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The Location of MNEs in the UK: Sectoral and Functional Agglomeration

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Outline of the Presentation

- Motivation
- Research Questions
- Literature
- Empirical Analysis
- Preliminary Results

Motivation

Table 1: Sectoral versus Functional Specialisation

Population ^a	Sectoral specialisation ^b		Functional specialisation ^c	
	1991	2005	1991	2005
Greater London	0.451	0.431	77.279	81.314
>1,000,000	0.373	0.326	9.768	19.267
200,000-999,999	0.547	0.502	-1.458	-1.816
100,000-199,999	0.697	0.638	-5.728	-13.917
<100,000	0.846	0.814	-3.971	-32.510

Source: Own elaboration using NOMIS data (based on Duranton & Puga 2005).

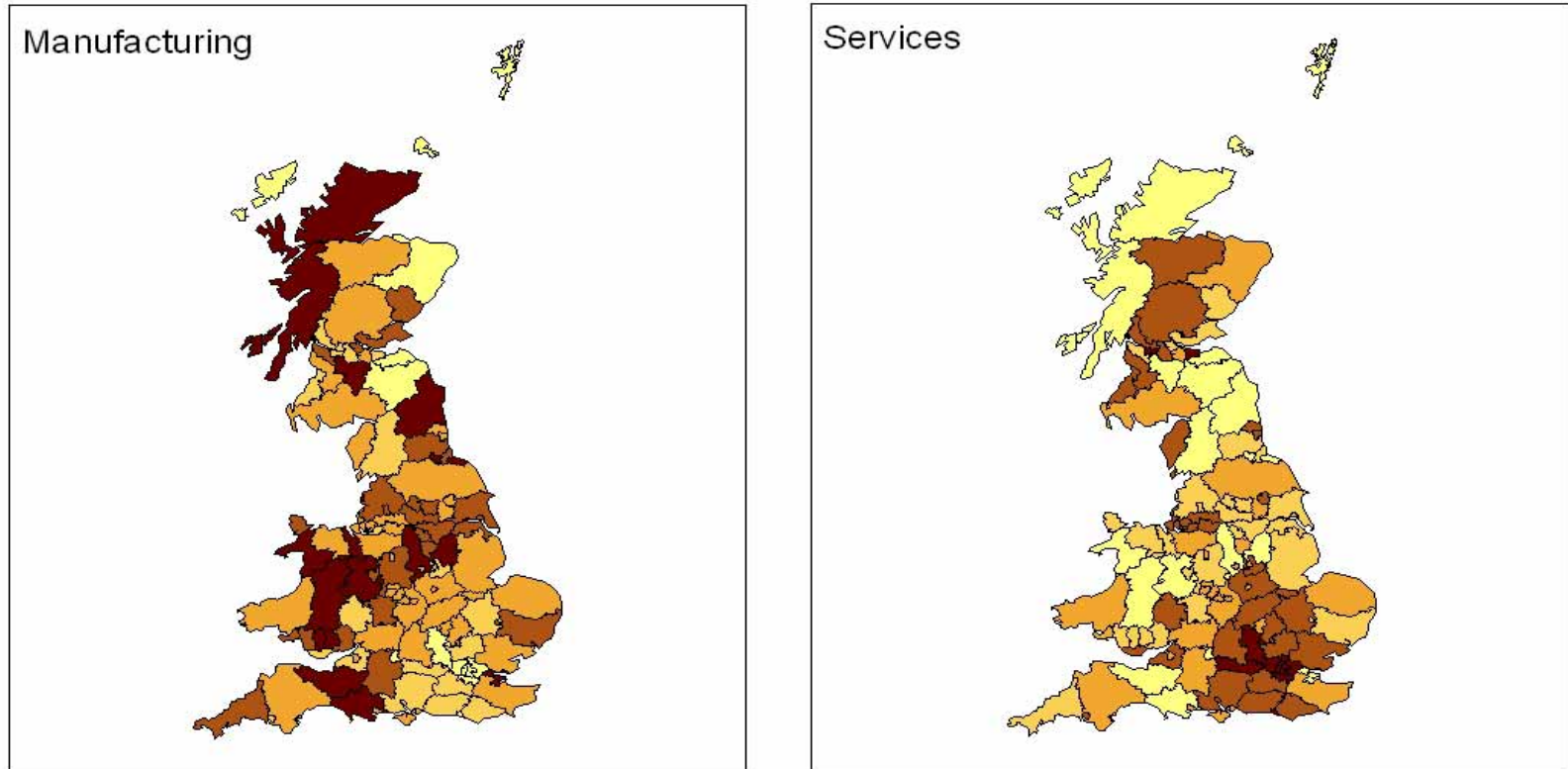
Notes: ^a The units of analysis are nuts3 areas in the UK.

^b Mean value for each population class of the Krugman Index of specialisation.

^c Percentage difference from the national average in the number of managers per production worker (process, plant and machine operatives).

Sectoral Spatial Pattern

Figure 1: Share of subsidiaries over the total relative to the national share (1997-2005)



Attractiveness

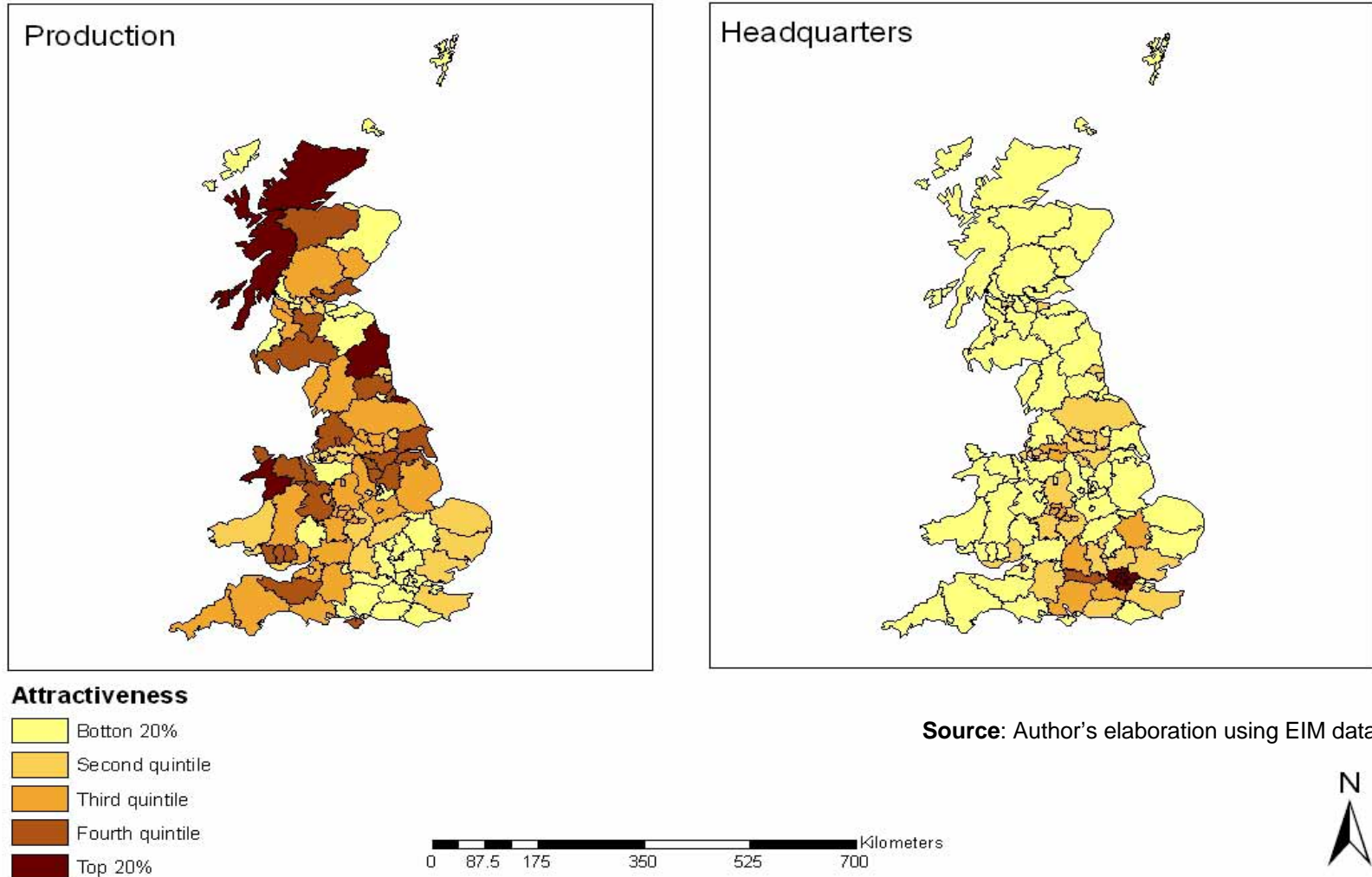


Source: Author's elaboration using EIM data.



Functional Spatial Pattern

Figure 2: Share of subsidiaries over the total relative to the national share (1997-2005)



Research Questions

- 1. Do the spatial pattern of MNEs vary significantly across different industries and functions?**
- 2. Do location determinants change depending on firm's characteristics?**
- 3. Do MNEs take into consideration sectoral and/or functional agglomeration?**

Literature

- **International Economics:**
 - Recent globalisation wave is related to tasks and functions (Baldwin 2006).
 - Importance of fragmentation of production carried out by MNEs.
- **Urban Economics:**
 - Diversified and specialised cities (Duranton and Puga 2000).
 - From sectoral to functional cities (Duranton and Puga 2005).
- **Empirics on MNEs' location:**
 - Country studies considering agglomeration (Bronzini 2004) (Guimaraes *et al.* 2000).
 - Studies considering functions (Defever 2006).
 - Economic Geography studies about location of particular functions.

Empirical Analysis

- **Data:**

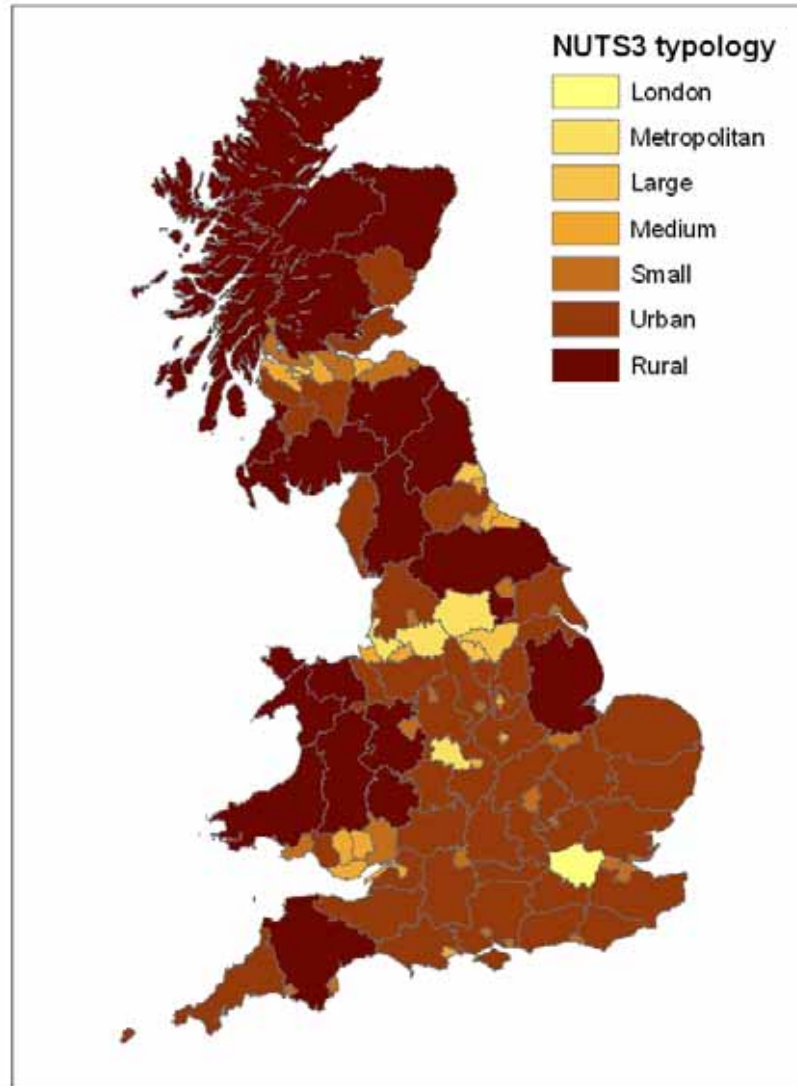
- New Greenfield Foreign Investments (3,000 projects).
 - Firm characteristics (e.g. sector, origin of the investment, function, etc.)
- Attributes of the location choices (e.g. salaries, market potential, agglomeration, etc.)

- **Methodology:**

- Discrete Choice Models (conditional and mixed logit).
- Comparison of different model specifications depending on firm characteristics.

NUTS 3 Typology

Figure 3: Classification of NUTS 3



Empirical Results

Table 1. Location Choice Results

Variables	Conditional Logit								
	(1) Baseline	(2) Services	(3) Manufact.	(4) European	(5) Non-eu	(6) HQs	(7) R&D	(8) Industrial	(9) Sales
Unemployment rate	0.018	-0.071	0.045	0.061	0.011	-0.233	0.501***	0.019	-0.018
Earnings/Education	-0.151	-0.405***	0.019	0.214	-0.286***	-0.322	-1.277*	0.645*	-0.196
Earnings/Productivity	-0.072	-0.339	0.532	-0.367	0.041	1.527**	0.460	-0.691	-0.017
Market Potential	1.958*	3.355*	1.471*	1.621*	2.122*	3.998*	2.469*	0.953*	2.921*
Sectoral Agg.	22.197*	15.983*	26.107*	23.725*	21.569*	21.837*	24.896*	22.472*	19.422*
Functional Agg.	3.771*	7.271*	1.059	-1.064	4.659*	3.107***	4.819***	-3.470	-0.046
FDI Sectoral Agg.	0.366*	0.207*	0.418*	0.344*	0.350*	0.501*	0.010	0.453*	0.277*
FDI Functional Agg.	0.696*	0.621*	0.721*	0.711*	0.680*	0.174***	0.648*	0.357*	0.581*
Sectoral Diversity	1.447*	1.914*	1.242*	1.091*	1.597*	1.816*	1.358**	0.634**	2.455*
Functional Diversity	-0.337*	-0.411*	-0.206***	0.059	-0.478*	-0.662*	-0.111	-0.006	-0.384**
Location dummies									
Metro	-0.558*	-0.797*	-0.697*	-0.565**	-0.586*	-1.426*	-1.225**	-0.503***	-0.886*
Large	-0.238***	-0.334	-0.384**	-0.371	-0.213	-1.317*	-0.414	-0.406	-0.374
Medium	-0.865*	-1.292*	-0.843*	-0.711*	-0.975*	-1.905*	-0.986*	-1.034*	-1.261*
Small	-1.191*	-1.693*	-1.108*	-1.329*	-1.158*	-2.182*	-1.027**	-1.584*	-1.314*
Urban area	-0.831*	-1.108*	-0.881*	-0.947*	-0.818*	-1.652*	-0.940**	-1.125*	-1.087*
Rural area	-1.197*	-1.401*	-1.244*	-1.177*	-1.234*	-1.748*	-1.852*	-1.454*	-1.520*
Number of observations	2,965	1,725	1,725	716	2,249	703	244	613	1,405
Log Likelihood	-8,699	-4,086	-4,773	-2,425	-6,466	-1,638	-978	-2,703	-3,468

Asterisks denote confidence levels *** p<.10, ** p<.05, * p<.01

Empirical Results

Table 1. Location Choice Results

Variables	Conditional Logit								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Baseline	Services	Manufact.	European	Non-eu	HQs	R&D	Industrial	Sales
Unemployment rate	0.018	-0.071	0.045	0.061	0.011	-0.233	0.501***	0.019	-0.018
Earnings/Education	-0.151	-0.405***	0.019	0.214	-0.286***	-0.322	-1.277*	0.645*	-0.196
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<i>Functional Agg.</i>	<i>3.771*</i>	<i>7.271*</i>	<i>1.059</i>	<i>-1.064</i>	<i>4.659*</i>	<i>3.107***</i>	<i>4.819***</i>	<i>-3.470</i>	<i>-0.046</i>
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Empirical Results (cont.)

Table2 : Location Choices Results with Interactions

Variables	Conditional Logit				
	Estimated Coeff.	Interactions	Estimated Coeff.	Interactions	Estimated Coeff.
Unemployment rate	-0.006	Metro-Manuf.	0.174	Metro-HQs	-0.526**
Earnings/Education	-0.122	Large-Manuf.	-0.031	Large-HQs	-0.424
Earning/Productivity	-0.073	Medium-Manuf.	0.222	Medium-HQs	0.085
Market Potential	2.160*	Small-Manuf.	0.663*	Small-HQs	-0.139
Sectoral Agg.	21.610*	Urban-Manuf.	0.204***	Urban-HQs	-0.102
Functional Agg.	2.708**	Rural-Manuf.	0.532***	Rural-HQs	-0.102
FDI Sectoral Agg.	0.296*	Metro-European	0.315***	Metro-R&D	-0.378
FDI Functional Agg.	0.584*	Large-European	0.021	Large-R&D	0.689**
Sectoral Diversity	1.471*	Medium-European	0.455*	Medium-R&D	0.913*
Functional Diversity	-0.382*	Small-European	0.138	Small-R&D	0.712**
		Urban-European	0.128	Urban-R&D	0.295
		Rural-European	0.257	Rural-R&D	0.324
Location dummies					
Metro	-0.740*			Metro-Industrial	0.204
Large	-0.582**			Large-Industrial	0.741**
Medium	-1.232*			Medium-Industrial	0.869*
Small	-2.075*			Small-Industrial	0.741*
Urban area	-1.232*			Urban-Industrial	0.461**
Rural area	-2.278*			Rural-Industrial	1.112*
Number of observations	2,965				
Log Likelihood	-8,658				

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Earning/Productivity	-0.073	Medium-Manuf.	0.222	Medium-HQs	0.085
Market Potential	2.160*	Small-Manuf.	0.663*	Small-HQs	-0.139
Sectoral Agg.	21.610*	Urban-Manuf.	0.204***	Urban-HQs	-0.102
Functional Agg.	2.708**	Rural-Manuf.	0.532***	Rural-HQs	-0.102
FDI Sectoral Agg.	0.296*	Metro-European	0.315***	Metro-R&D	-0.378
FDI Functional Agg.	0.584*	Large-European	0.021	Large-R&D	0.689**
Sectoral Diversity	1.471*	Medium-European	0.455*	Medium-R&D	0.913*
Functional Diversity	-0.382*	Small-European	0.138	Small-R&D	0.712**
		Urban-European	0.128	Urban-R&D	0.295
		Rural-European	0.257	Rural-R&D	0.324
Location dummies					
Metro	-0.740*			Metro-Industrial	0.204
Large	-0.582**			Large-Industrial	0.741**
Medium	-1.232*			Medium-Industrial	0.869*
Small	-2.075*			Small-Industrial	0.741*
Urban area	-1.232*			Urban-Industrial	0.461**
Rural area	-2.278*			Rural-Industrial	1.112*
Number of observations	2,965				
Log Likelihood	-8,658				

Asterisks denote confidence levels *** p<.10, ** p<.05, * p<.01

Empirical Results (cont.)

Table2 : Location Choices Results with Interactions

Variables	Conditional Logit				
	Estimated Coeff.	Interactions	Estimated Coeff.	Interactions	Estimated Coeff.
Unemployment rate	-0.006	Metro-Manuf.	0.174	Metro-HQs	-0.526**
Earnings/Education	-0.122	Large-Manuf.	-0.031	Large-HQs	-0.424
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Conclusions

- Spatial pattern of MNEs do vary:
 - Manufacturing is more disperse than services.
 - Upstream functions more concentrated than the rest of the functions.
- Location determinants do change depending on firm's characteristics.
- Functional agglomeration is a relevant location factor.

Thanks!

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Data (cont.)

Table 2: Description of the explanatory variables

	Sectoral dimension		Functional dimension	
	Variable	Description	Variable	Description
Diversification Index	$D^j_i = 1 / \sum_j s_{ij} - s_j $	Employment at the 4-digit SIC code	$D^k_i = 1 / \sum_k s_{ik} - s_k $	Employment in occupations (sub-groups)
Sectoral agglomeration	s_{ij}	Share of employment in the same 2-digit SIC as the investor		
Functional agglomeration			s_{ik}	Share of employment in occupations (sub-groups)
Foreign Agglomeration Potential	$FAP_{ij} = count_{ij} + \sum_{l \neq i} \frac{count_{lj}}{d_{li}}$	Number of investments in the same sector	$FAP_{ik} = count_{ik} + \sum_{l \neq i} \frac{count_{lk}}{d_{li}}$	Number of investments in the same function
Controls	Wages, market potential, education, urban typology and firm characteristics.			

Notes: i is the geographical area.

j is the sector.

k is the function.