Version 29/02/2012

ESP N

The ESPON 2013 Programme

TIGER
Territorial Impact of Globalization for Europe and its Regions

Applied Research Project 2013/1/1

Draft Final Scientific Report

Working paper 6

"The London Case Study"
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Introduction

Cities have come to be recognised as key drivers of the world economy in the twenty first century. They have become the dominant locations for human habitation, economic and social reproduction worldwide and the number of very large cities in the world - described variously in the literature as mega-cities, mega-city-regions, etc. - is increasing, especially in emerging economies, including China (Pain, 2011a). In the context of these developments, this case study is intended to provide insights into the contribution of urban agglomeration to Europe's sustainable growth in a changing and competitive global economic context.

Knowledge-intensive business services and their ICT-facilitated global networks have been recognised as having a critical role in boosting Europe's global economic competitiveness since the inception of the Lisbon agenda in the year 2000 (EC, 2000). Major cities London and Paris have been identified as having a special role as European global gateways which are highly integrated in such networks (Pain, 2011b). However, the role of agglomeration and the specialized functions associated with their city-based business services clusters have largely been overlooked in EU spatial development initiatives.

Instead, dominant policy priorities for investment projects have focused on the supposed link between sustainable development, territorial cohesion and spatial polycentricity at EU-wide, regional and metropolitan scales in the 1999 *European Spatial Development Perspective* (ESDP). The *North West Europe Spatial Vision* (2000) which has provided the context for urban spatial planning in the European economic 'core' during the past decade, has thus specifically discouraged further growth of major agglomerations and has aimed to rebalance the spatial development of the EU territory (Pain, 2008b).

By the year 2009, the Barca Report indicated a softening of the EU stance on the concept of polycentricity, suggesting that it should be recognized as a descriptive, as opposed to a normative/prescriptive, policy device. Further, CEC (2010) has suggested there is now a tacit acceptance on the part of the European Commission that agglomeration is important for economic growth (a focus of the ESPON, *CAEE: The Case for Agglomeration Economies in Europe* project),

> "There are gains from such concentration in terms of the increasing returns from agglomeration and from the clustering of particular activities in specific locations … This is reflected in the high level of GDP per head, productivity, employment and research and innovation activity relative to the national average in capital cities and in most other densely populated conurbations." (p. 5).

Yet, in contradiction, the report also states that

> "… to ensure a balanced and sustainable territorial development of the EU as whole, strengthening its economic competitiveness and capacity for growth while respecting the need to preserve its natural assets and ensuring social cohesion. This implies avoiding excessive concentrations of growth and facilitating the access to the increasing returns of agglomeration in all territories." (p. 6.)

Ongoing confusion about the relationship between the arrangement of built space, the economic functions of cities of different sizes and their roles in cross-border business

networks, illustrates the importance of engaging with this question in the present case study to inform a longstanding policy conundrum.

According to Flyvjberg (2011, p.301), case studies focus on an "individual unit," referred to by Stake as a "functioning specific" or "bounded system." (2008, pp. 119–120), thus boundaries must be set for the individual case unit. However, as the ESPON *FOCI* project has demonstrated, Europe's global context is increasingly important to its internal development capacities because "city development is strongly embedded in processes happening at other scales" (Ludlow 2011). Hence this case study will examine the multi-scale spaces, functional and nodal capacities of London in advanced business services networks and city real estate investment flows important for the effective pursuit of Europe 2020 sustainable growth objectives.

1.0 The City of London business cluster

The Loughborough and Manchester University ESRC/Corporation of London-funded 2001-2002, *City of London and Research into Business Clusters* study investigated the cluster ecology, sustainability and global agglomeration economies of the dense financial and business services cluster in the City of London, (Taylor *et al*., 2003).

The morphology of present-day clustering in the 'Square Mile' (the City's longstanding financial cluster) reflects its historical development process. The locations of sectors, firms and institutions continue to reflect their needs for proximity to and face-to-face contact with linked service suppliers and clients and, increasingly, for accessibility to specialized staff in terms of their proximity to clustered 'City' transport nodes.

Access to labour has become a key international clustering driver, helping to sustain City centralities and agglomeration. The development of the more recent Canary Wharf site has illustrated the challenges posed for firms by relocation across even a relatively short distance (Taylor *et al.* 2003).

In 2008, the City cluster consisted of 154 advanced financial and linked business (producer) services firms (APS) headquartered all over the world (table 1 and working paper 3). The importance of access to transnational specialized labour, innovation, depth of infrastructure including ICT, finance capital and specialized service suppliers have become at least, if not more, important locational factors than proximity to customers.

Table 1: APS present in London
Source: Authors, data supplied by the
Globalization & World Cities (GaWC) Research
Network: http://www.lboro.ac.uk/gawc/

APS sectors	Present in London	HQ	Total firms
Financial Services	61	8	75
Accountancy	25	16	25
Advertising	22	2	25
Law	24	8	25
Management consultancy	22	0	25
Total firms present	154	34	175

Figures 1-3 show the cluster morphology mapped for banks, auxiliary financial services and insurance which have especially synergistic functional relationships. The bottom map in each figure shows the firms within the total survey population for each sector which are densely clustered. The maps illustrate the strong cluster dynamic of banks, auxiliary financial services and insurance (a second cluster of international banks in London's 'West End' engages with the foreign private client banking market).

The international and multi-sector constitution of the City of London cluster means that transnational interactions and transactions are taking place within the space of the City which is a node for flows of labour, information, business, capital etc (Pain, 2011c). This means that this dense space has developed a critical mass of commercial office real estate for international corporate businesses and an international investment asset (Lizieri, 2009).

Figure 4 shows the dramatic growth in foreign ownership of London property space between the turn of the century and the year 2008 (see also Lizieri and Kutsch, 2006). London's population has grown by approximately one million people during the past two decades however it has a small resident population and specialized institutions focusing on the sustainability of its global role (Taylor *et al.* 2003).

Global capital invested in its compact spaces, flows into London, from London, and within London, giving it a nodal role and a vital need for local and international accessibility for through-flows of city workforce and customers extending far beyond its administrative borders.

Figure 1: Clustering of banks
Source: Taylor *et al.,* 2003.
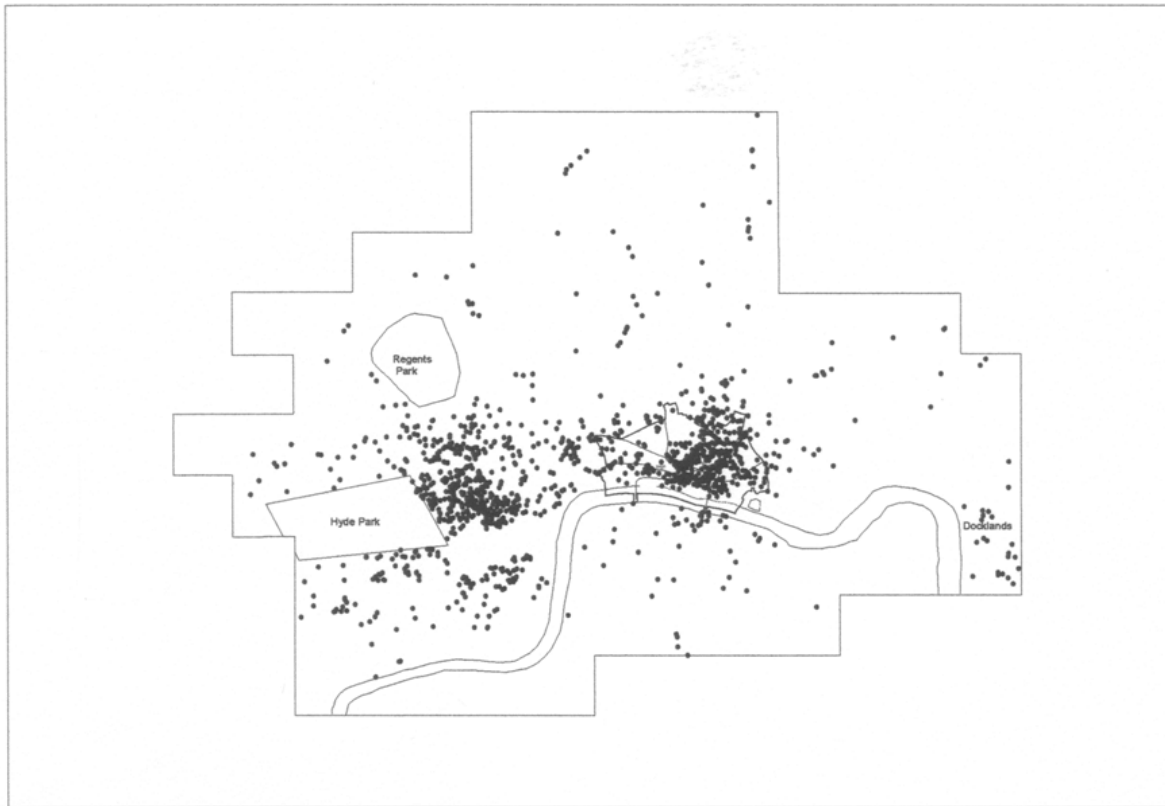
Figure 2: Clustering of auxiliary financial services

Source: Taylor *et al.,* 2003.

Figure 3: Clustering of insurance
Source: Taylor *et al.,* 2003.

Figure 4: Foreign ownership of London offices
Source: Lizieri *et al.*, 2011 (see also working paper 9).

Non-UK Ownership of City of London Offices
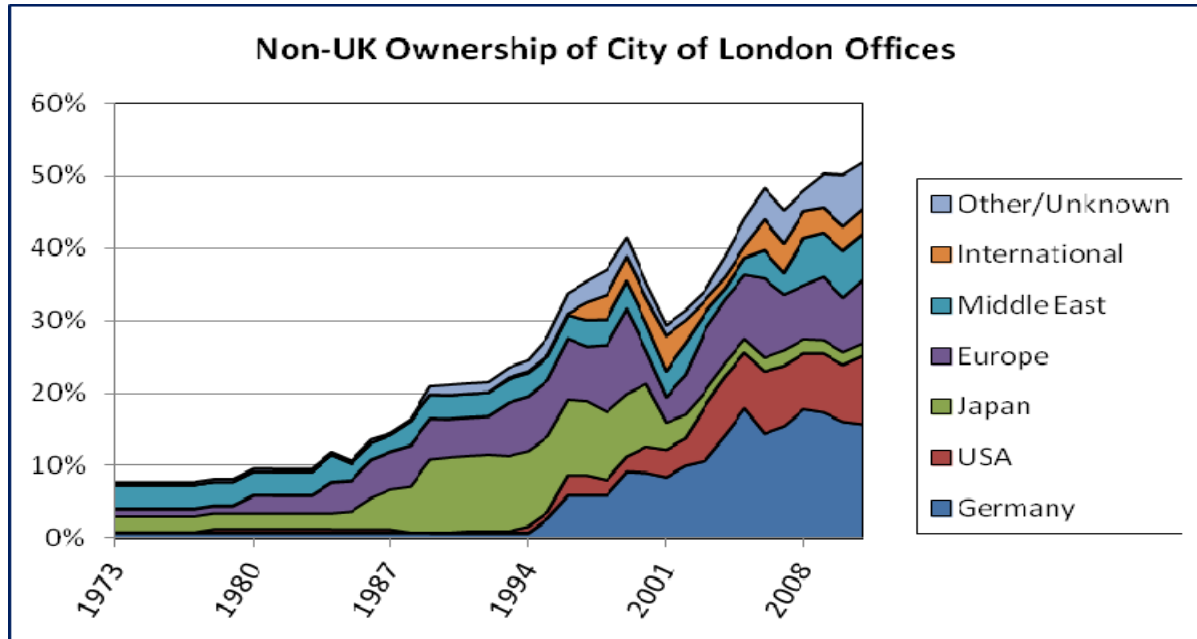
2.0 The London global mega-city region

The 2003-06 North West Europe INTERREG IIIB Polynet*: Sustainable Management of European Polycentric Mega-City Regions* study led by Hall and Pain (2006), has uniquely extended the spatial frame of reference for the City of London study. Its focus has been the global city expansion process beyond metropolitan administrative boundaries. The study has

been unique in examining the concept of polycentricity in the context of the functional development of North West European mega-city regions.

The research has been informed by network analysis of the operational structures and practices of APS firms at mega-city region, national, European and global scales. In addition, the spaces of flows in associated email, commuting and business travel were studied in order to inform understanding of the relationship between regional polycentricity and economic competitiveness.

The results showed that functional polycentricity, critical for the vibrancy of Europe in a global economic context, does not follow from development patterns based upon the normative policy ideal of morphological polycentricity.

The eight highly urbanised city regions studied, exhibit differing degrees of morphological polycentricity, yet just one city in each region was found to have a specialized international (European and global scale) business network function. Furthermore, an extensive South East England mega-city region around London was found to be functionally polycentric in advanced financial and business services networks even though London appears to dominate a surrounding region of much smaller towns and cities (figures 5 and 6; Pain, 2008).

In fact, Milton Keynes, Swindon, Cambridge and Oxford were amongst the 10 fastest growing cities by population alongside much larger UK Core Cities such as Leeds, between 1999 and 2009 (Centre for Cities, 2011). Yet classic morphologically balanced polycentric urban regions in terms of population size, such as the Rhine-Ruhr, Germany, and The Randstad, Netherlands, exhibited weaker mega-city region functional polycentricity in global business services networks.

Morphological polycentricity was also shown to present a challenge for sustainable development in all regions because associated criss-cross mobility cannot be supported efficiently by focused investment in public transport infrastructure and services. Cross-cutting traffic flows by car present a major challenge to environmentally sustainable polycentric development at this spatial scale (figure 7).

Figure 5: South East England mega-city region population 1981–1991–2001
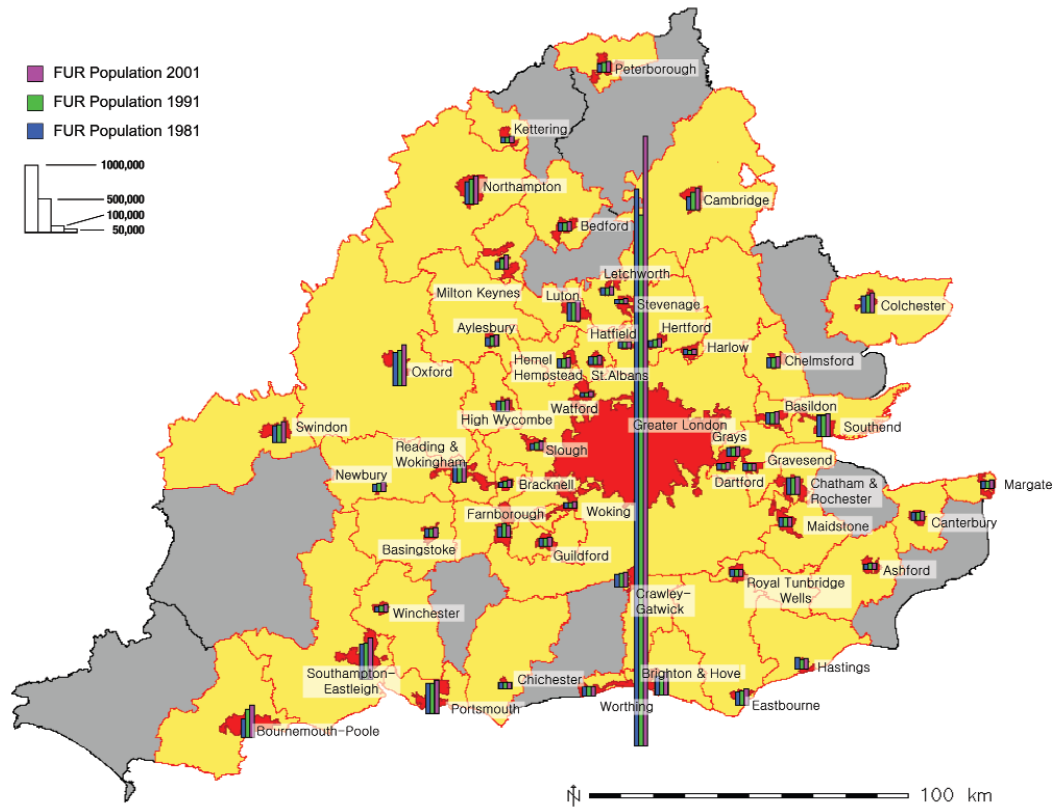Source: Hall and Pain, 2006.

Figure 6: Advanced producer services networks - South East England
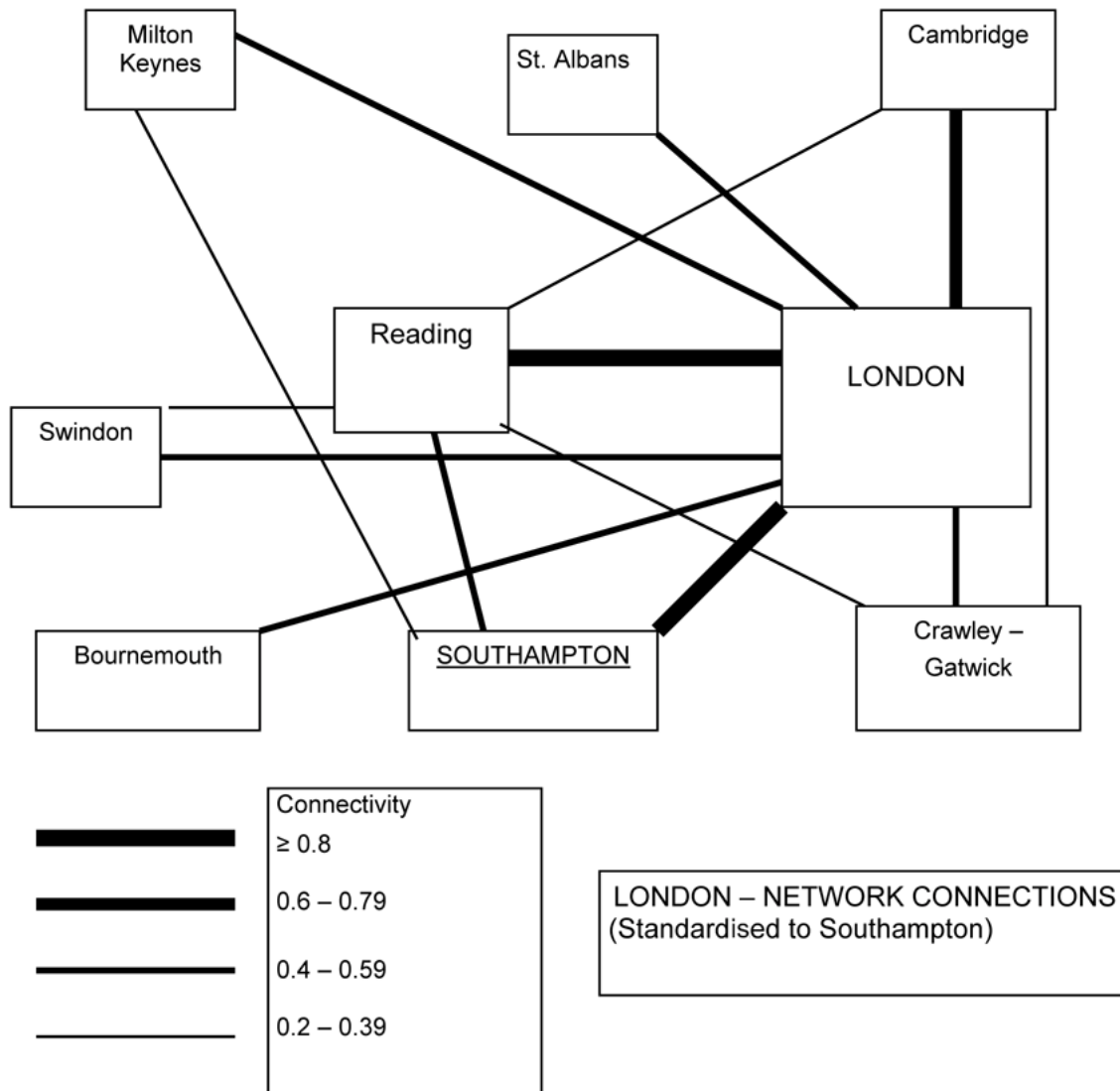Source: Pain, 2006.

Figure 7: The Randstad commuting flows
Source: Werff *et al.,* 2005.
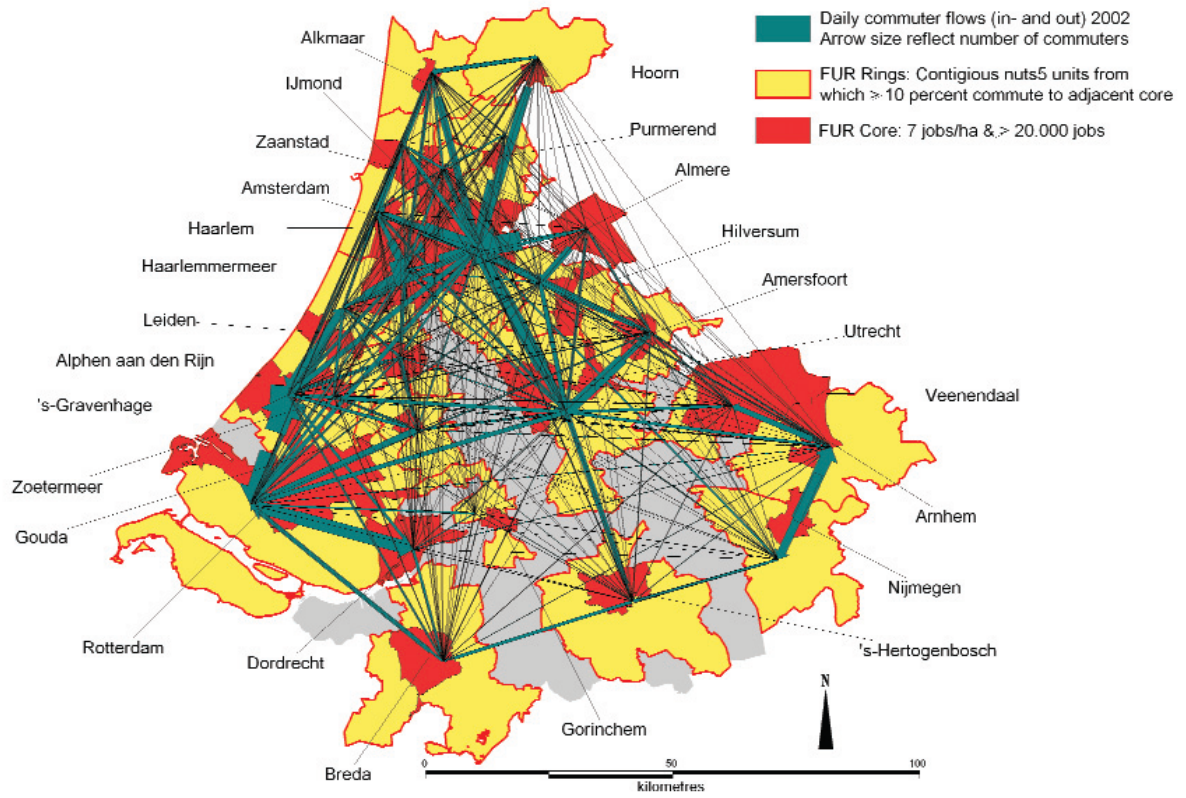
3.0 London's UK spatial relations

Two studies have examined relations between the South East mega-city region and other UK cities and regions.

The 2008 *Project to Map and Measure the Absorptive Capacity of UK cities and Regions* funded by the National Endowment for Science, Technology and the Arts, studied the external relations and knowledge network connectivity of UK statutory regions associated with APS, academic/scientific, internet and air flows (Mahroum *et al.,* 2008). The aim was to assess the capacity of regions to innovate locally and thus to promote UK-wide development in the knowledge-based global economy.

The data showed the dominance of the London metropolitan region's external network connectivity. The findings indicated that the ability of regions to participate actively in global networks is associated with high density concentrations of specialized knowledge-intensive firms, research universities and high volume flow infrastructures - built form, ICT and transportation:

> "density – of population, advanced business services, research universities and infrastructures – associated with metropolitan agglomeration, would seem to be a key determinant of regional 'knowledge access' capacity." (Mahroum *et al.,* 2008, p.64).

Figure 8 shows the way in which advanced financial and business services networks are interconnecting UK cities irrespective of arbitrary statutory regional boundaries.

The 2010 *Reading Diamond local economic assessment* later examined the spatial relations of a functional urban region within the South East England mega-city region, the Reading Diamond (Crampton *et al.,* 2010).

The study found that the service network connectivity of the Reading Diamond is not limited to relations within the M4 corridor or the South East mega-city region, but extends to intensive relations with larger UK urban centres, some of which have core city status (Reading is classified as a town, not even a city). Figure 9 shows the APS firms included in the survey.

The economic vibrancy of APS multi-sector clustering (not found in morphologically polycentric North-West European regions) in the 'Diamond' area is stimulated and deepened by mergers and acquisitions as well as by the organic growth of local firms, all supported by excellent regional, national and international communications. Intensive Reading Diamond service network connectivity is associated with business agglomeration and face-to-face contact. In spite of developments in ICT, staff the incidence of 'telecommuting' was

therefore insignificant albeit virtual communications were used when possible for distance

business communications.

Figure 8: The UK advanced producer services space economy, 2006
Source: Taylor *et al.*, 2009.
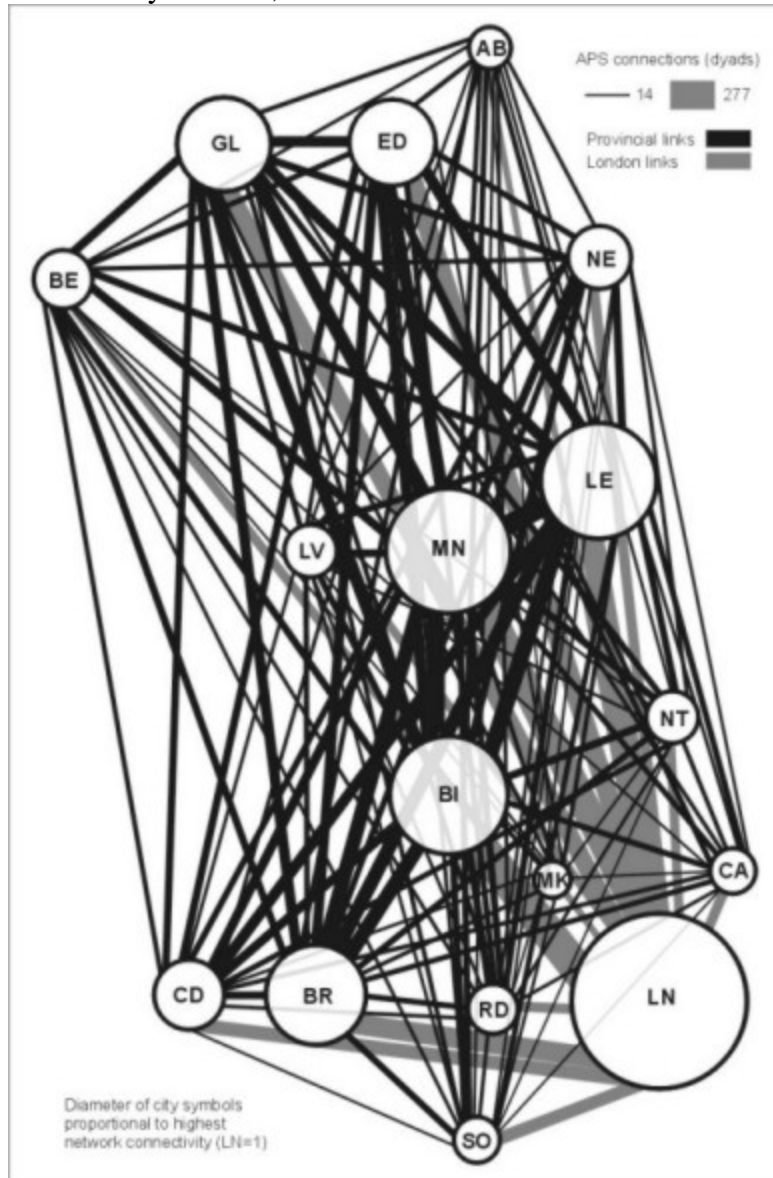
Figure 9: Map showing the number of APS firms surveyed by postcode
Source: Crampton *et al.,* 2006.
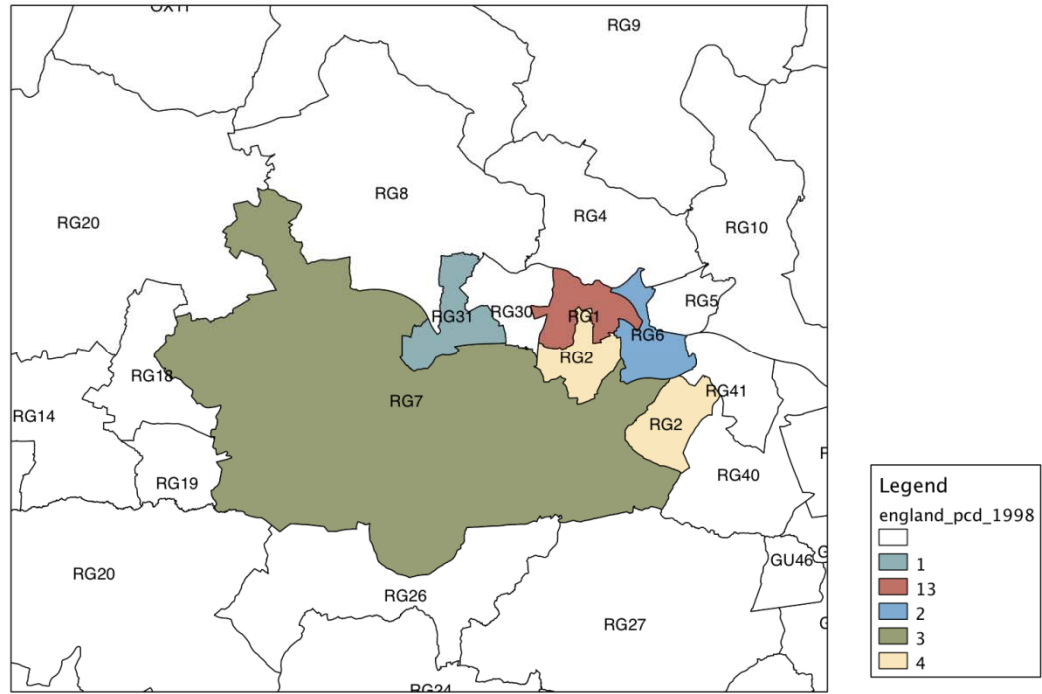
4.0 London's international spatial relations

The left-hand columns of table 2 list the top twenty cities across the world that were all well connected to London through APS organizational networks in the year 2008. The right-hand columns show the cities that were well connected to London just by the important global city APS cluster sub-group, banking/financial services (FS).

The London Dyad Index (LDI – see working paper 3 on dyadic city relations) for APS and for FS is calculated as a proportion of the strongest link among all direct connections to London; the index scale ranges from 0 to 100, where 100 indicates the most city connected to London among all cities connected to London.

London's strongest links for all APS, and for FS also, are with New York (ranked first). Pacific Asia cities are then especially well linked to London, especially by FS networks: Hong Kong (APS 2: FS 2); Singapore (APS rank 4; FS rank 3), Tokyo (APS rank 5; FS rank 4), Shanghai (APS rank 6; FS rank 5), Beijing (APS 7; FS rank 8) and Sydney (APS rank 8; FS rank 6). The only non-Pacific Asia region London dyad in the top eight ranking is Paris (APS 3; FS 7).

It is interesting to note that the dyad indices show that London is more connected to all other cities listed by FS than by APS in general.

Table D in the appendix, shows the percentage division of the different sectors per year for the five London top dyads. It must be stated however that a high percentage for financial services is to be expected since it was decided to keep representation high while proceeding with the data standardization method (see working paper 3 – "Europe in the world cities network" for further details). The London-New York dyad has the biggest value in every year so that it is always the value referred to. London-New York percentages are the values we can use to compare all the other dyads. For example, the London-Hong Kong dyad, has a strong financial services component, which decreases slightly in 2004 and gets stronger in 2008, accountancy and advertising gain more and more over time, while there are thinning law and management consultancy components. This means that connectivity between London and Hong Kong has changed over time, concentrating principally on financial services and intensifying connectivities through accountancy and advertising.

Table 2: Top 20 WCN cities (APS and FS), 2008
Source: Authors, data supplied by the Globalization & World Cities (GaWC) Research
Network: http://www.lboro.ac.uk/gawc/

Rank	Advanced Producer Services		Financial Services	
	city connected to London	London dyad index (APS)	city connected to London	London dyad index (FS)
1	New York	100.00	New York	100.00
2	Hong Kong	80.30	Hong Kong	98.72
3	Paris	78.34	Singapore	85.92
4	Singapore	71.29	Tokyo	82.45
5	Tokyo	68.92	Shanghai	77.88
6	Shanghai	65.40	Sydney	77.70
7	Beijing	64.82	Paris	77.51
8	Sydney	62.10	Beijing	70.57
9	Milan	60.83	Madrid	70.02
10	Madrid	58.46	Milan	65.81
11	Brussels	58.06	Seoul	65.63
12	Moscow	56.67	Toronto	65.45
13	Frankfurt	53.21	Taipei	60.51
14	Toronto	52.63	Frankfurt	59.23
15	Seoul	50.66	Mumbai	58.87
16	Chicago	50.26	Zurich	58.32
17	Mumbai	49.22	Brussels	54.48
18	Warsaw	47.26	Dublin	54.30
19	Amsterdam	47.14	Amsterdam	54.11
20	Zurich	46.79	Moscow	54.11

5.0 London's European spatial relations

After Paris, London's top EU APS links are with Milan (9th), Madrid (10th), Brussels (11th), Frankfurt (13th), Warsaw (18th), Amsterdam (19th) and Zurich (20th). The lower ranking of most EU city links for FS surprisingly include London-Frankfurt (14th).

The graph represented in figure 10 shows a 2008 APS 'Contemporary Mappa Mundi' (Vinciguerra et al., 2010) for   European cities produced by applying a spring embedding algorithm to the data. The position of cities indicates their network relations and centrality within Europe when geographical distance is not considered. Euclidean distances between the city nodes are proportional to the graph distances and cities belonging to the same EU country. This representation shows the global connectivity of Member States (denoted by different colours for nodes) of the EU territory with the most central states in the network located in the core of the system. The size of both the nodes and their city names are proportional to the Gross Connectivity index (GNI) calculated for the European network; the bigger the node, the more central the node is in the system.

UK and German APS network centralities are notable. It also interesting that functional polycentricity at a sub-national territorial scale can be detected for some states based on the quantitative data.

Figure 10: London's APS network position in Europe, 2008
Source: Authors, data supplied by the Globalization & World Cities (GaWC) Research
Network: http://www.lboro.ac.uk/gawc/

6.0 London's position in multi-scale real estate investment flows
Real estate data provided by RCA (Real Capital Analytics, Inc.) include information on the top 1000 commercial real estate deals for each of the years 2007, 2008, 2009 and 2010. Table 3 shows the ranking of office investment deals involving London, sorted by deals involving flows of financial capital from and to London. Interestingly, only four top nodes providing *flows into* London are European cities, whereas six out of the top ten nodes benefiting from flows *out of* London are European cities (for the complete table see appendix, table C).
The biggest top ten real estate investment deals involving flows *into* London are with New York, Dublin, Madrid, Boston, Bonn, Seoul, Frankfurt, Tokyo, Toronto and Singapore.
The biggest top ten real estate investment deals involving flows *out of* London: Madrid, Paris, Brussels, New York, Stockholm, Munich, Manchester, Seoul, Moscow, Amsterdam.
In the graphs shown in figures 11a and 11b, London is represented as an 'Ego-network' where only cities that are directly connected to London through real estate investment in- and outflows are shown with data aggregated for the years 2007-10. The size of flows is proportional to the size of investments going to and from London and the investments among the cities which are connected to London (the latter are not shown in table 3).
Figures 12 and 13 show that London and other UK cities have larger investment inflows than outflows whereas the reverse is the case for New York and many secondary US cities.

Table 3. London Investment flows (in $billion) over the 4-year period 2007-2010
Source: Authors, data supplied by Real Capital Analytics Inc:
http://www.rcanalytics.com

rank	from	to	investment
1	New York	London	6.1661
2	London	Madrid	5.5947
3	Dublin	London	3.9431
4	Madrid	London	3.046
5	Boston	London	2.7456
6	London	Paris	1.4144
7	Bonn	London	1.3125
8	Seoul	London	1.2762
9	Frankfurt	London	1.1732
10	Tokyo	London	1.1369
11	Toronto	London	1.0736
12	Singapore	London	0.9495
13	Newark	London	0.9305
14	Washington	London	0.9207
15	London	Brussels	0.8462
16	Fort Myers	London	0.8339
17	Sydney	London	0.7872
18	Doha	London	0.7715
19	Munich	London	0.7064
20	London	New York	0.662

Figure 11a: London's real estate investment ego-network
Source: Authors, data supplied by Real Capital Analytics Inc: http://www.rcanalytics.com

Figure 11a: London's real estate investment ego-network - geographic
Source: Authors, data supplied by Real Capital Analytics Inc: http://www.rcanalytics.com

Figure 12: Real estate inflow investments, 2010
Source: Authors, data supplied by Real Capital Analytics Inc: http://www.rcanalytics.com
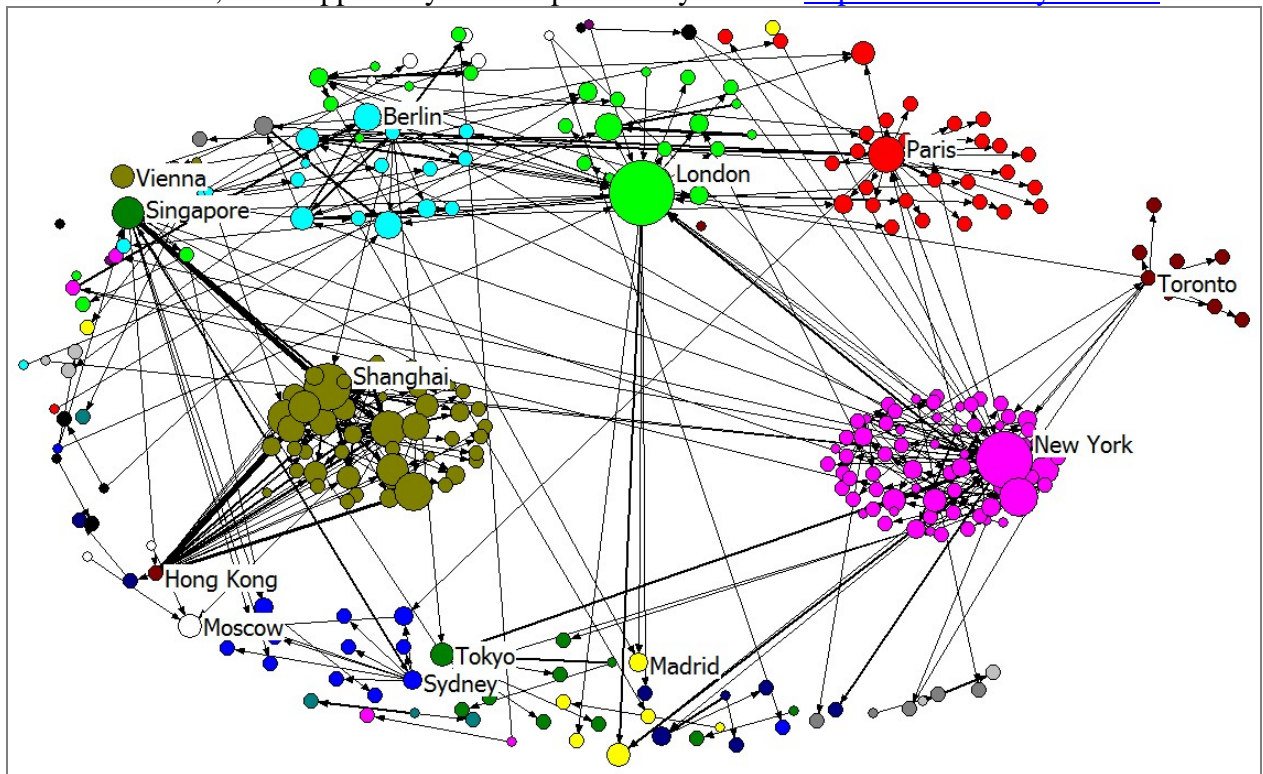
Figure 13: Real estate outflow investments, 2010
Source: Authors, data supplied by Real Capital Analytics Inc: http://www.rcanalytics.com
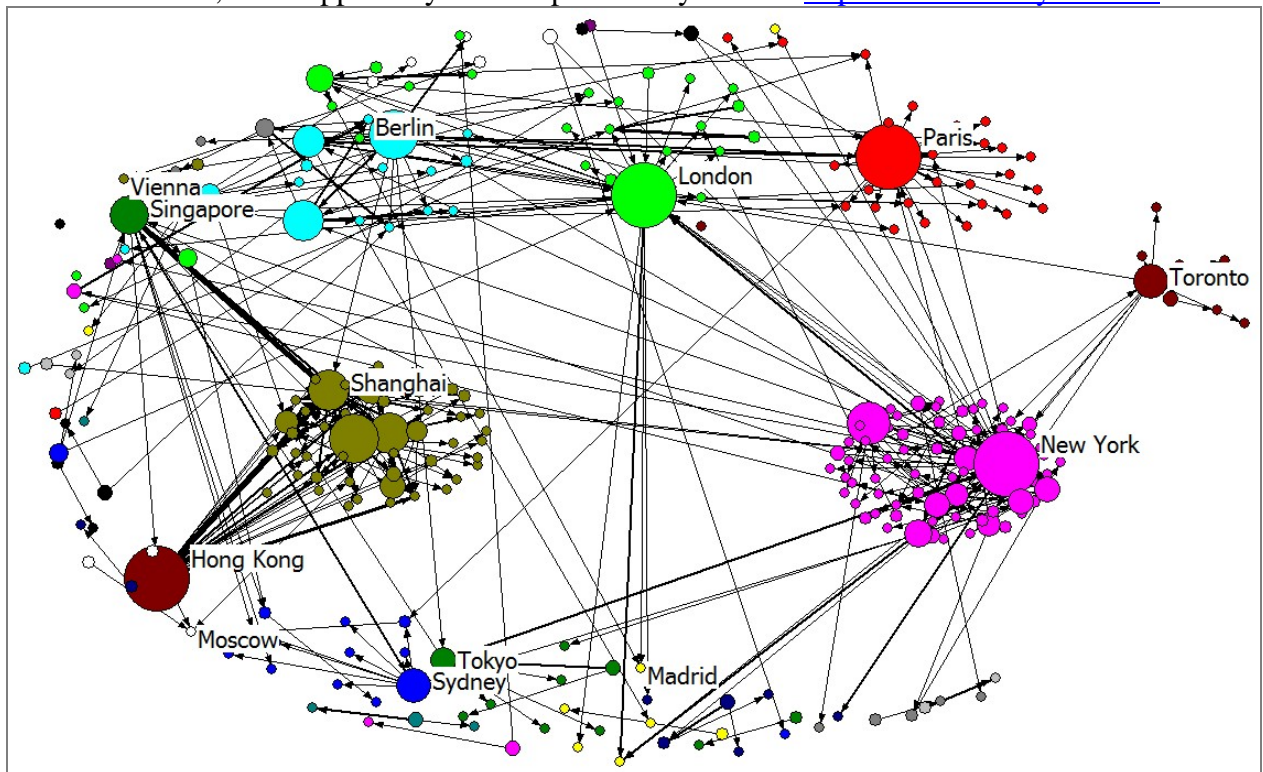
7.0 Conclusion

London can be described as functionally polycentric in advanced financial and business services networks at multiple geographical scales. The concentration of foreign firms using the City of London cluster also generates the multi-scale commercial real estate investment flows noted out from and into as well as within the City. We have focused on the analysis of office investments in this investigation but investments in other sectors, such as retail and housing, are also linked to London's role and function as an international centre.

The functional polycentricity of London clearly reflects its transnational agglomeration economies but these also generate its nodal capacities which link the City cluster to many other cities in the UK, Europe and worldwide, in positive ways. Within the UK, taxes levied from the financial services sector (clustered in the City of London) – employment, VAT, corporation tax etc. – represents an estimated 11.2% of all tax receipts in spite of the effects of the financial crisis and the sector was still the largest corporation tax payer in 2010 (PWC, 2011).

Agglomeration of specialized international functions thus stimulates complementary external relations between cities. A recent report shows that firms located in just eight major European international financial centres (IFCs) - Amsterdam, Dublin, Frankfurt, London, Luxembourg, Madrid, Milan and Paris – provide the bulk of financial services provision in the EU (Europe Economics, 2011). The researchers conclude that

> "Such concentration in financial centres provides better access to capital, talent and markets, and brings a specialisation in the provision of services to global business … this benefit then spills over into higher growth and boosts tax revenues. Location in these centres contributes to economic efficiency and boosts overall EU economic performance." (p. 6).

In addition,

> "… spatial concentration allows complementary specialisation in other business sectors and other geographic regions … This is a general benefit brought about by competition within the single market." (p.6).

These conclusions are in alignment with the results of the 2000-2001 *Comparing London and Frankfurt as World Cities - A Relational Study of Urban Change* qualitative interview study funded by the Anglo-German Foundation for the Study of Industrial Society, which found that European Monetary Union and the creation of the single market were supporting synergistic relations between London and Frankfurt generated by APS global strategies and business practices (Beaverstock *et al.,* 2001; Pain, 2008b).

European policy must respect the functional specialization between cities which is not possible without agglomeration but which is necessary to the global market operations of APS firms in contemporary economic globalization.

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Appendix

Table A: London dyads for Advanced Producer Services (APS) for 2000, 2004 and 2008, calculated on standardized data

Source: Authors, data supplied by the Globalization & World Cities (GaWC) Research Network:
http://www.lboro.ac.uk/gawc/

Rank	2000		2004		2008	
	city connected to London	London dyad index - 2000	city connected to London	London dyad index - 2004	city connected to London	London dyad index - 2008
1	New York	100.00	New York	100.00	New York	100.00
2	Hong Kong	73.68	Hong Kong	75.46	Hong Kong	80.30
3	Paris	69.12	Paris	72.97	Paris	78.34
4	Tokyo	69.04	Tokyo	70.39	Singapore	71.29
5	Singapore	66.72	Singapore	68.17	Tokyo	68.92
6	Chicago	60.06	Brussels	61.07	Shanghai	65.40
7	Los Angeles	57.43	Milan	60.24	Beijing	64.82
8	Frankfurt	56.97	Madrid	59.50	Sydney	62.10
9	Milan	56.81	Frankfurt	59.23	Milan	60.83
10	Brussels	54.18	Chicago	58.76	Madrid	58.46
11	Sydney	54.10	Amsterdam	57.01	Brussels	58.06
12	Amsterdam	54.02	Toronto	55.07	Moscow	56.67
13	Madrid	53.64	Beijing	51.66	Frankfurt	53.21
14	Toronto	53.33	Sydney	51.66	Toronto	52.63
15	Sao Paulo	50.00	Shanghai	51.38	Seoul	50.66
16	San Francisco	48.99	Los Angeles	50.18	Chicago	50.26
17	Zurich	44.20	Sao Paulo	49.72	Mumbai	49.22
18	Mexico City	43.34	Munich	48.62	Warsaw	47.26
19	Washington	43.27	Buenos Aires	46.40	Amsterdam	47.14
20	Taipei	42.34	San Francisco	46.13	Zurich	46.79
21	Bangkok	41.95	Warsaw	46.13	Buenos Aires	46.22
22	Beijing	41.64	Mexico City	45.39	Kuala Lumpur	46.04
23	Buenos Aires	41.41	Budapest	45.20	Bangkok	45.64
24	Jakarta	40.94	Zurich	44.93	Sao Paulo	45.52
25	Melbourne	40.25	Moscow	43.08	Taipei	44.66
26	Stockholm	40.09	Stockholm	42.80	Dublin	43.39
27	Shanghai	39.32	Jakarta	42.16	Stockholm	43.39
28	Mumbai	39.24	Bangkok	41.05	Rome	43.10

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29	Miami	38.93	Hamburg	41.05	Jakarta	43.04
30	Kuala Lumpur	37.23	Melbourne	40.96	Mexico City	42.46
31	Prague	37.00	Washington	40.77	Washington	40.55
32	Moscow	36.69	Dublin	40.59	Budapest	40.15
33	Warsaw	36.53	Kuala Lumpur	40.50	Los Angeles	40.03
34	Atlanta	35.99	Prague	40.41	Istanbul	39.23
35	Barcelona	35.99	Seoul	40.04	Prague	38.99
36	Johannesburg	35.68	Mumbai	39.94	Dubai	38.71
37	Seoul	35.45	Vienna	39.94	Vienna	37.84
38	Dublin	35.14	Berlin	39.76	Lisbon	37.72
39	Munich	35.06	Barcelona	39.39	San Francisco	37.20
40	Dusseldorf	34.98	Dusseldorf	39.39	Melbourne	35.47
41	Vienna	34.60	Taipei	39.21	Munich	34.26
42	Budapest	34.13	Rome	38.56	Johannesburg	34.08
43	Manila	33.90	Santiago	37.92	Boston	33.85
44	Montreal	33.82	Lisbon	36.44	Auckland	33.80
45	Hamburg	33.20	Atlanta	35.70	Santiago	33.68
46	Boston	32.89	Dubai	34.96	Athens	33.28
47	Copenhagen	32.89	Johannesburg	34.87	Caracas	31.95
48	Lisbon	32.66	Miami	34.78	Barcelona	31.72
49	Istanbul	32.28	Dallas	34.41	Atlanta	31.54
50	Auckland	32.12	Montreal	34.41	Luxembourg	30.56
51	Berlin	31.27	Luxembourg	34.23	Manila	30.16
52	Rome	30.50	Athens	33.67	Bucharest	29.87
53	Houston	29.49	Istanbul	32.84	New Delhi	29.87
54	Caracas	29.41	New Delhi	32.56	Tel Aviv	29.29
55	New Delhi	29.41	Bogota	32.38	Copenhagen	28.25
56	Dallas	29.33	Caracas	31.27	Hamburg	28.25
57	Bogota	29.10	Houston	30.44	Oslo	28.25
58	Luxembourg	28.79	Copenhagen	30.17	Dallas	27.90
59	Santiago	28.33	Auckland	29.98	Geneva	27.85
60	Dubai	28.02	Cairo	29.52	Dusseldorf	27.79
61	Cairo	26.01	Vancouver	29.43	Bogota	27.61
62	Vancouver	25.31	Geneva	29.34	Helsinki	27.50
63	Athens	24.92	Boston	29.24	Berlin	27.44
64	Geneva	24.61	Rio de Janeiro	28.60	Bangalore	26.52
65	Oslo	24.23	Manila	27.21	Cairo	26.46

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66	Rotterdam	23.30	Helsinki	26.20	Miami	25.65
67	Rio de Janeiro	22.91	Beirut	24.91	Riyadh	25.65
68	Seattle	22.83	Seattle	24.35	Houston	24.84
69	Minneapolis	22.52	Oslo	24.08	Guangzhou	24.09
70	Denver	22.37	Brisbane	23.71	Montreal	23.45
71	Beirut	22.29	Stuttgart	23.34	Bratislava	23.11
72	Ho Chi Minh City	21.75	Bratislava	22.79	Jeddah	22.93
73	Helsinki	21.44	Lima	22.60	Montevideo	22.53
74	Philadelphia	21.05	Montevideo	22.23	Kuwait	22.18
75	Cologne	20.36	Tel Aviv	22.23	Kiev	22.07
76	Brisbane	20.20	Bristol	21.96	Sofia	21.95
77	Perth	19.27	Philadelphia	21.86	Beirut	21.78
78	Montevideo	18.89	Bucharest	21.77	Lima	21.72
79	St Louis	18.58	San Diego	21.68	Casablanca	20.97
80	San Diego	18.58	Chennai	21.49	Karachi	20.97
81	Calgary	18.19	Birmingham	21.31	Ho Chi Minh City	20.62
82	Stuttgart	18.11	Cape Town	21.31	Brisbane	20.45
83	Antwerp	17.96	Manchester	20.85	Nicosia	19.93
84	Panama City	17.88	Perth	20.85	Vancouver	19.64
85	Bucharest	17.80	Calgary	20.66	Chennai	19.53
86	Hamilton	17.57	Bangalore	20.20	Rio de Janeiro	19.30
87	Manama	17.57	Minneapolis	20.11	Nairobi	19.06
88	Detroit	17.49	Denver	19.83	Seattle	18.72
89	Lima	17.49	Edinburgh	19.56	Manama	18.66
90	Wellington	17.49	Cleveland	19.28	Cape Town	18.60
91	Guangzhou	17.26	Cologne	19.10	Stuttgart	18.20
92	Adelaide	17.11	Guatemala City	18.91	Perth	17.85
93	Karachi	17.11	Nicosia	18.91	Zagreb	17.74
94	Riyadh	16.95	Rotterdam	18.82	Panama City	17.68
95	Bangalore	16.80	Antwerp	18.73	Antwerp	17.50
96	Birmingham	16.80	Port Louis	18.73	Denver	17.50
97	Nassau	16.72	Adelaide	18.27	Shenzhen	17.45
98	Manchester	16.72	Abu Dhabi	18.17	Manchester	16.87
99	Calcutta	16.56	Detroit	18.17	Edinburgh	16.81
100	Jeddah	16.33	Riyadh	17.34	Philadelphia	16.81
101	Cape Town	16.10	Charlotte	17.25	Calcutta	16.75
102	Tel Aviv	16.10	Guangzhou	16.88	Quito	16.75

103	Cleveland	15.87	Lyon	16.88	Santo Domingo	16.46
104	Lyon	15.71	Ho Chi Minh City	16.79	Guatemala City	15.94
105	Bristol	15.56	San Salvador	16.33	Minneapolis	15.94
106	Port Louis	15.56	Colombo	16.14	San Jose (Costa Rica)	15.89
107	Bratislava	15.33	Karachi	16.05	Calgary	15.71
108	Kiev	15.17	Quito	16.05	Ljubljana	15.60
109	Charlotte	15.09	Pittsburgh	15.87	Amman	15.08
110	Portland	15.02	Amman	15.77	Birmingham	15.02
111	Pittsburgh	14.94	Portland	15.41	Port Louis	14.90
112	Nairobi	14.78	Hamilton	15.13	Portland	14.79
113	Nicosia	14.71	Jeddah	15.13	Guayaquil	14.67
114	Chennai	14.47	Kiev	14.94	Lagos	14.62
115	Hanoi	14.24	Lagos	14.94	Detroit	14.50
116	Quito	14.16	Wellington	14.94	Doha	14.33
117	Casablanca	14.01	San Jose (Costa Rica)	14.85	Riga	14.21
118	Indianapolis	13.78	Zagreb	14.85	San Diego	14.21
119	Osaka	13.78	Phoenix	14.58	San Salvador	14.21
120	Abu Dhabi	13.70	Casablanca	14.48	St Petersburg	14.21
121	St Petersburg	13.39	Nairobi	14.30	Rotterdam	14.15
122	Sofia	13.31	Leeds	14.21	Almaty	13.75
123	Monterrey	13.31	Osaka	14.21	Colombo	13.63
124	Kuwait	13.16	Panama City	14.21	Guadalajara	13.63
125	Kansas City	12.93	Calcutta	13.56	Wellington	13.58
126	Edinburgh	12.62	Manama	13.56	Hanoi	13.52
127	Labuan	12.62	Cincinnati	13.47	Tallin	13.34
128	Palo Alto	12.38	Dresden	13.19	Glasgow	13.11
129	Phoenix	12.31	Glasgow	13.19	Dhaka	12.88
130	Glasgow	12.15	Guayaquil	13.10	Adelaide	12.82
131	Guayaquil	12.15	Sofia	13.10	Vilnius	12.82
132	Harare	12.15	St Louis	13.10	Cologne	12.71
133	Lagos	12.15	Hanoi	13.01	Hyderabad (India)	12.71
134	Marseille	12.15	Malmo	13.01	Islamabad	12.36
135	Bilbao	11.92	Nassau	12.64	Monterrey	12.36
136	Zagreb	11.92	Baltimore	12.55	Columbus	12.25
137	Muscat	11.92	Belfast	12.45	Osaka	12.13
138	Amman	11.84	Tunis	12.45	Tunis	11.90
139	Baltimore	11.84	Indianapolis	12.27	Phoenix	11.84

140	Strasbourg	11.76	Guadalajara	12.18	Lahore	11.79
141	San Jose (Costa Rica)	11.69	Palo Alto	12.08	Bristol	11.73
142	Rochester	11.69	Christchurch	11.90	Cleveland	11.73
143	Leipzig	11.61	Durban	11.90	Leeds	11.73
144	Tunis	11.53	Southampton	11.81	Lyon	11.50
145	San Salvador	11.53	Turin	11.62	Tampa	11.38
146	Almaty	11.38	Marseille	11.53	Tegucigalpa	11.21
147	Guatemala City	11.38	Kuwait	11.44	La Paz	11.09
148	Leeds	11.38	Tallin	11.44	Baltimore	11.03
149	Asuncion	11.22	St Petersburg	11.35	Kansas City	10.80
150	Valencia	11.15	Lille	11.16	Accra	10.75
151	Abidjan	10.99	Bordeaux	11.07	Belgrade	10.63
152	Cincinnati	10.91	Dar es Salaam	10.98	Canberra	10.34
153	Dresden	10.84	Canberra	10.79	Hamilton	10.05
154	San Jose (CA)	10.84	Leipzig	10.79	Pittsburgh	10.05
155	Gothenburg	10.76	Belgrade	10.61	Georgetown (Cayman)	9.99
156	Tampa	10.53	Utrecht	10.61	St Louis	9.59
157	Guadalajara	10.45	Tampa	10.52	Indianapolis	9.53
158	Santo Domingo	10.45	Accra	10.42	Asuncion	9.42
159	Colombo	10.29	Harare	10.42	Charlotte	9.42
160	Hartford	10.29	La Paz	10.42	Harare	9.07
161	Accra	9.98	Riga	10.33	Ottawa	9.07
162	Lahore	9.83	Vilnius	10.33	Labuan	8.95
163	Lusaka	9.83	Porto Alegre	10.24	Managua	8.95
164	Dhaka	9.60	Seville	10.24	Bologna	8.72
165	Windhoek	9.60	Cardiff	10.15	Nanjing	8.72
166	Riga	9.60	Edmonton	10.15	Nassau	8.61
167	Utrecht	9.44	Almaty	10.06	Lausanne	8.55
168	Columbus	9.37	Lahore	10.06	Abu Dhabi	8.43
169	Buffalo	9.29	Santo Domingo	10.06	Las Vegas	8.43
170	Lille	9.29	Brazilia	9.96	Tianjin	8.43
171	Edmonton	9.21	Labuan	9.96	Belfast	8.38
172	Belo Horizonte	9.13	Norwich	9.87	Richmond	8.38
173	Durban	9.13	Asuncion	9.78	San Jose (CA)	8.32
174	Ottawa	9.13	Gaborone	9.78	Dar es Salaam	8.26
175	Richmond	9.06	Dhaka	9.69	Newcastle	8.26
176	Turin	8.98	Doha	9.69	Lusaka	8.15

177	Nottingham	8.98	Gothenburg	9.69	Gaborone	8.09
178	Bordeaux	8.90	Liverpool	9.50	Quebec	8.09
179	Islamabad	8.90	Muscat	9.41	Christchurch	7.97
180	Malmo	8.90	Ottawa	9.41	Valencia	7.86
181	Kingston (Jamaica)	8.82	Buffalo	9.32	Hartford	7.80
182	La Paz	8.59	Curitiba	9.32	Porto Alegre	7.74
183	Christchurch	8.51	Lusaka	9.32	Aberdeen	7.68
184	Hobart	8.51	Dakar	9.23	Sacramento	7.57
185	Kampala	8.44	Valencia	9.23	Liverpool	7.39
186	Shenzhen	8.36	Aberdeen	9.13	Medellin	7.39
187	Winnipeg	8.28	Honolulu	9.13	Curitiba	7.28
188	Porto Alegre	8.28	Ljubljana	9.13	Durban	7.28
189	Belfast	8.20	Suva	9.13	Honolulu	7.16
190	Tallin	8.20	Windhoek	8.95	Palo Alto	7.16
191	Aberdeen	7.97	Basel	8.86	Basel	7.11
192	Ljubljana	7.97	Kansas City	8.76	Cardiff	7.05
193	Dalian	7.89	Nottingham	8.76	Nagoya	7.05
194	Tegucigalpa	7.89	Tijuana	8.76	Turin	7.05
195	Honolulu	7.74	Hyderabad (India)	8.67	Baku	6.99
196	Vilnius	7.74	New Orleans	8.49	Macao	6.99
197	Tehran	7.66	Kampala	8.39	Nottingham	6.93
198	Doha	7.59	Tehran	8.39	Penang	6.93
199	Nagoya	7.59	Bandung	8.30	Utrecht	6.93
200	Curitiba	7.51	Genoa	8.30	Krakow	6.87
201	Basel	7.43	San Jose (CA)	8.30	Norwich	6.87
202	Liverpool	7.43	Shenzhen	8.30	Ankara	6.82
203	Bern	7.35	Newcastle	8.21	Jerusalem	6.82
204	Seville	7.35	Bilbao	8.12	Dalian	6.76
205	Maputu	7.35	Strasbourg	8.12	Southampton	6.76
206	Brazilia	7.28	Abidjan	8.03	Leipzig	6.70
207	Canberra	7.20	Douala	8.03	Marseille	6.70
208	The Hague	7.20	Monterrey	8.03	Omaha	6.59
209	Nuremberg	7.20	Hannover	7.93	Reykjavik	6.59
210	Lausanne	7.04	Kingston (Jamaica)	7.84	Ahmadabad	6.47
211	Las Vegas	6.97	Rochester	7.84	Dresden	6.47
212	Southampton	6.97	Managua	7.75	Winnipeg	6.47
213	Dar es Salaam	6.89	Richmond	7.66	Tehran	6.41

214	Port of Spain	6.81	Georgetown (Cayman)	7.56	Muscat	6.35
215	Baku	6.73	Tianjin	7.56	Strasbourg	6.35
216	Medellin	6.73	Naples	7.47	Sheffield	6.24
217	New Orleans	6.66	Sacramento	7.47	Seville	6.12
218	Newcastle	6.58	Lausanne	7.38	Edmonton	6.01
219	Sacramento	6.50	Columbus	7.29	Algiers	5.95
220	Yokohama	6.42	Bergen	7.20	Tashkent	5.95
221	Douala	6.35	Bologna	7.20	Arhus	5.89
222	Gaborone	6.27	Islamabad	7.20	New Orleans	5.89
223	Dakar	6.04	Medellin	7.20	Xiamen	5.83
224	Bologna	5.96	Las Vegas	7.10	Kingston (Jamaica)	5.60
225	Tashkent	5.96	Nagoya	6.73	Kyoto	5.55
226	Yangon	5.80	Omaha	6.64	Tijuana	5.55
227	Omaha	5.80	Pretoria	6.64	Cincinnati	5.43
228	Tianjin	5.73	Tegucigalpa	6.46	Gothenburg	5.37
229	Norwich	5.73	Belo Horizonte	6.27	Genoa	5.20
230	Managua	5.73	Macao	6.27	Rochester	5.20
231	Hannover	5.65	Yokohama	6.27	Minsk	5.08
232	Hyderabad (India)	5.65	Salvador	6.18	Kampala	5.03
233	Essen	5.57	Sanaa	6.18	Sarajevo	4.97
234	Tijuana	5.57	Sheffield	6.18	Tbilisi	4.97
235	Quebec	5.19	Hartford	6.09	Dakar	4.85
236	Naples	5.19	Baku	5.90	Bordeaux	4.74
237	Ahmadabad	5.11	Essen	5.90	Nuremberg	4.74
238	Salvador	5.11	Reykjavik	5.90	Recife	4.74
239	Bandar Seri Begawan	5.03	Damascus	5.81	Bilbao	4.62
240	Kyoto	4.95	Algiers	5.72	The Hague	4.56
241	Pretoria	4.95	Maputu	5.63	Ciudad Juarez	4.51
242	Belgrade	4.88	Krakow	5.44	Douala	4.51
243	Penang	4.88	Luanda	5.44	Hannover	4.51
244	Dortmund	4.64	Tashkent	5.26	Port of Spain	4.45
245	Genoa	4.64	Linz	5.17	Belo Horizonte	4.39
246	Sheffield	4.57	Sarajevo	5.07	Bergen	4.33
247	Bergen	4.41	Mombasa	4.89	Lille	4.27
248	Damascus	4.41	Penang	4.89	Pretoria	4.27
249	Kobe	4.41	Port of Spain	4.80	Essen	4.16
250	Recife	4.41	Quebec	4.80	Linz	4.10

251	Cardiff	4.33	Ankara	4.70	Dortmund	4.04
252	Suva	4.33	Kobe	4.70	Hobart	4.04
253	Luanda	4.18	Nuremberg	4.70	Liege	4.04
254	Port Moresby	4.10	Arhus	4.52	Malmo	4.04
255	Reykjavik	3.95	Bern	4.52	Pusan	4.04
256	Plymouth	3.64	Kyoto	4.52	Tirana	3.93
257	Macao	3.56	Kinshasa	4.43	Windhoek	3.93
258	Georgetown (Cayman)	3.48	Medan	4.43	Buffalo	3.81
259	Bandung	3.41	Dalian	4.24	Brazilia	3.70
260	Bulawayo	3.33	Jerusalem	4.24	Maputu	3.70
261	Ciudad Juarez	3.33	The Hague	4.24	Mombasa	3.70
262	Sanaa	3.33	Winnipeg	3.87	Salvador	3.70
263	Arhus	3.25	Dortmund	3.69	Yokohama	3.70
264	Xiamen	3.25	Tbilisi	3.69	Abidjan	3.58
265	Addis Ababa	3.17	Trieste	3.69	Damascus	3.41
266	Minsk	3.17	Alexandria	3.60	Alexandria	3.29
267	Pusan	3.02	Plymouth	3.60	Plymouth	3.24
268	Palermo	3.02	Minsk	3.51	Bern	3.18
269	Ankara	2.94	Malacca	3.32	Kobe	2.77
270	Mombasa	2.86	Liege	3.14	Luanda	2.77
271	Kinshasa	2.71	Ahmadabad	3.04	Palermo	2.66
272	Nanjing	2.63	Ciudad Juarez	2.95	Bandar Seri Begawan	2.60
273	Medan	2.48	Hobart	2.77	Trieste	2.54
274	Alexandria	2.40	Xiamen	2.77	Port Moresby	2.43
275	Algiers	2.40	Bulawayo	2.68	Sanaa	2.43
276	Tirana	2.40	Pusan	2.58	Medan	2.37
277	Sarajevo	2.40	Tirana	2.58	Kinshasa	2.20
278	Jerusalem	2.32	Bandar Seri Begawan	2.40	Naples	2.20
279	Trieste	2.24	Palermo	2.40	Addis Ababa	2.08
280	Malacca	2.17	Yangon	2.12	Suva	1.96
281	Liege	2.01	Addis Ababa	1.94	Yangon	1.85
282	Linz	2.01	Nanjing	1.85	Bulawayo	1.79
283	Krakow	1.70	Recife	1.29	Bandung	1.62
284	Tbilisi	1.70	Port Moresby	1.01	Malacca	0.46

Table B: London dyads for Financial Services (FS) for 2000, 2004 and 2008, calculated on standardized data
Source: Authors, data supplied by the Globalization & World Cities (GaWC) Research Network:
http://www.lboro.ac.uk/gawc/

Rank	2000		2004		2008	
	city connected to London	London dyad index - 2000	city connected to London	London dyad index - 2004	city connected to London	London dyad index - 2008
1	New York	100.00	New York	100.00	New York	100.00
2	Tokyo	90.67	Hong Kong	81.94	Hong Kong	98.72
3	Hong Kong	89.56	Singapore	81.94	Singapore	85.92
4	Singapore	80.67	Tokyo	79.35	Tokyo	82.45
5	Paris	76.00	Paris	73.23	Shanghai	77.88
6	Chicago	70.44	Madrid	67.42	Sydney	77.70
7	Los Angeles	66.00	Milan	67.42	Paris	77.51
8	Sydney	60.67	Shanghai	65.81	Beijing	70.57
9	Milan	60.44	Zurich	61.94	Madrid	70.02
10	Madrid	59.56	Toronto	59.03	Milan	65.81
11	Sao Paulo	59.56	Chicago	58.39	Seoul	65.63
12	Frankfurt	59.33	Sao Paulo	57.42	Toronto	65.45
13	San Francisco	56.89	Frankfurt	55.81	Taipei	60.51
14	Taipei	56.89	Brussels	55.16	Frankfurt	59.23
15	Brussels	54.89	Buenos Aires	52.90	Mumbai	58.87
16	Jakarta	54.67	Dublin	51.94	Zurich	58.32
17	Zurich	54.67	Mexico City	51.94	Brussels	54.48
18	Bangkok	54.44	Munich	51.61	Dublin	54.30
19	Toronto	54.44	Los Angeles	50.00	Amsterdam	54.11
20	Shanghai	54.00	Warsaw	50.00	Moscow	54.11
21	Mexico City	49.78	Amsterdam	49.03	Kuala Lumpur	52.65
22	Dublin	49.33	Beijing	48.71	Bangkok	51.19
23	Amsterdam	49.11	Jakarta	48.71	Chicago	49.91

24	Beijing	48.67	Santiago	48.06	Sao Paulo	49.91
25	Mumbai	47.56	Sydney	47.42	Jakarta	49.54
26	Kuala Lumpur	46.00	Luxembourg	46.45	Warsaw	46.44
27	Buenos Aires	44.89	Johannesburg	44.84	Dubai	45.16
28	Seoul	44.89	San Francisco	44.19	Buenos Aires	44.79
29	Luxembourg	44.44	Seoul	43.55	Los Angeles	44.79
30	Johannesburg	43.78	Kuala Lumpur	42.58	Stockholm	42.60
31	Manila	42.22	Istanbul	40.65	Mexico City	41.86
32	Istanbul	40.67	Taipei	40.65	Istanbul	40.77
33	Dusseldorf	39.78	Berlin	40.00	Luxembourg	39.67
34	Warsaw	39.78	Budapest	40.00	Manila	37.66
35	Melbourne	38.89	Hamburg	39.68	San Francisco	36.93
36	Boston	38.00	Mumbai	39.35	Geneva	36.56
37	Houston	37.78	Miami	39.03	Melbourne	35.47
38	Miami	36.22	Montreal	37.74	Guangzhou	34.37
39	Atlanta	35.11	Auckland	37.10	Johannesburg	32.91
40	Berlin	34.89	Bogota	37.10	Prague	32.18
41	Prague	34.67	Cairo	37.10	Santiago	31.44
42	Barcelona	34.44	Prague	37.10	Boston	30.90
43	Dallas	34.44	Stockholm	36.77	Rome	30.35
44	Santiago	34.00	Dusseldorf	36.13	Lisbon	30.16
45	Bogota	33.11	Lisbon	35.81	Montreal	30.16
46	New Delhi	32.44	Moscow	35.16	Athens	29.62
47	Munich	31.56	Athens	34.84	Washington	29.07
48	Labuan	31.33	Bangkok	34.84	Budapest	28.34
49	Caracas	31.11	Barcelona	34.52	Dallas	27.06
50	Auckland	30.67	Melbourne	34.52	Auckland	26.69
51	Moscow	30.67	Rio de Janeiro	34.52	Houston	26.33
52	Hamburg	30.44	Geneva	33.23	Atlanta	25.96
53	Montreal	30.22	Dallas	32.26	Manama	25.78

54	Athens	29.78	Atlanta	31.61	Munich	25.78
55	Geneva	29.78	Caracas	31.61	Bangalore	25.59
56	Ho Chi Minh City	29.56	Dubai	30.65	Caracas	25.59
57	Manama	29.56	Manila	30.32	Vancouver	24.50
58	Budapest	28.89	New Delhi	29.68	Miami	24.13
59	Stockholm	28.89	Bandung	29.03	Cairo	22.85
60	Cairo	27.78	Labuan	29.03	Labuan	22.85
61	Seattle	27.56	Houston	28.06	Calgary	21.94
62	Philadelphia	26.89	Vancouver	28.06	Vienna	21.94
63	Lisbon	26.67	Vienna	27.42	Tel Aviv	21.39
64	Guangzhou	26.22	Boston	26.45	Perth	21.02
65	Rio de Janeiro	25.78	Rome	26.45	Shenzhen	20.84
66	Washington	25.56	Philadelphia	25.48	Hanoi	20.66
67	Denver	25.11	Suva	25.48	Edinburgh	20.48
68	Rotterdam	25.11	Edinburgh	24.84	Karachi	20.48
69	Dubai	24.89	Birmingham	24.52	Bogota	19.74
70	Osaka	24.67	Abu Dhabi	23.23	Doha	19.74
71	Vancouver	24.67	Copenhagen	23.23	Birmingham	19.38
72	Hanoi	24.22	Osaka	22.90	New Delhi	19.38
73	Copenhagen	23.11	Washington	22.58	Lima	18.28
74	Rome	23.11	Cologne	21.61	Tianjin	17.92
75	Vienna	23.11	Stuttgart	21.29	Manchester	17.73
76	Nassau	22.67	Guangzhou	20.97	Barcelona	17.00
77	Minneapolis	22.22	Buffalo	20.32	Ho Chi Minh City	16.45
78	Cologne	22.00	Hanoi	20.32	Brisbane	16.09
79	Hamilton	20.89	Montevideo	19.68	Calcutta	16.09
80	Calgary	20.44	Karachi	19.35	Copenhagen	16.09
81	Portland	20.44	Tianjin	19.35	Bucharest	15.72
82	Perth	19.56	Calgary	19.03	Seattle	15.36
83	Stuttgart	18.89	Rotterdam	19.03	Bratislava	15.17

84	Wellington	18.89	Beirut	18.71	Dusseldorf	14.63
85	Beirut	18.44	Perth	18.71	Osaka	14.63
86	Buffalo	18.44	Bucharest	18.39	Montevideo	14.44
87	Karachi	18.00	Manchester	18.39	Bristol	14.26
88	Brisbane	17.78	Brisbane	17.42	Panama City	14.26
89	Antwerp	17.56	Manama	17.10	Riyadh	14.26
90	Dalian	16.89	Hamilton	16.77	Colombo	13.89
91	Baltimore	16.44	San Diego	16.77	Chennai	13.53
92	Abu Dhabi	16.22	Bratislava	16.45	Glasgow	13.53
93	Montevideo	16.22	Portland	16.45	Berlin	13.35
94	Rochester	16.22	Colombo	16.13	Almaty	13.16
95	Charlotte	16.00	Norwich	16.13	Denver	13.16
96	Strasbourg	16.00	Chennai	15.81	Portland	12.80
97	Bucharest	15.78	Nassau	15.81	Oslo	12.61
98	Panama City	15.78	Seattle	15.16	Philadelphia	12.07
99	Pittsburgh	15.78	Antwerp	14.84	Rio de Janeiro	12.07
100	Kiev	15.11	Yokohama	14.84	Macao	11.88
101	San Diego	15.11	Almaty	14.52	Beirut	11.70
102	St Louis	15.11	Baltimore	14.52	Nicosia	11.70
103	Calcutta	14.89	Bristol	14.52	Hamburg	11.52
104	Oslo	14.89	Genoa	14.52	Minneapolis	11.52
105	Bilbao	14.44	Southampton	14.52	Hartford	11.33
106	Muscat	14.44	Georgetown (Cayman)	14.19	Norwich	11.33
107	Tehran	14.44	Helsinki	14.19	Nottingham	11.33
108	Adelaide	14.22	Kiev	14.19	Antwerp	11.15
109	Kansas City	14.22	Lima	14.19	Hamilton	11.15
110	Tianjin	14.22	Oslo	14.19	Leeds	10.97
111	Almaty	14.00	Tel Aviv	14.19	Nairobi	10.97
112	Edmonton	13.78	Basel	13.87	Wellington	10.97
113	Indianapolis	13.56	Glasgow	13.87	Helsinki	10.79

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114	St Petersburg	13.56	Turin	13.87	Kiev	10.79
115	Nagoya	13.33	Charlotte	13.55	Cologne	10.60
116	Shenzhen	13.33	Edmonton	13.55	Hyderabad (India)	10.60
117	Palo Alto	12.89	Port Louis	13.55	Newcastle	10.42
118	Abidjan	12.67	Ho Chi Minh City	13.23	Tampa	10.24
119	Chennai	12.67	Adelaide	12.90	Sofia	10.05
120	Cincinnati	12.67	Utrecht	12.90	Cardiff	9.87
121	Hartford	12.22	Denver	12.58	Harare	9.87
122	Edinburgh	12.00	Panama City	12.58	Stuttgart	9.87
123	Nairobi	11.78	Calcutta	12.26	Basel	9.69
124	Belo Horizonte	11.56	Leeds	12.26	Georgetown (Cayman)	9.51
125	Jeddah	11.56	Shenzhen	12.26	Port Louis	9.51
126	Riyadh	11.56	Casablanca	11.94	Rotterdam	9.51
127	Harare	11.33	Nicosia	11.94	Cape Town	9.14
128	Manchester	11.33	Cape Town	11.61	Nanjing	9.14
129	Nicosia	11.33	Tehran	11.61	Dhaka	8.96
130	Port Louis	11.33	Bangalore	11.29	Nassau	8.96
131	Windhoek	11.33	Cardiff	11.29	Xiamen	8.96
132	Yangon	11.33	Dhaka	11.29	Abu Dhabi	8.78
133	Utrecht	11.11	Krakow	11.29	Columbus	8.78
134	Birmingham	10.89	Liverpool	11.29	Richmond	8.78
135	Bordeaux	10.89	Pittsburgh	11.29	Sheffield	8.78
136	Detroit	10.89	Amman	10.97	Kansas City	8.41
137	Glasgow	10.89	Lagos	10.97	San Jose (Costa Rica)	8.23
138	Marseille	10.89	Kobe	10.65	The Hague	8.23
139	Turin	10.89	Plymouth	10.65	Liverpool	8.04
140	Winnipeg	10.89	Sheffield	10.65	Plymouth	8.04
141	Bangalore	10.67	Lyon	10.32	Baltimore	7.86
142	Essen	10.67	Medan	10.32	Adelaide	7.68
143	Richmond	10.44	Abidjan	10.00	Kyoto	7.68

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144	Sofia	10.44	Bologna	10.00	Tehran	7.68
145	Yokohama	10.44	Cincinnati	10.00	Aberdeen	7.50
146	Southampton	10.00	Guatemala City	10.00	Kampala	7.50
147	Tampa	10.00	Naples	10.00	Southampton	7.50
148	Lyon	9.78	Newcastle	10.00	Tashkent	7.50
149	Monterrey	9.78	Porto Alegre	10.00	Charlotte	7.31
150	Valencia	9.78	Seville	10.00	Lahore	7.31
151	Colombo	9.56	Belo Horizonte	9.68	Las Vegas	7.31
152	Lausanne	9.56	Bordeaux	9.68	Ottawa	7.31
153	Basel	9.33	Dalian	9.68	Pittsburgh	7.31
154	Casablanca	9.33	Nottingham	9.68	San Diego	7.31
155	Dortmund	9.33	Rochester	9.68	St Petersburg	7.31
156	Phoenix	9.33	Xiamen	9.68	Lagos	7.13
157	San Jose (CA)	9.33	Algiers	9.35	Lusaka	7.13
158	Xiamen	9.33	Dar es Salaam	9.35	Phoenix	6.95
159	Hannover	9.11	Jeddah	9.35	Dalian	6.76
160	Helsinki	9.11	Kampala	9.35	Lyon	6.76
161	Kobe	9.11	Nairobi	9.35	Amman	6.58
162	Leeds	9.11	Aberdeen	9.03	Omaha	6.58
163	Lima	9.11	Essen	9.03	Tegucigalpa	6.58
164	Nuremberg	9.11	Kyoto	9.03	Vilnius	6.58
165	Islamabad	8.89	Nagoya	9.03	Algiers	6.40
166	Lahore	8.89	Quebec	9.03	Santo Domingo	6.40
167	Cleveland	8.67	Quito	9.03	Belfast	6.22
168	Kampala	8.67	Valencia	9.03	Bologna	6.22
169	Lusaka	8.67	Wellington	9.03	Islamabad	6.22
170	Porto Alegre	8.67	Cleveland	8.71	Nagoya	6.22
171	Zagreb	8.67	Curitiba	8.71	Pusan	6.22
172	Kyoto	8.44	Doha	8.71	Quebec	6.22
173	Las Vegas	8.44	Leipzig	8.71	Accra	6.03

174	Bern	8.22	Sofia	8.71	Casablanca	6.03
175	Leipzig	8.22	Bandar Seri Begawan	8.39	Dar es Salaam	6.03
176	Quebec	8.22	Belgrade	8.39	Utrecht	6.03
177	Tashkent	8.22	Dortmund	8.39	Curitiba	5.85
178	Kingston (Jamaica)	8.00	Strasbourg	8.06	Nuremberg	5.85
179	Sacramento	8.00	Hannover	7.74	Tunis	5.85
180	Bratislava	7.56	Riyadh	7.74	Valencia	5.85
181	Dhaka	7.56	St Petersburg	7.74	Yokohama	5.85
182	Dresden	7.56	Tampa	7.74	Gaborone	5.67
183	Genoa	7.56	Zagreb	7.74	Detroit	5.48
184	Nanjing	7.56	Macao	7.42	Winnipeg	5.48
185	New Orleans	7.56	Minneapolis	7.42	Bandar Seri Begawan	5.30
186	Tel Aviv	7.56	Nuremberg	7.42	Ahmadabad	5.12
187	Asuncion	7.33	Ahmadabad	7.10	Christchurch	5.12
188	Belfast	7.33	Brazilia	7.10	Dakar	5.12
189	Guayaquil	7.33	Hyderabad (India)	7.10	Essen	5.12
190	Lille	7.33	Las Vegas	7.10	Honolulu	5.12
191	Quito	7.33	Lille	7.10	Palo Alto	5.12
192	Bristol	7.11	Pusan	7.10	Sacramento	5.12
193	Accra	6.89	St Louis	7.10	Monterrey	4.94
194	Bandar Seri Begawan	6.89	Accra	6.77	Alexandria	4.75
195	Curitiba	6.89	Lusaka	6.77	Douala	4.75
196	San Salvador	6.89	Malmo	6.77	Hobart	4.75
197	Bandung	6.67	Windhoek	6.77	Kobe	4.75
198	Columbus	6.67	Belfast	6.45	San Jose (CA)	4.75
199	Guadalajara	6.67	Dakar	6.45	San Salvador	4.75
200	Liverpool	6.67	Dresden	6.45	Asuncion	4.57
201	Newcastle	6.67	Lausanne	6.45	Kingston (Jamaica)	4.57
202	Nottingham	6.67	Muscat	6.45	Port of Spain	4.57
203	Ottawa	6.67	Palo Alto	6.45	Canberra	4.39

204	Amman	6.44	Tashkent	6.45	Genoa	4.39
205	Luanda	6.44	Bern	6.13	Indianapolis	4.39
206	Brazilia	6.22	Douala	6.13	Muscat	4.39
207	Honolulu	6.22	Kinshasa	6.13	New Orleans	4.39
208	Dakar	6.00	Luanda	6.13	Turin	4.39
209	Kinshasa	6.00	Durban	5.81	Zagreb	4.39
210	Kuwait	6.00	Monterrey	5.81	Krakow	4.20
211	Lagos	6.00	Detroit	5.48	Edmonton	4.02
212	Baku	5.78	Phoenix	5.48	La Paz	4.02
213	Port of Spain	5.78	Richmond	5.48	Quito	4.02
214	Algiers	5.56	Guayaquil	5.16	Seville	4.02
215	Naples	5.56	Lahore	5.16	Trieste	4.02
216	San Jose (Costa Rica)	5.56	New Orleans	5.16	Bern	3.84
217	Seville	5.56	San Salvador	5.16	Riga	3.84
218	Medellin	5.33	Sanaa	5.16	Tallin	3.84
219	Omaha	5.33	Tunis	5.16	Baku	3.66
220	Aberdeen	5.11	Arhus	4.84	Belo Horizonte	3.66
221	Cape Town	5.11	Bulawayo	4.84	Cincinnati	3.66
222	Christchurch	5.11	Harare	4.84	Cleveland	3.66
223	Plymouth	5.11	Kansas City	4.84	Guatemala City	3.66
224	Sheffield	5.11	Salvador	4.84	Lausanne	3.66
225	Bologna	4.67	Tallin	4.84	Leipzig	3.66
226	Maputu	4.67	Yangon	4.84	Lille	3.66
227	Penang	4.67	Alexandria	4.52	Rochester	3.66
228	Trieste	4.67	Medellin	4.52	St Louis	3.66
229	Hobart	4.44	Sacramento	4.52	Penang	3.47
230	Malacca	4.44	San Jose (CA)	4.52	Bandung	3.29
231	Norwich	4.44	Gothenburg	4.19	Dortmund	3.29
232	Dar es Salaam	4.22	Honolulu	4.19	Kuwait	3.29
233	La Paz	4.22	Maputu	4.19	Mombasa	3.29

234	Mombasa	4.22	Mombasa	4.19	Jeddah	3.11
235	Pusan	4.22	Penang	4.19	Yangon	3.11
236	Tunis	4.22	Asuncion	3.87	Belgrade	2.93
237	Doha	4.00	Bergen	3.87	Buffalo	2.93
238	Liege	4.00	Hartford	3.87	Medan	2.93
239	Medan	4.00	Liege	3.87	Naples	2.93
240	Salvador	4.00	Nanjing	3.87	Port Moresby	2.93
241	The Hague	4.00	San Jose (Costa Rica)	3.87	Bulawayo	2.74
242	Ahmadabad	3.56	Bilbao	3.55	Windhoek	2.74
243	Hyderabad (India)	3.56	Kingston (Jamaica)	3.55	Addis Ababa	2.56
244	Macao	3.56	Kuwait	3.55	Bilbao	2.56
245	Gothenburg	3.33	Ljubljana	3.55	Bordeaux	2.56
246	Krakow	3.11	Marseille	3.55	Marseille	2.56
247	Bulawayo	2.89	Santo Domingo	3.55	Strasbourg	2.56
248	Durban	2.89	Gaborone	3.23	Arhus	2.38
249	Palermo	2.89	Malacca	3.23	Dresden	2.19
250	Minsk	2.67	Ottawa	3.23	Hannover	2.19
251	Riga	2.67	Tbilisi	3.23	Porto Alegre	2.19
252	Addis Ababa	2.44	Indianapolis	2.90	Recife	2.19
253	Bergen	2.44	Riga	2.90	Abidjan	1.83
254	Douala	2.44	Ankara	2.58	Brazilia	1.83
255	Guatemala City	2.44	Baku	2.58	Liege	1.83
256	Malmo	2.44	Christchurch	2.58	Ankara	1.65
257	Recife	2.44	Damascus	2.58	Durban	1.46
258	Santo Domingo	2.44	Guadalajara	2.58	Ljubljana	1.46
259	Sarajevo	2.44	Islamabad	2.58	Palermo	1.46
260	Cardiff	2.22	La Paz	2.58	Suva	1.46
261	Gaborone	2.22	Palermo	2.58	Tbilisi	1.46
262	Ankara	1.78	Port of Spain	2.58	Bergen	0.73
263	Damascus	1.78	Recife	2.58	Guayaquil	0.73

264	Sanaa	1.78	Tegucigalpa	2.58	Malmo	0.73
265	Tbilisi	1.78	Trieste	2.58	Minsk	0.73
266	Tegucigalpa	1.78	Winnipeg	2.58	Salvador	0.73
267	Ljubljana	1.56	Sarajevo	2.26	Sarajevo	0.73
268	Canberra	1.33	Columbus	1.94		
269	Linz	0.89	Omaha	1.94		
270	Vilnius	0.89	Vilnius	1.94		
271	Alexandria	0.67	Port Moresby	1.61		
272	Belgrade	0.67	Reykjavik	1.61		
273	Georgetown (Cayman)	0.67	Linz	1.29		
274	Managua	0.67	Minsk	1.29		
275	Reykjavik	0.67	The Hague	1.29		
276	Suva	0.67	Addis Ababa	0.97		
277	Tallin	0.67	Canberra	0.97		
278	Tirana	0.67	Managua	0.97		

Table C: London Investment flows (in $billion) over the 4-year period 2007-2010
Source: Authors, data supplied by Real Capital Analytics Inc: http://www.rcanalytics.com

rank	from	to	investment
1	New York	London	6.1661
2	London	Madrid	5.5947
3	Dublin	London	3.9431
4	Madrid	London	3.046
5	Boston	London	2.7456
6	London	Paris	1.4144
7	Bonn	London	1.3125
8	Seoul	London	1.2762
9	Frankfurt	London	1.1732
10	Tokyo	London	1.1369
11	Toronto	London	1.0736
12	Singapore	London	0.9495
13	Newark	London	0.9305
14	Washington	London	0.9207
15	London	Brussels	0.8462
16	Fort Myers	London	0.8339
17	Sydney	London	0.7872
18	Doha	London	0.7715
19	Munich	London	0.7064
20	London	New York	0.662
21	Muscat	London	0.6574
22	Hamburg	London	0.5289
23	Beirut	London	0.5265
24	Cork	London	0.4581
25	Tel Aviv	London	0.4515
26	Tripoli	London	0.4277
27	Abu Dhabi	London	0.3918
28	London	Stockholm	0.3774
29	Stockholm	London	0.3707
30	London	Munich	0.351
31	Zurich	London	0.3491
32	Hamilton	London	0.3418
33	London	Manchester	0.3402
34	Wiesbaden	London	0.3354
35	London	Seoul	0.3077
36	London	Moscow	0.2702
37	Edinburgh	London	0.2512
38	London	Amsterdam	0.2196
39	London	Singapore	0.203
40	London	Melbourne	0.2001
41	London	Glasgow	0.187
42	London	Edinburgh	0.1809
43	London	Stuttgart	0.1782
44	London	Washington	0.1725
45	London	Charlotte	0.171
46	Reykjavic	London	0.1681
47	Norwalk, CT	London	0.1655

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48	London	Newcastle upon Tyne	0.1611
49	Beijing	London	0.1536
50	London	San Francisco	0.1425
51	London	Shanghai	0.1379
52	London	Arnhem	0.1277
53	London	Birmingham	0.1206
54	Wilmslow	London	0.1171
55	Guernsey	London	0.1073
56	London	Warsaw	0.1061
57	London	Horley	0.1034
58	London	Milan	0.0836
59	Norwich	London	0.0697

Table D: London Top dyads - change of percentage of sectors over time
Source: Authors, data supplied by the Globalization & World Cities
(GaWC) Research Network: http://www.lboro.ac.uk/gawc/

London	New York		2000	2004	2008
		ACC	14.29	14.29	14.29
		ADV	14.29	14.29	14.29
		FS	42.86	42.86	42.86
		LAW	14.29	14.29	14.29
		MC	14.29	14.29	14.29

London	Hong Kong		2000	2004	2008	London	Paris		2000	2004	2008
		ACC	11.66	16.98	16.96			ACC	14.66	16.47	16.36
		ADV	11.59	12.02	12.44			ADV	10.48	10.54	13.48
		FS	50.60	46.28	51.44			FS	46.21	43.11	42.77
		LAW	14.47	14.57	9.91			LAW	11.84	14.59	14.39
		MC	11.68	10.16	9.24			MC	16.81	15.29	12.99

London	Tokyo		2000	2004	2008	London	Singapore		2000	2004	2008
		ACC	13.33	15.73	15.42			ACC	11.96	14.54	17.90
		ADV	10.27	11.86	14.58			ADV	11.25	10.55	13.39
		FS	54.48	47.40	49.89			FS	50.19	49.73	50.07
		LAW	11.28	12.91	8.91			LAW	12.55	13.01	6.08
		MC	10.65	12.09	11.19			MC	14.04	12.16	12.56