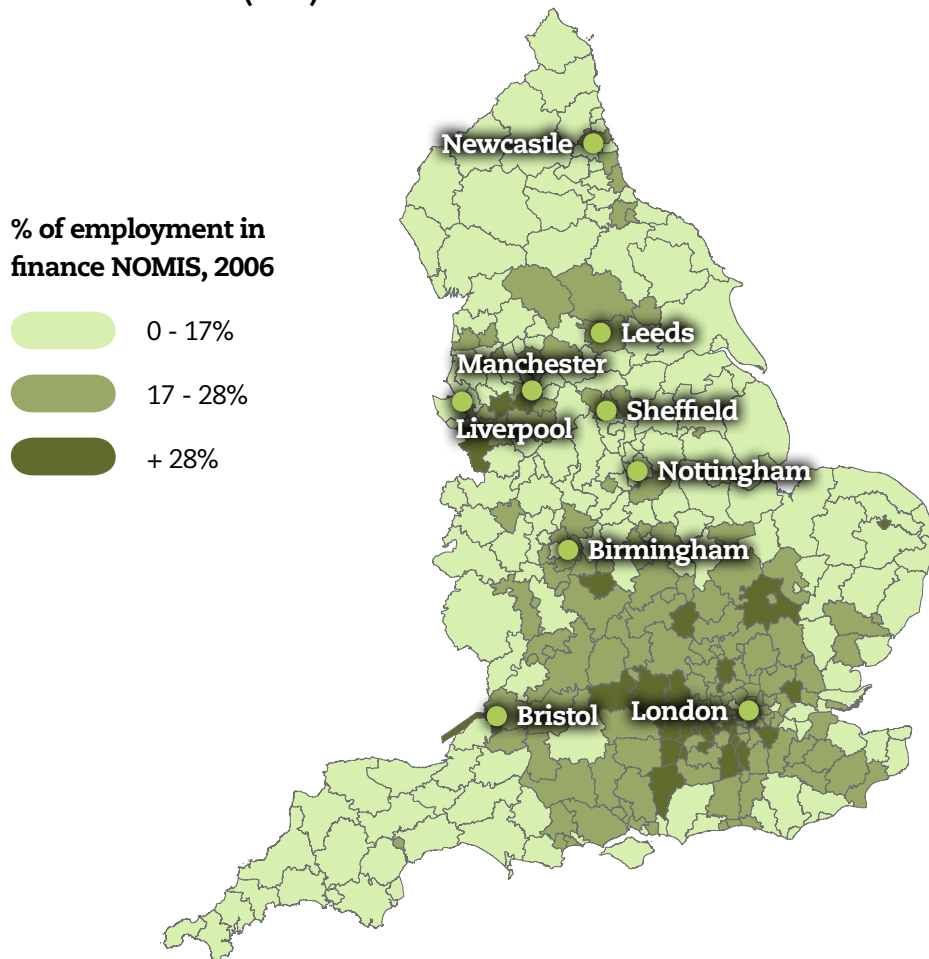


“The economic structure of the Northern and the Southern economies is very different”

The size of firms and the markets they serve may also affect the nature of their supply chains. In the case of legal and financial services firms, bigger companies have typically been found to have more internationalised supply chains while smaller firms have more localised, less extended chains (SURF et al 2006). Naturally the type of markets that firms serve affects their location and the importance of national versus global links. Firms serving global markets need to be located near a big airport like Heathrow or ports, while this may not be necessary when firms are serving local markets.

The economic structure of the Northern and the Southern economies is very different. Arguably, growth in sectors that benefit more from agglomeration economies or proximity has been to Southern cities’ advantage. For example, Southern cities show a higher proportion of employment in financial and business services (Map 1). Employment in knowledge-intensive sectors is also higher in Southern cities – within both manufacturing and services sectors (Chart 5).

Map 1. Share of Employment in Financial Intermediation and Business Services (2006)¹



Source: Annual Business Inquiry.

1. Financial intermediation and business services broad definition (includes Sections J and K of SIC03 codes).



Chart 5: 15 Cities with the Highest Shares in Knowledge-Intensive Sectors

Cities	High Tech	Cities	Knowledge-Intensive Business Sectors (KIBS) (Wide def)	Cities	Knowledge-Intensive Business Sectors (KIBS) (Narrow def)
Top 15	2005 Emp %	Top 15	2005 Emp %	Top 15	2005 Emp %
Derby (EM)	11.7	Cambridge (E)	36.0	Reading (SE)	19.1
Aldershot (SE)	8.4	Oxford(SE)	28.2	Aldershot (SE)	18.2
Blackpool (NW)	7.5	Southampton(SE)	27.3	Milton Keynes (SE)	13.4
Portsmouth (SE)	6.1	Milton Keynes(SE)	27.1	Cambridge (E)	13.3
Swindon (SW)	6.1	Reading(SE)	26.6	London (LON)	12.6
Cambridge (E)	5.8	London (LON)	26.4	Bristol (SW)	9.8
Burnley (NW)	5.7	Norwich (E)	24.8	Warrington (NW)	9.8
Hastings (SE)	5.7	Brighton(SE)	23.9	Leeds (Y&H)	8.2
Worthing (SE)	5.5	Bristol (SW)	23.8	Manchester (NW)	8.2
Bristol (SW)	4.9	Aldershot (SE)	23.7	Swindon (SW)	8.0
Reading (SE)	4.4	Leeds (Y&H)	22.8	Southend (E)	7.8
Crawley (SE)	4.4	Bournemouth (SW)	21.9	Oxford (SE)	7.8
Luton (E)	4.4	Worthing (SE)	21.2	Crawley (SE)	7.5
Telford (WM)	4.3	York (Y&H)	20.1	Luton (E)	7.5
Preston (NW)	4.0	Northampton (EM)	19.9	Brighton (SE)	7.4

Source: State of the English Cities Database. See Appendix B for more details. Highlighted Cities in bold are those in the Greater South East.

In addition, the work of Hall and Pain (2006) shows that smaller cities in the Greater South East and London operate as a network linked up through advanced producer services supply chains. This conclusion was reinforced by the Centre for Cities study of London's economic links with the rest of the UK (Lucci and Seex 2007) which showed that domestic trade between London and the rest of the UK is concentrated in the Greater South East.

In contrast, no comparable mechanism would seem to be operating in the North. According to the evidence presented by IPEG et al (2007), based on a study of legal and financial firms, supply chains for business and legal firms in the North are stronger between Northern core cities and London than with the core cities and the smaller areas nearby.

The available evidence seems to suggest that these business links are greater between London and the smaller cities in the Greater South East than between core cities in the North and their hinterland.

“Smaller cities in the Greater South East and London operate as a network”



People: Moving to Match Demand

Another way in which cities economies interact is through the labour market. Many workers are ready to move or commute for the right job. Again, economic and agglomeration theories offer some insights into why people decide to move or commute and which workers are more likely to do so.

Skilled workers are more prepared to travel to match their skills to the appropriate job than less qualified workers as their higher wages (related to their higher skills and productivity) outweigh the costs of travelling. In addition, the nature of their jobs is often more suitable to flexible work arrangements. Finally, the more specialised nature of their skills means that generally there are fewer opportunities that would match their skills and therefore they are more prepared to incur further costs to look for the right match.

Workers will move to buoyant areas or areas nearby from which they can commute if real wages are higher than the wages they could expect elsewhere. This movement of people to areas with higher real wages affects housing and living costs – which go upwards as more people want to work and live there. Thus, people will move until housing and living costs outweigh the benefits of higher nominal wages (Overman et al 2007).

Based on these interactions between agglomeration economies, housing costs and wages, cities can have complementary relationships with one another (Overman et al 2007). In this case the effects of a positive shock in an area (for example, job creation due to new investment by a firm in the business services sector with high returns to scale) would benefit other areas nearby (for example, through the multiplier effects that higher wages have on the local economy). Other types of relationships are identified whereby further growth in successful areas would only result in pulling labour from weaker regions.

It is not only about demand matching supply. There are other factors to bear in mind when it comes to understanding migration and commuting patterns. Issues such as quality of place, life cycle preferences and culture may also play an important role.

Hall and Pain (2006) suggest that travel to work movements in the Greater South East are characterised by a complex network of movements that not only connects London with smaller and medium-sized cities, but also generate interdependencies between smaller areas themselves. Evidence on travel to work movements in the North shows that these are more self-contained within city regions and only embrace certain areas nearby (IPEG et al 2007). Data on commuting for Manchester and nearby areas in Lancashire shows that residents from smaller urban areas, such as Preston, Blackburn, Burnley and Blackpool do not appear to be integrated into the Manchester labour market, despite being quite close in terms of distance and having reasonable transport links (GVA Grimley 2007). This suggests that transport infrastructure and commutability play a key role in strengthening links and ultimately economic growth.

“Skilled workers are more prepared to travel to match their skills to the appropriate job than less qualified workers”



Towards a Better Understanding of Complementary Relationships

This section provides preliminary evidence on the relationships between core cities and areas nearby. Drawing on two contrasting illustrative examples – London/Reading and Manchester/Burnley– it demonstrates that there are at least two different types of relationships between large and medium-sized cities. It then goes on to identify the key factors underlying ‘complementary relationships’ such as the one between London and Reading.

Box 3: Example 1 - Complementary Relations, London – Reading

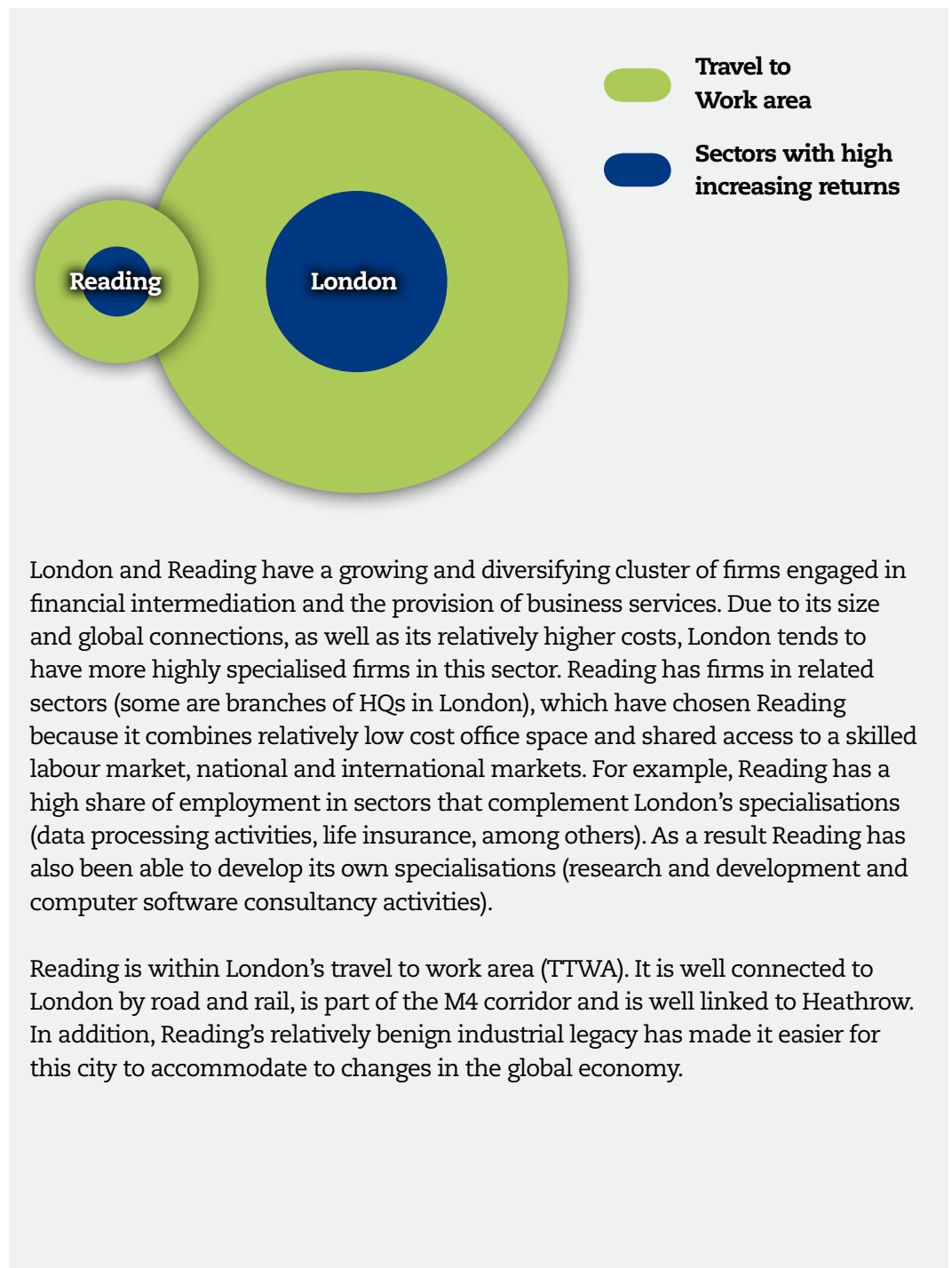




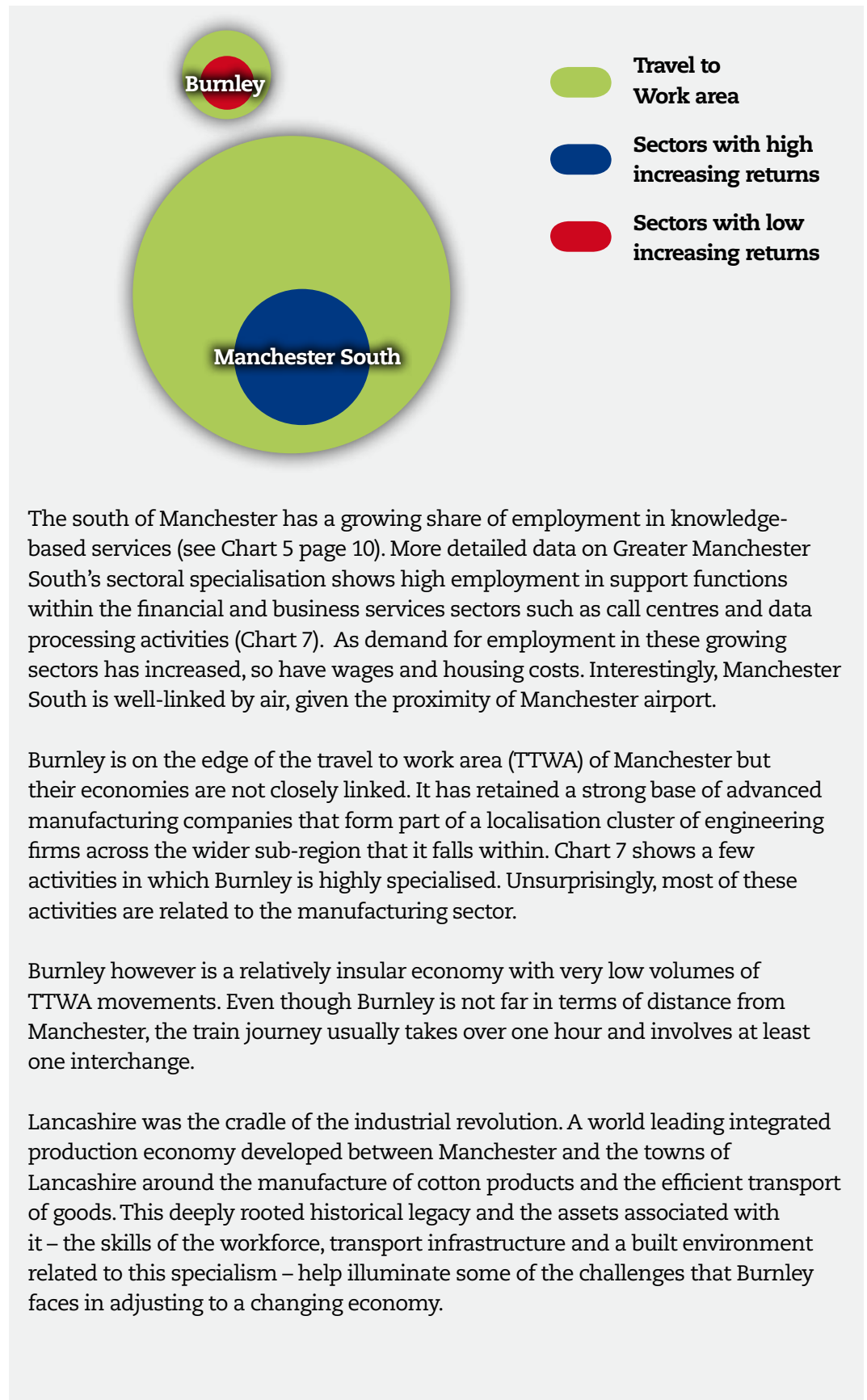
Chart 6: London and Reading Sectoral Specialisation

Sector (4 digit SIC03 code)	Number of employees (2005)	Share of employment with respect to England (Location Quotient)
London		
6712 : Security broking and fund management	46,800	4.4
6523 : Other financial intermediation n.e.c. *	33,200	4.2
9220 : Radio and television activities	38,700	3.8
9211 : Motion picture and video production	12,200	3.6
6713 : Activities auxiliary to financial intermediation n.e.c. *	29,000	2.3
7413 : Market research and public opinion polling	23,800	2.3
7440 : Advertising	30,300	2.3
Reading		
5184 : Wholesale of computers, computer peripheral equipment and software	4,800	11.1
7222 : Other software consultancy and supply	13,600	5.0
5186 : Wholesale of other electronic parts and equipment	1,300	4.3
7415 : Management activities of holding companies	4,200	4.2
6420 : Telecommunications	6,300	3.4
7310 : Research and experimental development on natural sciences & engineering	2,800	3.2
6522 : Other credit granting	1,300	2.4
6601 : Life insurance	1,200	2.3
7230 : Data processing	700	2.2
7413 : Market research and public opinion polling	1,200	2.1

*Source: Annual Business Inquiry. Location Quotients (LQs) provide an indication of sectoral specialisation. We have selected a few sectors where the LQs are double the national average (Oxford Economics 2007). See Appendix C for more details. * n.e.c. not elsewhere classified.*



Box 4: Example 2 - Non-Complementary Relations Manchester- Burnley



“Burnley is on the edge of the travel to work area (TTWA) of Manchester but their economies are not closely linked”



Chart 7: Manchester and Burnley Sectoral Specialisation

Sector (4 digit SIC03 code)	Number of employees (2005)	Share of employment with respect to England (Location Quotient)
Manchester South		
7486 : Call centre activities	5,300	3.0
7240 : Data base activities	1,400	2.8
6601 : Life insurance	4,400	2.5
Burnley		
3615 : Manufacture of mattresses	900	27.6
1754 : Manufacture of other textiles n.e.c. *	500	13.4
1511 : Production and preserving of meat	800	13.2
3611 : Manufacture of chairs and seats	700	8.4
3162 : Manufacture of other electrical equipment n.e.c. *	600	6.8

*Source: Annual Business Inquiry. Location Quotients (LQs) provide an indication of sectoral specialisation. We have selected a few sectors where the LQs are double the national average (Oxford Economics 2007). See Appendix C for more details. * n.e.c. not elsewhere classified.*

Given Burnley’s non-dynamic relationship with Manchester South it has not attracted firms and labour in spite of rising wages, office space and housing costs in Manchester. As a consequence the net effect from growth of knowledge-based employment in Manchester may be a growing divergence with Burnley. Overall, Burnley gains little direct benefit from the growth of knowledge-based employment in Manchester.

The examples of London/Reading and Manchester/Burnley demonstrate that there are at least two different types of relationships between core cities and areas nearby. This relates to both core and neighbouring cities’ asset mix, especially firms and skills, and the ways these have accommodated to a changing economic geography. London has become the UK’s only truly global city, highly specialised in knowledge-intensive financial intermediation and business services, and so more routine functions can be decentralised to lower cost surrounding areas. In the case of Manchester, however, employment growth within the financial and business services sectors seems still to be dominated by support functions and therefore could be at an early stage to develop synergetic relationships within this sector.

“Overall, Burnley gains little direct benefit from the growth of knowledge-based employment in Manchester”



Box 5. A Preliminary Analysis of Economic Convergence

Using the cases of the North West and Greater South East as illustrative examples, we carried out a preliminary analysis of economic convergence between core cities (Manchester and London) and smaller cities nearby, using variables such as travel to work movements, house prices ratios, wage ratios and similarity of economic structure to reflect the level of integration between core cities and neighbouring cities and towns).

This preliminary analysis supports the main argument put forward in this report. There are different types of relationships between core cities and medium-sized cities. Those places that are performing less well in GVA terms (e.g. Burnley in the case of the North West and Hastings in the case of the Greater South East) are also those places that are more isolated from the core. They show no significant travel to work movements (related in many cases to transport infrastructure Charts 8 and 9) and a more dissimilar economic structure in comparison to the core city (Charts 10 and 11).

Chart 8. Greater South East – Commuting between London and Selected Cities

Cities	Proportion of resident employees commuting to London (2004)	Proportion of area's jobs taken by London in-commuters (2004)	Av journey time to London
Hastings	2.1%	0.6%	01:55
Brighton	4.4%	0.8%	01:15
Cambridge	2.8%	1.8%	01:15
Oxford	2.9%	2.6%	01:05
MKeynes	6.0%	2.6%	00:50
Luton	12.6%	6.9%	00:30
Reading	10.1%	5.1%	00:30

Source: ONS, Annual Population Survey and National Rail. See Appendix D for more details.

Chart 9: North West - Commuting between Manchester and Selected Cities (2004)

Cities	Proportion of resident employees commuting to Manchester (2004)	Proportion of area's jobs taken by Manchester in-commuters (2004)	Av journey time to Manchester
Blackpool	1.0%	0.4%	01:20
Burnley	2.6%	0.8%	01:20
Blackburn	3.6%	3.2%	00:50
Preston	2.2%	1.5%	00:45
Warrington	12.5%	8.2%	00:35
Rochdale	30.3%	20.2%	00:30
Bolton	20.3%	11.7%	00:20

Source: ONS, Annual Population Survey and National Rail. See Appendix D for more details.

“There are different types of relationships between core cities and medium-sized cities”



To understand complementary relationships we need to look at both commuting patterns and measures of economic convergence. Interestingly, in the case of Oxford and Cambridge travel to work movements to London do not appear to be as significant as for other cities in the Greater South East. By measures of economic convergence, however, these cities appear to be highly integrated to the London economy.

Chart 10: Greater South East - Economic Convergence

	Share of employment in Knowledge Intensive Business Sectors London = 100 (2005)	Gross weekly pay London = 100 (2005)	Median house price London = 100 (2005)	GVA Change 1995-2004 London = 100	GVA 2004 London = 100	GVA (£) 2004
Brighton	81	74	83	87	62	16,406
Cambridge	137	93	93	96	71	18,644
Hastings	45	60	58	56	45	11,865
Luton	71	71	61	78	65	17,024
Milton Keynes	99	81	69	115	98	25,867
Oxford	120	75	98	111	82	21,429
Reading	111	94	87	141	105	27,493
LONDON	100	100	100	100	100	26,262

Source: State of the English Cities and ONS. See Appendix E for more details.

Chart 11: North West - Economic Convergence

	Share of employment in KIBS Manchester = 100 (2005)	Gross weekly pay Manchester = 100 (2005)	Median house price Manchester = 100 (2005)	GVA Change 1995-2004 Manchester = 100	GVA 2004 Manchester = 100	GVA (£) 2004
Blackburn	53	92	67	53	85	13,509
Blackpool	52	97	100	71	74	11,773
Bolton	55	96	83	54	72	11,483
Burnley	37	91	47	83	91	14,506
Preston	64	100	103	83	91	14,506
Rochdale	32	95	79	54	72	11,483
Warrington	87	116	115	113	124	19,766
MANCHESTER	100	100	100	100	100	15,934

Source: State of the English Cities and ONS. See Appendix E for more details.

“To understand complementary relationships we need to look at both commuting patterns and measures of economic convergence”



Conclusion

It is clear that the issue of connectivity between core cities and their neighbouring areas plays a key role in explaining differences in regional economic performance between the North and the Greater South East.

Using London/Reading in the South East and Manchester/Burnley in the North West as examples, this report suggests that the high growth levels experienced by London and its neighbours arise from inter dependent and mutually supportive special networks. These allow the Greater South East to operate as a wider and deeper market for employers and employees, for suppliers and customers and for innovation and specialisation. The fact that growth in the North's core cities does not "spillover" evenly to the smaller cities around them is a product of the absence of such well-developed regional links.

To conclude we set out key policy recommendations that highlight the necessity of building a regional economic development strategy that promotes core city growth, and at the same time enhances physical, economic and social links between these cores and the other cities clustered around them.

Policy Recommendations

In order to develop mutually beneficial linkages between core cities and their neighbours, government agencies should take into account the following policy areas:

- **National government, and especially the Treasury and the Department for Transport, should consider going beyond the conclusions of the Eddington Transport Study (2006).** While improving the capacity of existing infrastructure and tackling urban bottlenecks is critical, there is also a case for investment in new infrastructure linking more isolated towns to regional economic hubs.
- **Regional and pan-regional agencies, such as the Northern Way and RDAs, should promote large urban centres as hubs for growth by channelling resources into key regional assets like transport infrastructure, to ensure that the benefits of core city growth are widely disseminated across the region.** This is especially important in the case of Manchester and Leeds.
- **All cities, large and small, should take advantage of Regional Single Strategies, Multi-Area Agreements and Local Area Assessments to identify areas for collaboration and align their economic development strategies.** In particular, smaller cities should focus on developing specialisations which complement rather than compete with those of the regional hub.

“Smaller cities should focus on developing specialisations which complement rather than compete with those of the regional hub”



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Appendix

Throughout this report cities are defined as primary urban areas (PUAs) - a measure of the physical built-up areas (see Parkinson et al 2006) with a population higher than 125,000 (unless otherwise specified).

A. GVA per capita (Charts 1- 4)

Gross Value Added (GVA) measures the contribution to the economy of each individual producer, industry or sector. It is the value of goods and services produced by an area, sector or producer minus the cost of the raw materials and other inputs used to produce them. It is a key indicator of the state of the whole economy, its wealth and productivity.

Regional Accounts use NUTS (Nomenclature of Units for Territorial Statistics) geographies for consistency with Europe. Total GVA is published to NUTS3 level which includes individual counties and unitary authorities. Labels for NUTS3 areas approximate these to urban areas.

B. Cities with the Highest Shares in Knowledge-Intensive Sectors (Chart 5)

See below the definitions of Knowledge-Intensive Business and High-tech Sectors (State of the English Cities Database).

Knowledge-Intensive Business Services (KIBS) - Narrow definition SIC03 codes

721 : Hardware consultancy

722 : Software consultancy and supply

723 : Data processing

724 : Data base activities

726 : Other computer related activities

741 : Legal, accounting, book-keeping and auditing activities; tax consultancy; market research and public opinion polling; business and management consultancy; holdings

742 : Architectural and engineering activities and related technical consultancy

743 : Technical testing and analysis

744 : Advertising

73 : Research and development

Knowledge-Intensive Business Services (KIBS) - Wide definition SIC03 codes

65 : Financial intermediation, except insurance and pension funding

66 : Insurance and pension funding, except compulsory social security

67 : Activities auxiliary to financial intermediation

7011 : Development and selling of real estate

7032 : Management of real estate on a fee or contract basis

7210 : Hardware consultancy

7221 : Publishing of software

7222 : Other software consultancy and supply



7230 : Data processing

7240 : Data base activities

7411 : Legal activities

7412 : Accounting, book-keeping and auditing activities; tax consultancy

7413 : Market research and public opinion polling

7414 : Business and management consultancy activities

7415 : Management activities of holding companies

7420 : Architectural and engineering activities and related technical consultancy

7430 : Technical testing and analysis

7440 : Advertising

7450 : Labour recruitment and provision of personnel

803 : Higher education

Knowledge industries - High-tech SIC03 codes

73 : Research and development

2416 : Manufacture of plastics in primary forms

2417 : Manufacture of synthetic rubber in primary forms

2441 : Manufacture of basic pharmaceuticals

2442 : Manufacture of pharmaceutical preparations

3001 : Manufacture of office machinery

3002 : Manufacture of computers and other information processing equipment

3110 : Manufacture of electric motors, generators and transformers

3120 : Manufacture of electricity distribution and control apparatus

3162 : Manufacture of other electrical equipment not elsewhere classified

3210 : Manufacture of electronic valves and tubes and other electronic components

3220 : Manufacture of television and radio transmitters and apparatus for line telephony and line telegraphy

3310 : Manufacture of medical and surgical equipment and orthopaedic appliances

3320 : Manufacture of instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process control equipment

3330 : Manufacture of industrial process control equipment

3340 : Manufacture of optical instruments and photographic equipment

3530 : Manufacture of aircraft and spacecraft

7210 : Hardware consultancy

7260 : Other computer related activities



C. London/Reading, Manchester/Burnley Sectoral Specialisation (Charts 6 and 7)

We have used location quotients (LQs) as a measure of sectoral specialisation. LQs represent the ratio between a city's share of employment in a particular sector and the share of employment in that sector for the English average. We only included sectors where location quotients are double the national share and the number of employees is greater than 1,000 for core cities and greater than 500 for smaller cities.

London 4-digit SIC03 CODES	LQs (>2)	Employees (>1000)
7521 : Foreign affairs	5.12	1,100
6511 : Central banking	5.02	1,500
9212 : Motion picture and video distribution	4.54	3,700
6712 : Security broking and fund management	4.43	46,800
6523 : Other financial intermediation not elsewhere classified	4.24	33,200
9240 : News agency activities	4.02	8,000
2214 : Publishing of sound recordings	3.90	2,400
9220 : Radio and television activities	3.84	38,800
9211 : Motion picture and video production	3.58	12,200
6210 : Scheduled air transport	3.44	42,500
6711 : Administration of financial markets	3.18	1,600
1110 : Extraction of crude petroleum and natural gas	3.00	2,500
6321 : Other supporting land transport activities	2.89	32,100
9112 : Activities of professional organisations	2.83	8,700
2231 : Reproduction of sound recording	2.76	1,400
2213 : Publishing of journals and periodicals	2.73	25,400
2211 : Publishing of books	2.61	12,300
9120 : Activities of trade unions	2.52	3,300
9231 : Artistic and literary creation and interpretation	2.34	23,800
5145 : Wholesale of perfume and cosmetics	2.34	6,800
6713 : Activities auxiliary to financial intermediation nec	2.33	29,100
7413 : Market research and public opinion polling	2.31	23,800
7440 : Advertising	2.31	30,300
7012 : Buying and selling of own real estate	2.27	1,700
7133 : Renting of office machinery and equipment including computers	2.16	1,400
9232 : Operation of arts facilities	2.16	5,100
6010 : Transport via railways	2.10	16,600
9111 : Activities of business and employers organisations	2.08	4,700
2212 : Publishing of newspapers	2.05	13,200

Reading 4-digit SIC03 CODES	LQs (>2)	Employees (>500)
1110 : Extraction of crude petroleum and natural gas	23.91	1,100
4022 : Distribution of gaseous fuels through mains	14.49	2,000
5184 : Wholesale of computers, computer peripheral equipment and software	11.08	4,800
9001 : Collection and treatment of sewage	7.42	1,300
4012 : Transmission of electricity	7.16	600
7250 : Maintenance and repair of office, accounting and computing machinery	5.17	1,100
4100 : Collection, purification and distribution of water	5.07	1,000



7222 : Other software consultancy and supply	5.04	13,600
5114 : Agents involved in the sale of machinery, industrial equipment, ships and aircraft	4.36	561
5186 : Wholesale of other electronic parts and equipment	4.27	1,300
7415 : Management activities of holding companies	4.22	4,200
6420 : Telecommunications	3.36	6,300
3120 : Manufacture of electricity distribution and control apparatus	3.33	900
7310 : Research and experimental development on natural sciences and engineering	3.25	2,800
5143 : Wholesale of electrical household appliances and radio and television goods	3.07	1,100
7260 : Other computer related activities	2.98	2,200
7110 : Renting of automobiles	2.80	800
5146 : Wholesale of pharmaceutical goods	2.77	1,200
5552 : Catering	2.42	4,800
6522 : Other credit granting	2.40	1,300
6601 : Life insurance	2.32	1,200
5139 : Non-specialised wholesale of food, beverages and tobacco	2.24	1,400
7230 : Data processing	2.20	700
7413 : Market research and public opinion polling	2.14	1,200

Manchester South 4-digit SIC03 CODES	LQs (>2)	Employees (>1000)
8041 : Driving school activities	6.81	1,100
1561 : Manufacture of grain mill products	5.39	1,900
6220 : Non-scheduled air transport	5.11	2,100
5141 : Wholesale of textiles	4.14	1,800
6323 : Other supporting air transport activities	3.14	3,400
5139 : Non-specialised wholesale of food, beverages and tobacco	3.04	6,400
7486 : Call centre activities	3.00	5,300
5142 : Wholesale of clothing and footwear	2.88	3,300
7240 : Data base activities	2.75	1,400
6321 : Other supporting land transport activities	2.54	5,100
6601 : Life insurance	2.51	4,400
7110 : Renting of automobiles	2.17	2,100

Burnley 4-digit SIC03 CODES	LQs (>2)	Employees (>500)
3615 : Manufacture of mattresses	27.6	900
1754 : Manufacture of other textiles not elsewhere classified	13.4	500
1511 : Production and preserving of meat	13.2	800
3611 : Manufacture of chairs and seats	8.4	700
3162 : Manufacture of other electrical equipment nec	6.8	600
2523 : Manufacture of builders ware of plastic	4.7	900
2811 : Manufacture of metal structures and parts of structures	4.0	700
3530 : Manufacture of aircraft and spacecraft	3.7	1,100
2524 : Manufacture of other plastic products	3.1	600
2852 : General mechanical engineering	2.8	900
8022 : Technical and vocational secondary education	2.1	900



D. Commuting (Charts 8 and 9)

The proportion of resident employees commuting to London and Manchester is calculated as the proportion of out-commuters to London/Manchester PUA to the total number of resident employees.

The proportion of areas' jobs taken by London/Manchester in-commuters is calculated as the proportion of in-commuters from London/Manchester to the total number of workplace employees.

Average journey time to London/Manchester is calculated as an average of times for first five trains to all Manchester or London stations from 7.30 on 03/03/2008.

E. Economic Convergence (Chart 10 and 11)

The share of employment in knowledge-intensive business sectors (wide definition, for details see Appendix A) measures the share of employment in this sector for different cities with respect to London in the Greater South East (Chart 11, London =100) and Manchester in the North West (Chart 12 Manchester=100). It indicates whether cities are complementary in this sector.

Gross weekly pay (residence based) and average (median) house prices show the relative value of wages and housing in different places in the Greater South East with respect to London (London=100) and places in the North West with respect to Manchester (Manchester=100). These variables provide an indication of how integrated these economies are.

See A (this Appendix) for a definition of Gross value added (GVA). We have calculated GVA change from 1995 to 2004 for cities in the Greater South East and North West with respect to London and Manchester respectively to provide an indication of whether their economies have followed similar patterns of economic growth. We have also included GVA data for 2004 (both as an index and in nominal value) to show where these cities stand today with respect to the regional hub.