

Geographical rent – modelling social and economic development with spatial methods

Researcher and R user point of view

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Spatial economic analysis

Economic information

Geographical information

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	ID	KOD	REG	KRAJ	border	stborder	stborder	region	weweg	stluka	coords	coordy	KW_1995	KW_1996
2	1.00	de05	Amstberg	2.00	0.00	0.00	0.00	DE.wew.west.wew	0.00	-486374.03	79899.20	83039.90	80991.70	
3	2.00	de01	Koblenz	2.00	0.00	0.00	0.00	DE.wew.west.wew	0.00	-529886.06	-36205.07	29772.60	29660.90	
4	3.00	de02	Köln	2.00	0.00	0.00	0.00	DE.wew.west.wew	0.00	-572022.14	27499.97	100205.40	100508.30	
5	4.00	de02	Trier	2.00	0.00	0.00	0.00	DE.wew.west.wew	0.00	-585799.63	-67377.58	9701.40	9721.90	
6	5.00	de09	Saarland	2.00	0.00	0.00	0.00	DE.wew.west.wew	0.00	-569107.07	-132267.64	23700.40	22795.60	
7	6.00	de03	Wuppertal	2.00	0.00	0.00	0.00	DE.wew.west.wew	0.00	-486455.52	-126877.96	46027.00	44335.50	
8	7.00	de11	Darmstadt	2.00	0.00	0.00	0.00	DE.wew.west.wew	0.00	-437431.30	-61317.70	117499.60	118763.40	
9	8.00	de12	Gießen	2.00	0.00	0.00	0.00	DE.wew.west.wew	0.00	-439024.53	3369.19	21779.70	21792.10	
10	9.00	de12	Kassel	2.00	0.00	0.00	0.00	DE.wew.west.wew	0.00	-389184.77	47813.95	28034.00	27875.90	
11	10.00	de04	Detmold	2.00	0.00	0.00	0.00	DE.wew.west.wew	0.00	-431646.57	145435.77	46506.90	46610.50	
12	11.00	de03	Münster	2.00	0.00	0.00	0.00	DE.wew.west.wew	0.00	-529225.48	149851.57	51378.70	49003.90	
13	12.00	de01	Düsseldorf	2.00	0.00	0.00	0.00	DE.wew.west.wew	0.00	-603703.90	95586.72	137601.90	135426.50	
14	13.00	de04	Weser-Eng.	2.00	0.00	0.00	0.00	DE.wew.west.wew	0.00	-486938.26	259960.60	47936.20	48148.60	
15	14.00	de03	Lüneburg	2.00	0.00	0.00	0.00	DE.wew.west.wew	0.00	-362311.54	284037.29	29269.80	29160.50	
16	15.00	de07	Weser-Elbe	2.00	0.00	0.00	0.00	DE.wew.west.wew	0.00	-350759.76	294640.87	59709.80	59553.40	
17	16.00	pl06	Ponorskie	5.00	0.00	0.00	0.00	PL.wew.sast.wew	0.00	174094.04	423063.98	5938.90	6767.80	
18	17.00	pl06	mińsko-maz.	5.00	0.00	0.00	0.00	PL.wew.sast.wew	0.00	356480.08	410673.77	3106.70	3637.00	
19	18.00	pl02	wielka-Ponoz.	5.00	0.00	0.00	0.00	PL.wew.sast.wew	0.00	214172.44	304098.95	5591.50	6195.50	
20	19.00	pl07	Wielkopolsk.	5.00	0.00	0.00	0.00	PL.wew.sast.wew	0.00	141650.06	213169.80	8767.00	10404.50	
21	20.00	pl04	Podlaskie	5.00	0.00	0.00	0.00	PL.wew.sast.wew	0.00	504184.94	389863.83	2591.50	2975.40	
22	21.00	pl04	wielkopolsk.	5.00	0.00	0.00	0.00	PL.wew.sast.wew	0.00	402909.67	707115.19	2919.60	3226.60	
23	22.00	pl05	Łódzkie	5.00	0.00	0.00	0.00	PL.wew.sast.wew	0.00	297498.97	150359.53	6640.40	7304.30	
24	23.00	de06	Hamburg	2.00	0.00	0.00	0.00	DE.wew.west.wew	0.00	-347178.43	323753.91	66235.50	66323.80	
25	24.00	de06	Brandenburg	2.00	1.00	1.00	1.00	% granicest granic	0.00	-116398.09	209839.33	39020.20	39050.20	
26	25.00	pl04	Lubuskie	5.00	1.00	1.00	1.00	% granicest granic	0.00	14406.13	187381.54	2690.10	2961.10	
27	26.00	de02	Hannover	2.00	0.00	0.00	0.00	DE.wew.west.wew	0.00	-352609.55	196357.91	50968.30	50299.40	
28	27.00	de06	Bremen	2.00	0.00	0.00	0.00	DE.wew.west.wew	0.00	-426966.68	274278.41	20602.70	20295.70	
29	28.00	de02	Dresden	2.00	1.00	1.00	1.00	% granicest granic	0.00	-60877.06	69653.58	27090.80	27780.70	
30	29.00	de01	Chemnitz	2.00	1.00	1.00	1.00	% granicest granic	0.00	-154202.31	11271.29	23876.30	24237.20	
31	30.00	de03	Leipzig	2.00	0.00	0.00	0.00	DE.wew.west.wew	0.00	-160314.63	92656.89	18462.90	18278.10	
32	31.00	de09	Thüringen	2.00	0.00	0.00	0.00	DE.wew.west.wew	0.00	-278692.50	31734.46	35467.50	36239.70	
33	32.00	de14	Flämingen	2.00	1.00	1.00	1.00	% granicest granic	0.00	509194.67	674623.65	36262.90	36262.90	



Researcher and R user point of view ...

Tools:

- 1) GIS maps
- 2) Economic and social data
- 3) SPDEP package as a tool for modelling economic and social development on regional level in spatial approach

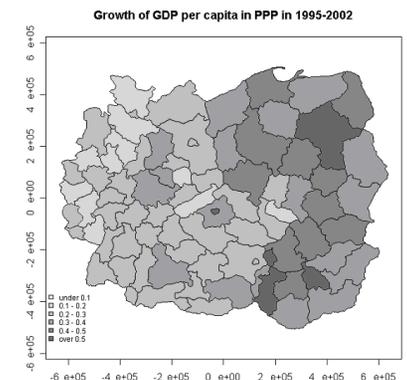
Field of the research

Tools: Integration of GIS maps and economic data

Question: Looking for interactions in space...→ what can explain us differences in speed of development

Field of research

- 1) social and economic development
- 2) spatial interactions - do neighbours matter?
- 3) geographical rent - do borders matter?
- 4) do spatial and social proximity matters?



Field of the research

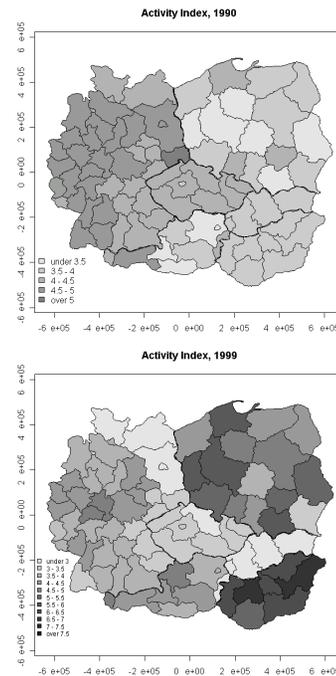
Tools: Spatial methods in SPDEP

Answer (trial): Perhaps there are some soft determinants

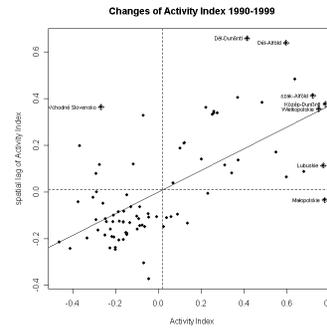
Activity Index: important (or not) work-related factors. The activity index presents the economic culture, lifestyle and workstyle, and mentality of a society. It shows professional priorities and attitude towards work, thus also reflecting socio-economic awareness.

→ Issues mixed in Activity Index (1=important, 0=not important)

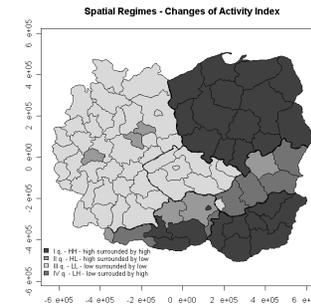
- Good co-workers
- Prestige of the profession
- Opportunity to show initiative
- Social utility of work
- Contacts with other people
- Opportunity to achieve something
- Responsible job
- Opportunity to use one's skills



Activity Index vs. GDP

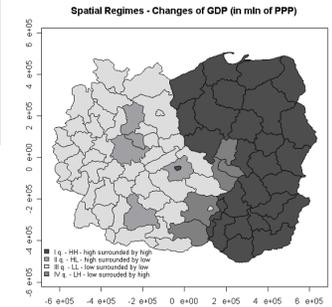


Moran Scatterplot regions vs their neighbours



Changes of GDP and Activity Index have similar pattern

Spatial regimes – points from Moran scatterplot on the map



From Researcher and R user point of view...

→ Advantages of R

too many to list them.....☺

- almost perfect tool and packages (mainly SPDEP) for spatial economic analysis

From Researcher and R user point of view...

→ Disadvantages of R

- 1) Graphics - still some problems with nice, advanced graphics for economic data (even not available in R Graph Gallery)
- 2) Descriptive statistics
easy functions give poor results, other functions require many data transformations
- 3) Poor program marketing!!! - I do my best to promote it (book on spatial methods in R), but still it is not well-known program in economics ☹

Thank You for attention!