



UNIwersytet WarsZawski
Wydział Nauk Ekonomicznych

NPV-based econometric modelling
in the assessment
of public intervention efficiency:
The case of Special Economic Zones
in Poland in 1995-2012

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Special Economic Zones in Poland: few facts

Created in 1994, will work till 2026, now 2519 permits.

14 zones in 146 cities and in 210 municipalities (9,5 thous. ha = 8,4% of industrial sites in Poland).

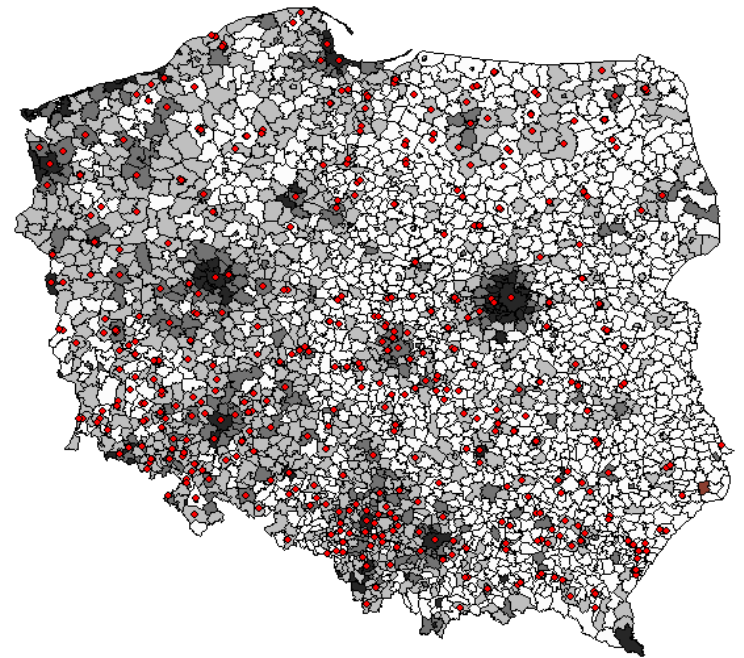
Employment for approx. 250 thous. People (1,7% of working force in Poland).

The total investment of 85,8 billion zł (approx. 6% of domestic investment)

Additionally: government and local spending on infrastructure amounted to almost 3 billion zł.

The sum of tax exemptions is nearly 10 billion zł (approx. 13% of the investment)

SEZ and firms per capita - 2012



The total cost of creating SEZ is approx. 13.5 billion zł (17% of the investment)



Briefly about the literature on SEZ

1) The annual reports of the [Ministry of Economy \(and Labour\)](#) on Special Economic Zones - the most important quantitative and qualitative statement of operations in the SEZ



2) [Scientific reports](#) based on annual reports of Ministry of Economy, expanding the selected topics from reports, e.g.: Kisiel & Lizińska (2012), Szczebiot-Knoblach, Lizińska & Kisiel (2012), Gryczka (2009), Piwowarczyk (2013) etc.



3) [Scientific reserach](#): Przybyła (2010) – SEZ and economic base of cities, Domański (2008) – territorial differentiation of capital investment



4) [Information of the Supreme Chamber of Control \(NIK, 2009\)](#) about the audit of functioning and the extension of the area of SEZ in 2006-2008



5) [Reports by advisory firms](#): KPMG (2012), E&Y (2011)





Goal of the research (1)

SEZ, by assumption, are the instrument of supporting economically weaker areas - mostly the peripheral areas of low endogenous potential, for which the exogenous impulses from SEZ were expected to be the driving force of local economies

The fundamental question: **Did the municipalities, in which SEZ was located, benefit from this?** → budgetary and economic analysis from the perspective of local government.

Theoretical assumptions:

- the positive effects of diffusion of growth stimuli (spillover)
- the positive effects of spatial concentration
- **Costs** (lower revenues from CIT) < **Benefits** (higher revenues from PIT)

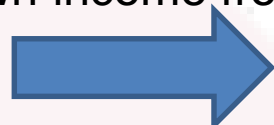
Hypotheses:

- 1) SEZ provide benefits for both the local budgets in the form of increased own income and / or for a local labor markets in the form of increased employment.
- 2) SEZ as an instrument to support cohesion policy, intensify the diffusion of positive development impulses, both within the municipality, as well as to neighboring areas.



Goal of the research(2)

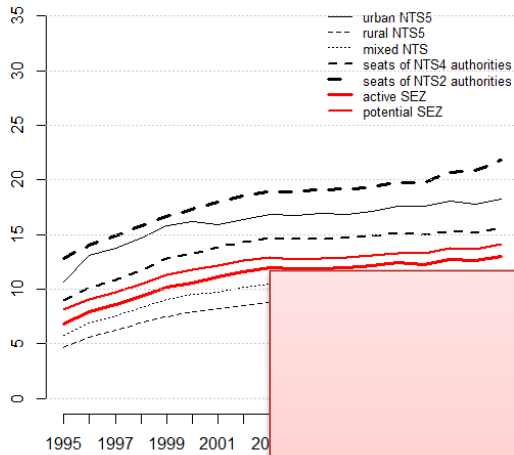
- Do SEZ **impact positively on economic** and social development of the region and its neighbors? Is there a **diffusion** of development incentives to neighboring municipalities?
- Is the SSE is an **efficient instrument to support** economic development? Did the municipalities with SEZ significantly improved economic performance compared to other municipalities in the period of 18 years?
- What is the **pattern of developmental changes** at the local level: convergence, divergence or path-dependence (stability over time)? Does between different types of municipalities, cities, seats of *powiat* authorities, and municipalities with SEZ exists **structural stability** and significant differences in development are emerging?
- Is the hypothesis of ***quasi "gift exchange"*** feasible? That local governments attract investors to improve their situation in the long-term. In the short term, this means higher costs and expenses (investments in infrastructure, tax exemptions), but with the hope of increasing their own income from PIT and CIT in the future?



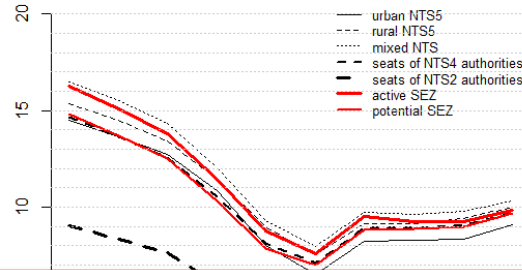
Four ways to test it!

Method 1: Panel charts 1995:2012

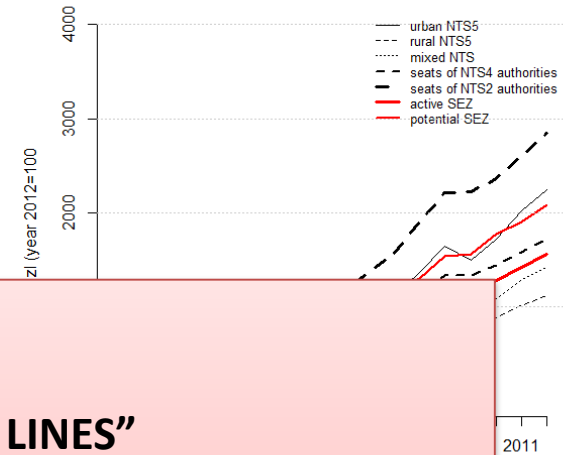
Firms per 100 inhabitants in productive age



Unemployment rate



Municipalities – Own revenues per inhabitant at constant prices of base year 2012



Expected result:

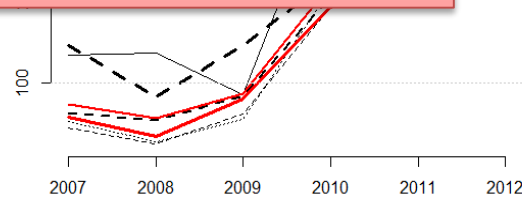
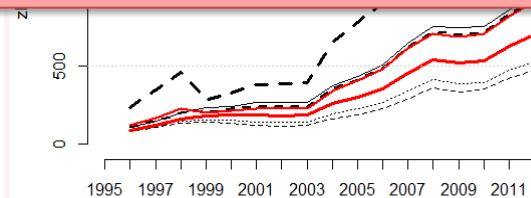
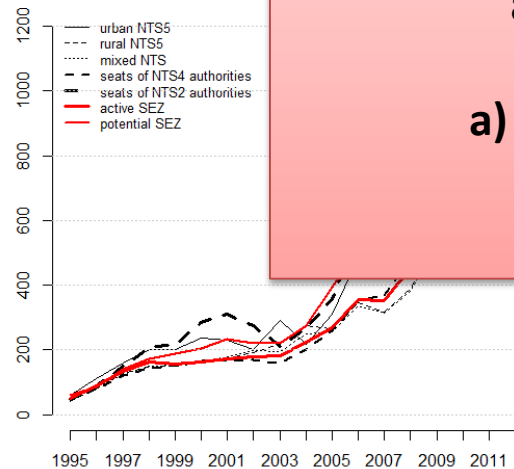
**Changes of trend in „RED LINES”
(should not behave the same as the other municipalities)**

a) should develop quicker if were the same

or

a) Should catch up with the rest if were weaker

Investment Expenditure at constant prices



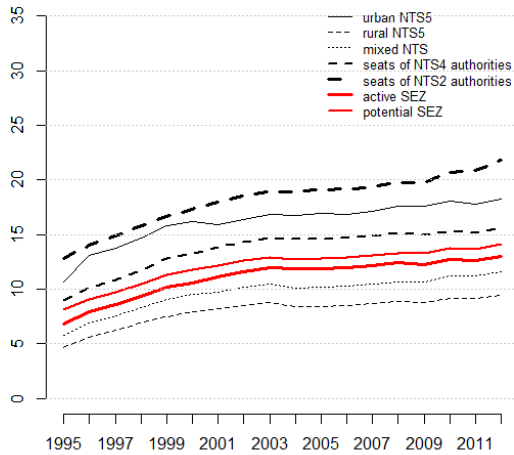
Municipalities performance vs. existence of SEZ

Municipalities performance vs. existence of SEZ

Municipalities performance vs. existence of SEZ

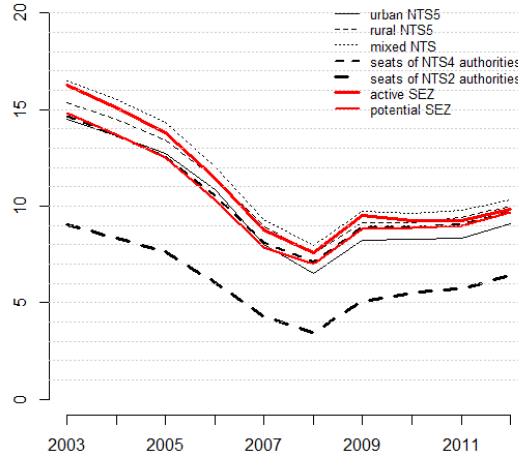
Method 1: Panel charts 1995:2012

Firms per 100 inhabitants in productive age



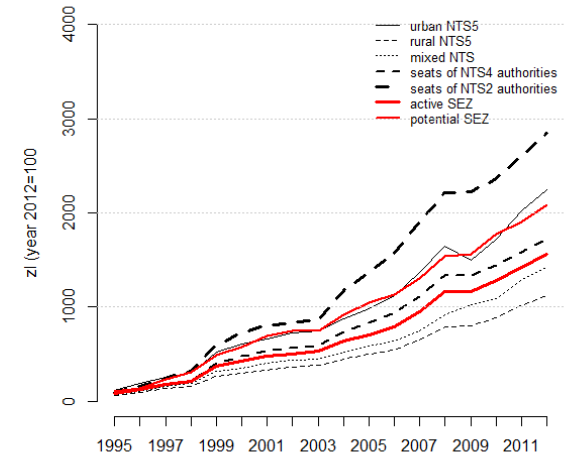
Municipalities performance vs. existence of SEZ

Unemployment rate



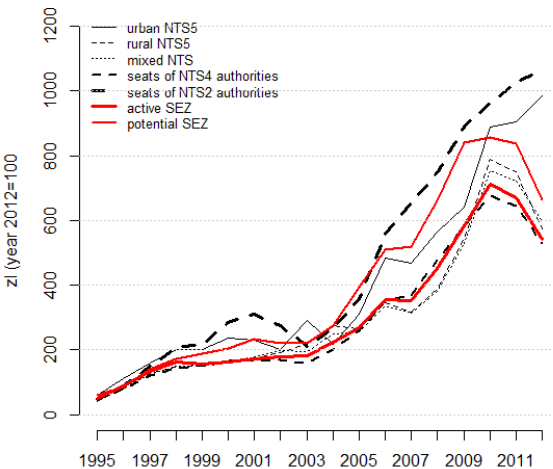
Municipalities performance vs. existence of SEZ

Municipalities – Own revenues per inhabitant at constant prices of base year 2012



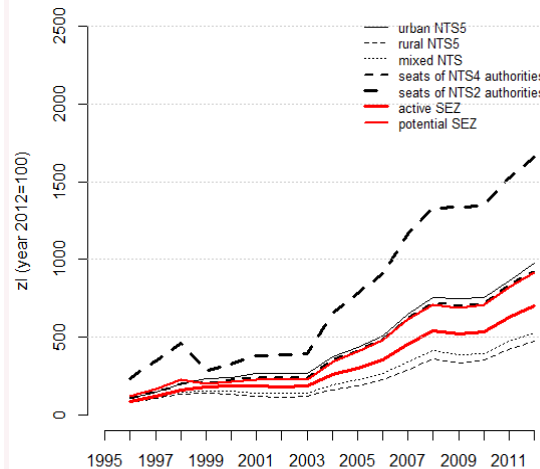
Municipalities performance vs. existence of SEZ

Investment Expenditures per inhabitant at constant prices of base year 2012



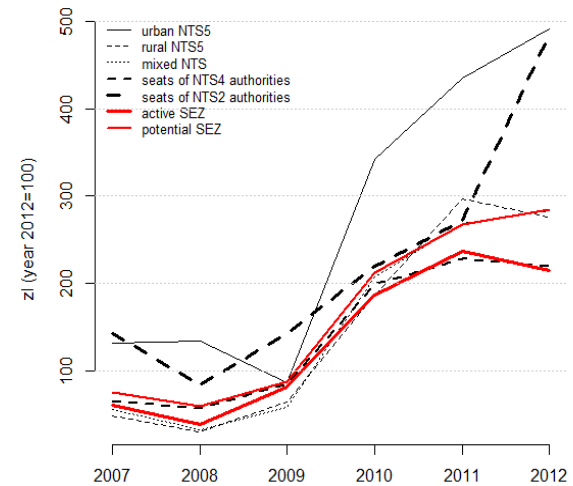
Municipalities performance vs. existence of SEZ

PIT revenues per inhabitant in productive age at constant prices of base year 2012



Municipalities performance vs. existence of SEZ

EU funds per inhabitant at constant prices of base year 2012



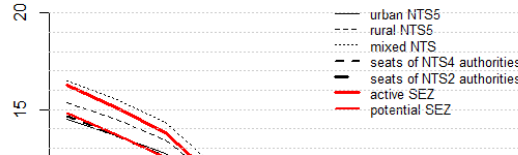
Municipalities performance vs. existence of SEZ

Method 1: Panel charts 1995:2012

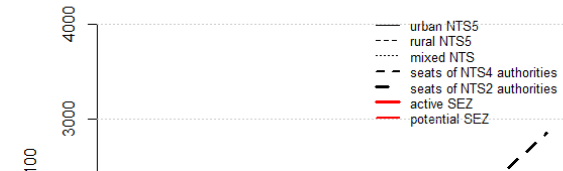
Firms per 100 inhabitants in productive age



Unemployment rate



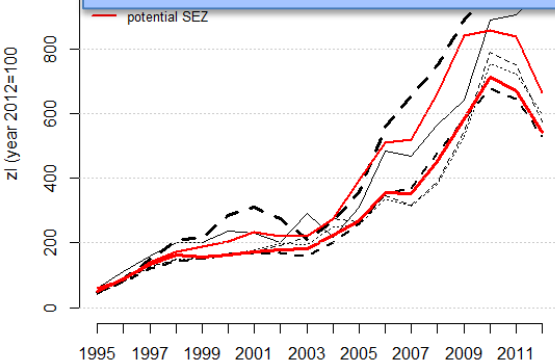
Municipalities – Own revenues per inhabitant at constant prices of base year 2012



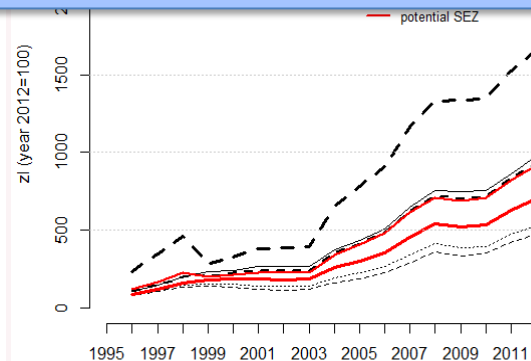
Results

- There is no reason to believe that SEZ as a tool to support the development is an important exogenous stimulus for development. In most cases, the municipalities in which SEZ were established, were mediocre (not the weakest) units, and after a few years municipalities with SEZ are in a similar position as in the initial period.

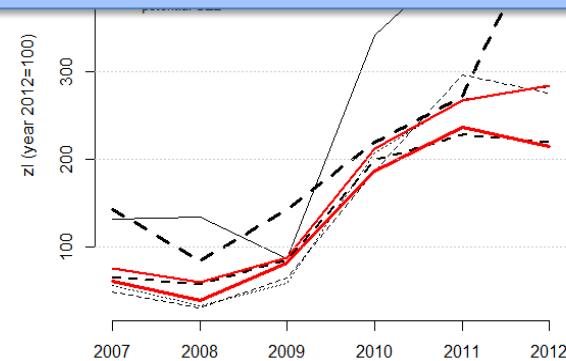
- Municipalities, which have recently been extended to SEZ, are on average better than other municipalities and have no development problems.



Municipalities performance vs. existence of SEZ



Municipalities performance vs. existence of SEZ



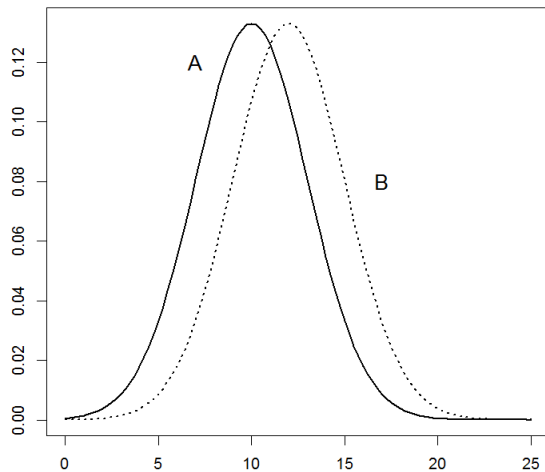
Municipalities performance vs. existence of SEZ



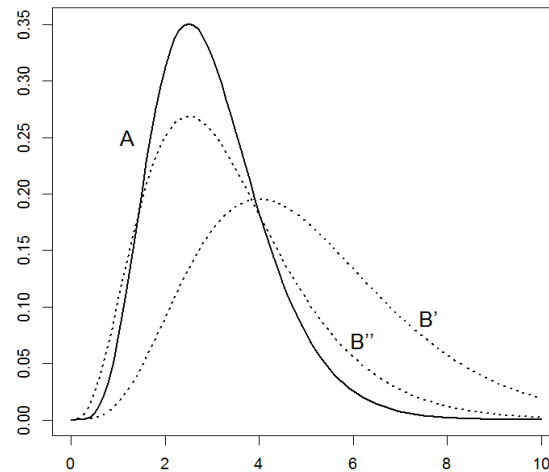
Method 2: Density distributions

Expected changes

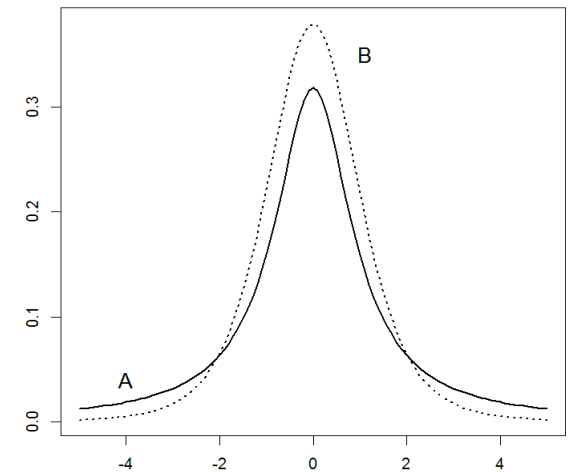
global shift



divergence



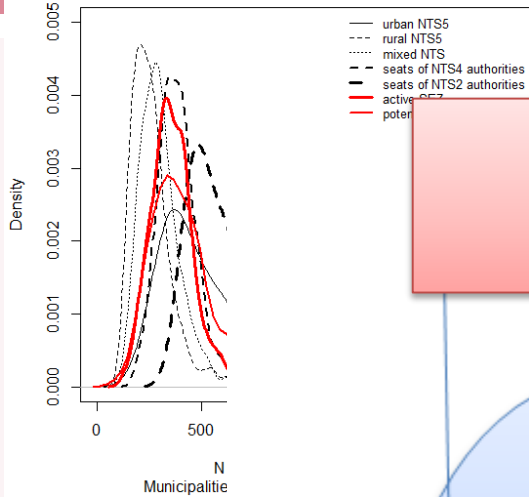
convergence



Source: Kopczewska K., 2014, L-moments skewness and kurtosis as measures of regional convergence and cohesion, *Statistica Neerlandica* (November 2014)

Method 2: Density distributions for 6-years averages in 1995-2000 and 2007-2012

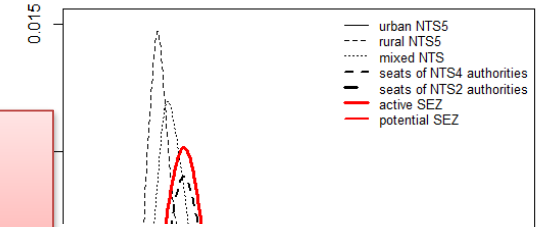
Own revenues per inhabitant
1995-2000 average



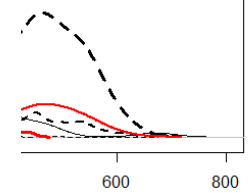
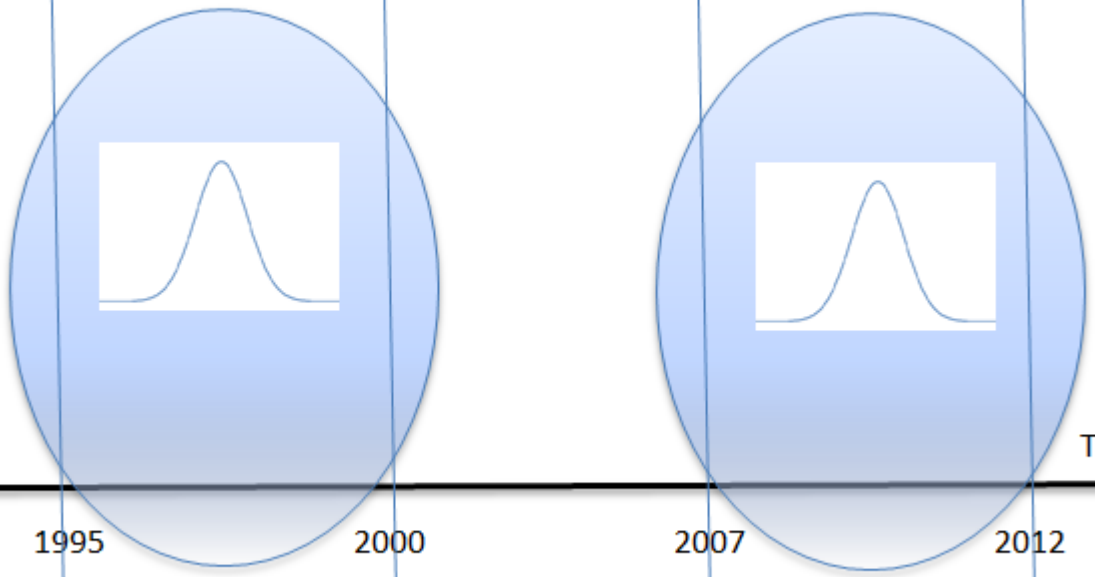
Investment expenditure per inhabitant
1995-2000 average



PIT revenues per population in productive age
1995-2000 average

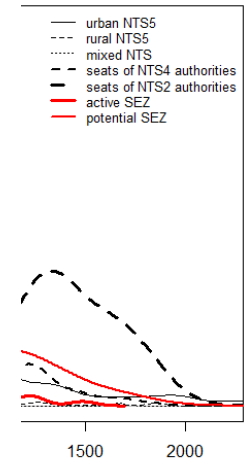


Expected result
Shift of distribution for SEZ

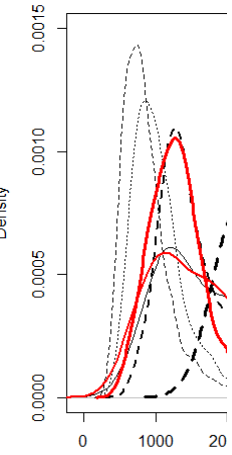


idth = 35.23
e vs. existence of SEZ

ion in productive age
7-2012 average



Own re
20



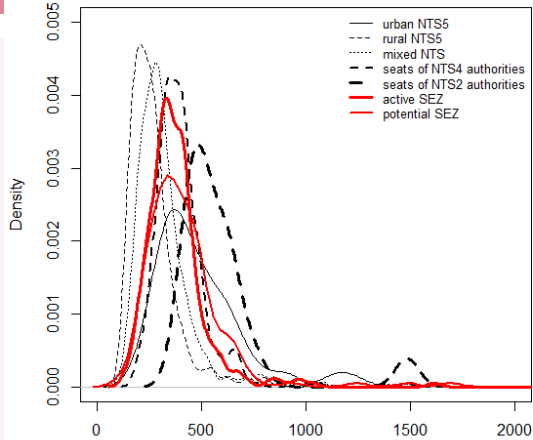
N = 71 Bandwidth = 293.4
Municipalities performance vs. existence of SEZ

N = 71 Bandwidth = 140
Municipalities performance vs. existence of SEZ

N = 71 Bandwidth = 105.9
Municipalities performance vs. existence of SEZ

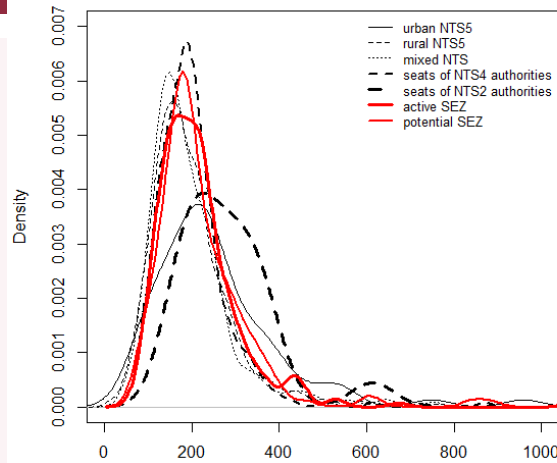
Method 2: Density distributions for 6-years averages in 1995-2000 and 2007-2012

**Own revenues per inhabitant
1995-2000 average**



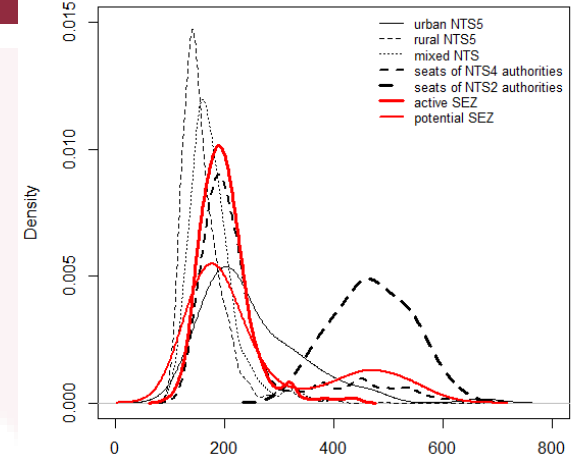
N = 71 Bandwidth = 68.45
Municipalities performance vs. existence of SEZ

**Investment expenditure per inhabitant
1995-2000 average**



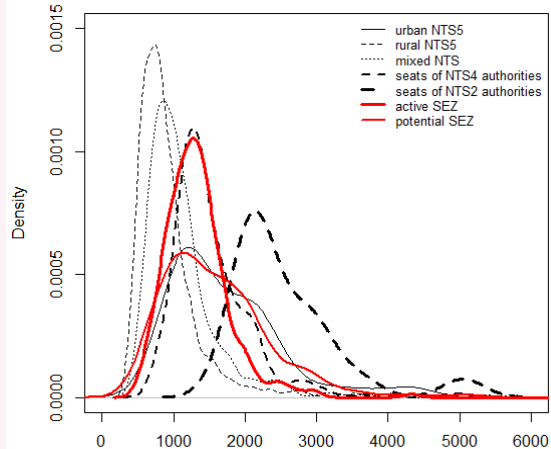
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Municipalities performance vs. existence of SEZ

**PIT revenues per population in productive age
1995-2000 average**



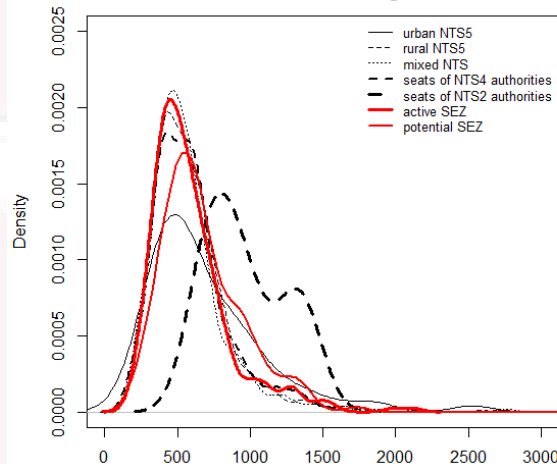
N = 71 Bandwidth = 35.23
Municipalities performance vs. existence of SEZ

**Own revenues per inhabitant
2007-2012 average**



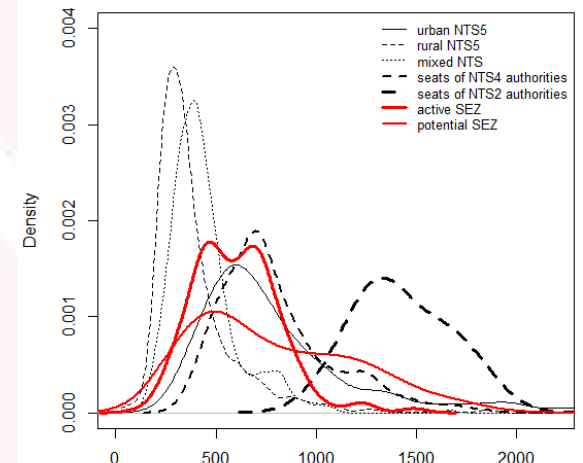
N = 71 Bandwidth = 293.4
Municipalities performance vs. existence of SEZ

**Investment expenditure per inhabitant
2007-2012 average**



N = 71 Bandwidth = 140
Municipalities performance vs. existence of SEZ

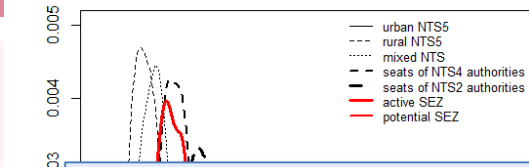
**PIT revenues per population in productive age
municipalities, 2007-2012 average**



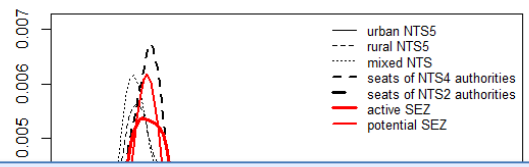
N = 71 Bandwidth = 105.9
Municipalities performance vs. existence of SEZ

Method 2: Density distributions for 6-years averages in 1995-2000 and 2007-2012

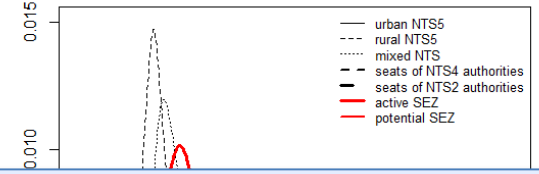
Own revenues per inhabitant
1995-2000 average



Investment expenditure per inhabitant
1995-2000 average

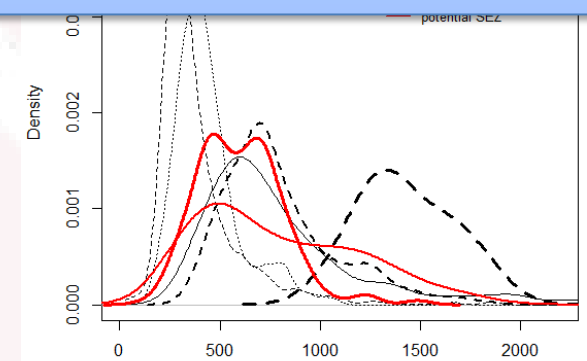
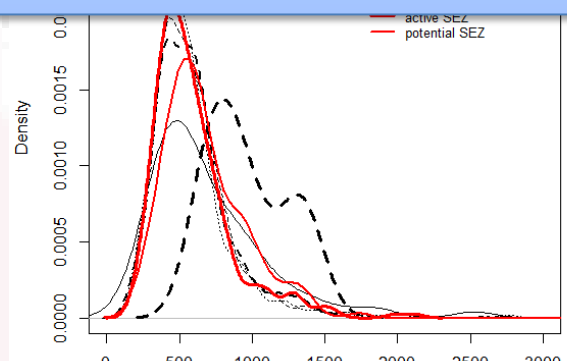
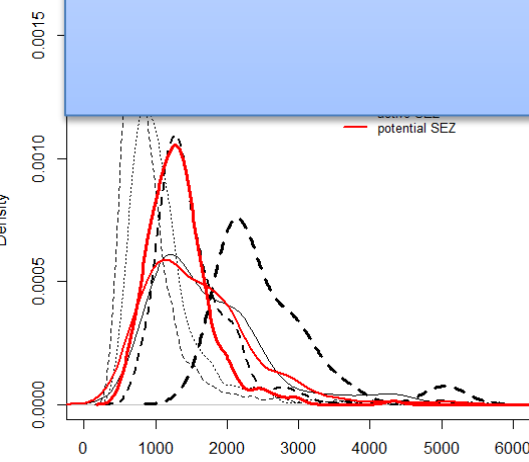


PIT revenues per population in productive age
1995-2000 average



Results

- SEZ does not cause a significant improvement in the economic situation of municipalities in the long run
- Core regional citres are significantly different, but the rest of groups of municipalities have similar empirical density distributions → no impact of SEZ





Method 3: Cumulative simultaneous spatial autoregressive model SAC (1)

- Objective: To evaluate the significance of the impact of SEZs on the amount of own revenues in the years 1995-2012
 - Did the municipalities with SEZ obtain significantly higher amount of own revenues per capita than other municipalities?
 - Can we assume the quasi „*gift exchange*“ hypothesis? – that local governments attract investors, to improve their situation in the long-run. In the short term, this means higher costs and expenses (investments in infrastructure, tax exemptions), but with the hope of increasing their own incomes, PIT and CIT.

- Model: **cumulative structure** to reflect the flows, resources and stocks as well as the characteristics of the individual municipalities (constant over time). **Investment approach**, philosophy similar to the NPV model: discounted expenditures compared with the discounted (deflated) incomes in the whole period of the investment.

- Incomes are the own revenues, expenditures are the investments. The first year of "investment" is 1995. Models are estimated for each year.



Method 3: Cumulative simultaneous spatial autoregressive model SAC (2)

Rule of accumulation of flows over years:

model 1: 1995

model 2: 1995+1996

model 3: 1995+1996+1997

.....

model 18: 1995+.....+ 2012

Spatial Estimation: for each year we estimate SAC model in general form as following:

$$y = \rho W y + \beta X + u \quad i \quad u = \lambda W u + e$$

Where:

W – contiguity matrix n x n

for variables **constant over time**: $x = x_i$

for **stock** variables: $x = x_{T,i}$, $y = y_{T,i}$,

for **flow** variables: $x = x_{T,i} = \sum_{t=1995}^T x_{t,i} \cdot d_t$, $y = y_{T,i} = \sum_{t=1995}^T y_{t,i} \cdot d_t$, where d_t is deflator for year t

	own revenues	investment	workers employed	...	SEZ active
	<i>flow</i>	<i>flow</i>	<i>stock</i>		<i>dummy</i>
1995	Y (1995)	X1 (1995)	X2 (1995)		X3 (1995)
1996	Y (1996)	X1 (1996)	X2 (1996)		X3 (1996)
1997	Y (1997)	X1 (1997)	X2 (1997)		X3 (1997)
1998	Y (1998)	X1 (1998)	X2 (1998)		X3 (1998)
1999	Y (1999)	X1 (1999)	X2 (1999)		X3 (1999)
2000	Y (2000)	X1 (2000)	X2 (2000)		X3 (2000)
2001	Y (2001)	X1 (2001)	X2 (2001)		X3 (2001)
2002	Y (2002)	X1 (2002)	X2 (2002)		X3 (2002)
2003	Y (2003)	X1 (2003)	X2 (2003)		X3 (2003)
2004	Y (2004)	X1 (2004)	X2 (2004)		X3 (2004)
2005	Y (2005)	X1 (2005)	X2 (2005)		X3 (2005)
2006	Y (2006)	X1 (2006)	X2 (2006)		X3 (2006)
2007	Y (2007)	X1 (2007)	X2 (2007)		X3 (2007)
2008	Y (2008)	X1 (2008)	X2 (2008)		X3 (2008)
2009	Y (2009)	X1 (2009)	X2 (2009)		X3 (2009)
2010	Y (2010)	X1 (2010)	X2 (2010)		X3 (2010)
2011	Y (2011)	X1 (2011)	X2 (2011)		X3 (2011)
2012	Y (2012)	X1 (2012)	X2 (2012)		X3 (2012)



Method 3: Cumulative simultaneous spatial autoregressive model SAC (3)

Discounted cumulated flows: MONEY: own revenues *per capita*, investment expenditures *per capita*, PIT and CIT revenues *per capita* in productive age.

Values from the last period: number of employed & number of firms per capita in productive age.

Control variables constant over time: SEZ active (dummy), SEZ potential (dummy), distance from municipality to core city, status of core city (dummy)

$$\begin{aligned} \text{own rev.} &= \alpha + \rho \cdot \text{own. rev}_{wlag} + \beta_1 \cdot \text{investment} + \beta_2 \cdot \text{PIT rev.} + \beta_3 \cdot \text{CIT rev} + \\ &+ \beta_4 \cdot \text{working} + \beta_5 \cdot \text{firms} + \beta_6 \cdot \text{SEZ}_{active} + \beta_7 \cdot \text{SEZ}_{potent.} + \\ &+ \beta_7 \cdot \text{DIST} + \beta_8 \cdot \text{core city} + u \\ u &= \lambda W u + \varepsilon \end{aligned}$$

Dataset: year 1995-2012 (18 years)
2474 spatial units
14 variables in whole analysis



623'448
observations



Method 3: Cumulative simultaneous spatial autoregressive model SAC (4)

Table 1: Estimation of cumulative simultaneous spatial SAC model

	(Intercept)	Investment expenditures1	PIT revenues2	CIT revenues2	Employed2	Business units2	SEZ active3	SEZ potential3	DIST	Regional core city3	rho	lambda	AIC Spat.	AIC Lm
	<p>Expected results:</p> $\begin{aligned} \text{own rev.} = & \alpha + \rho \cdot \text{own. rev}_{wlag} + \\ & + \beta_1 \cdot \text{investment} \\ & + \beta_2 \cdot \text{PIT rev.} + \beta_3 \cdot \text{CIT rev} + \\ & + \beta_4 \cdot \text{working} + \beta_5 \cdot \text{firms} + \\ & + \beta_6 \cdot \text{SEZ}_{active} + \beta_7 \cdot \text{SEZ}_{potent.} + \\ & + \beta_7 \cdot \text{DIST} \\ & + \beta_8 \cdot \text{core city} \\ & + u \quad \& \quad u = \lambda Wu + \varepsilon \end{aligned}$					<p>OWN REVENUES depend on:</p> <ul style="list-style-type: none"> + spatial dependence + long-term investment (multiplier) + components of own revenues + more workers and firms increase taxes + SEZ are hypothesised to improve the performance - peripheral location should worsen performance + regional core city should improve performance ~ error spatially autocorrelated 								
2012	-3281.81***	1.4***	0.16***	2.57***	11601.46***	22453.45***	-175.7	172.68	-3.64	-2071.08***	0.047***	0.3613***	46957	47176

1 per capita; 2 per productive age population; 3 dummy variable

Source: Own results, estimated in R with packages spdep (Bivand, 2014)



Method 3: Cumulative simultaneous spatial autoregressive model SAC (4)

Table 1: Estimation of cumulative simultaneous spatial SAC model

	(Intercept)	Investment expenditures ¹	PIT revenues ²	CIT revenues ²	Employed ²	Business units ²	SEZ active ³	SEZ potential ³	DIST	Regional core city ³	rho	lambda	AIC Spat.	AIC Lm
1995	-42,15***	1,16***	102,47***	-1,04***	201,14***	-33,09	-5,68***	-6,05	0,06***	-4,15	0,0269	0,1918***	24695	24742
1996	-57,07***	1,05***	0,07	0,3***	268,03***	226,5***	-9,3	-9,29	0,1	-38,39	0,0361	0,1829***	28580	28634
1997	-130,83***	1,04***	0,02	0,69***	754,29***	-29,22	-43,55***	-43,88***	0,1	-118,59***	0,042***	0,1071***	31905	31929
1998	-157,54***	1,05***	0,12***	2,54***							0,186	0,124***	34577	34595
1999	-133,03***	1,04***	0,13***	2,89***							0,156	0,156***	36223	36223
2000	-157,02***	1,07***	0,22***	2,25***							0,032	0,032***	37824	37824
2001	-68,23	1,14***	0,22***	2,25***							0,249	0,249***	39140	39140
2002	-165,87	1,21***	0,22***	2,25***							0,265	0,265***	40547	40547
2003	-298,5**	1,29***	0,31***	3,92***							0,255	0,255***	41645	41645
2004	-585,57**	1,38***	0,28***	3,7***							0,276	0,2504***	42661	42661
2005	-903,58**	1,49***	0,23***	2,98***							0,259	0,2622***	43151	43242
2006	-1144,21**	1,51***	0,13***	3,47***	8639,21***	5304,05***	-256,6***	63,33	-3,02***	-1308,96***	0,0244	0,2747***	43733	43832
2007	-1325,43**	1,5***	-0,07	3,25***	8555,09***	8619,99***	-238,29	82,84	-2,9	-1376,52***	0,0247	0,309***	44124	44254
2008	-1483,12**	1,51***	0,01	2,6***	8312,11***	11504,2***	-184,41	160,07	-2,85	-1068,79***	0,0255	0,3714***	44254	44455
2009	-1677,41**	1,39***	0,13***	2,39***	7020,99***	16105,41***	-144,19	75,86	-1,95	-880,87	0,0263	0,4226***	44674	44943
2010	-2233,4***	1,33***	0,17***	2,83***	7789,6***	17642,97***	-101,69	82,13	-1,6	-1275,94***	0,034***	0,4122***	45360	45637
2011	-2830,56***	1,33***	0,17***	2,85***	8375,56***	22820,49***	-109,21	115,69	-2,42	-1559,55***	0,044***	0,4031***	46166	46434
2012	-3281,81***	1,4***	0,16***	2,57***	11601,46***	22453,45***	-175,7	172,68	-3,64	-2071,08***	0,047***	0,3613***	46957	47176

Investment expenditures
 Positive and significant
 Long-term multiplier from 1.05 to 1.51



1 per capita; 2 per productive age population; 3 dummy variable
 Source: Own results, estimated in R with packages spdep (Bivand, 2014)



Method 3: Cumulative simultaneous spatial autoregressive model SAC (4)

Table 1: Estimation of cumulative simultaneous spatial SAC model

	(Intercept)	Investment expenditures1	PIT revenues2	CIT revenues2	Employed2	Business units2	SEZ active3	SEZ potential3	DIST	Regional core city3	rho	lambda	AIC Spat.	AIC Lm
1995	-42,15***	1,16***	02,47***	-1,04***	201,14***	-33,09	-5,68***	-6,05	0,06***	-4,15	0,0269	0,1918***	24695	24742
1996	-57,07***	1,05***	0,07	0,3***	268,03***	226,5***	-9,3	-9,29	0,1	-38,39	0,0361	0,1829***	28580	28634
1997	-130,83***	1,04***	0,02	0,69***	754,29***	-29,22	-43,55***	-43,88***	0,1	-118,59***	0,042***	0,1071***	31905	31929
1998	-157,54***	1,05***	-0,12***	2,54***	1257,32***	-349,63***	-98,36***	-76,4***	0,03	-262,93***	0,0186	0,124***	34577	34595
1999	-133,03***	1,04***	-0,13***	2,89***	1830,96***	263,82	-114,65***	-96,02***	-0,41	-373,87***	0,0156	0,1936***	36179	36223
2000	-157,02***	1,07***	-0,22***	2,25***	419,64***	249,7								
2001	-68,23	1,14***	-0,31***	2,74***	666,82***	-225,6								
2002	-165,87	1,21***	-0,36***	3,24***	135,5***	524,3								
2003	-298,5***	1,29***	-0,31***	3,92***	14,8									
2004	-585,57***	1,38***	-0,28***	3,7***	656,2***	1476,								
2005	-903,58***	1,49***	-0,23***	2,98***	834,69***	3429,81								
2006	-1144,21***	1,51***	-0,13***	3,47***	639,21***	5304,05								
2007	-1325,43***	1,5***	-0,07	3,25***	555,09***	8619,99								
2008	-1483,12***	1,51***	0,01	2,6***	8312,11***	11504,2***	-184,41	160,07	-2,85	-1068,79***	0,0255	0,3714***	44254	44455
2009	-1677,41***	1,39***	0,13***	2,39***	7020,99***	16105,41***	-144,19	75,86	-1,95	-880,87	0,0263	0,4226***	44674	44943
2010	-2233,4***	1,33***	0,17***	2,83***	7789,6***	17642,97***	-101,69	82,13	-1,6	-1275,94***	0,034***	0,4122***	45360	45637
2011	-2830,56***	1,33***	0,17***	2,85***	8375,56***	22820,49***	-109,21	115,69	-2,42	-1559,55***	0,044***	0,4031***	46166	46434
2012	-3281,81***	1,4***	0,16***	2,57***	11601,46***	22453,45***	-175,7	172,68	-3,64	-2071,08***	0,047***	0,3613***	46957	47176

PIT and CIT revenues

Positive/negative and significant Components of own revenues



1 per capita; 2 per productive age population; 3 dummy variable
 Source: Own results, estimated in R with packages: spdep (Bivand, 2014)



Method 3: Cumulative simultaneous spatial autoregressive model SAC (4)

Table 1: Estimation of cumulative simultaneous spatial SAC model

	(Intercept)	Investment expenditures ¹	PIT revenues ²	CIT revenues ²	Employed ²	Business units ²	SEZ active ³	SEZ potential ³	DIST	Regional core city ³	rho	lambda	AIC Spat.	AIC Lm
1995	-42,15***	1,16***	102,47***	-1,04***	201,14***	-33,09	-5,68***	-6,05	0,06***	-4,15	0,0269	0,1918***	24695	24742
1996	-57,07***	1,05***	0,07	0,3***	268,03***	226,5***	-9,3	-9,29	0,1	-38,39	0,0361	0,1829***	28580	28634
1997	-130,83***	1,04***	0,02	0,69***	754,29***	-29,22	-43,55***	-43,88***	0,1	-118,59***	0,042***	0,1071***	31905	31929
1998	-157,54***	1,05***	-0,12***	2,54**	1257,32***	349,63***	-98,36***	-76,4***	0,03	-262,93***	0,0186	0,124***	34577	34595
1999	-133,03***	1,04***	-0,13***	2,89**	1830,96***	263,82	-114,65***							
2000	-157,02***	1,07***	-0,22***	2,25**	3419,64***	249,77	-154,52***							
2001	-68,23	1,14***	-0,31***	2,74**	4666,82***	225,64	-153,21***							
2002	-165,87	1,21***	-0,36***	3,24**	6135,54***	524,8								
2003	-298,5***	1,29***	-0,31***	3,92**	7141,31***	143,8								
2004	-585,57***	1,38***	-0,28***	3,7**	8656,17***	1476,3	-212,2***							
2005	-903,58***	1,49***	-0,23***	2,98**	9334,69***	329,81***	-210,56***							
2006	-1144,21***	1,51***	-0,13***	3,47**	8639,21***	504,05***	-256,6***							
2007	-1325,43***	1,5***	-0,07	3,25**	8555,09***	8519,99***	-238,29	82,84	-2,9	-1376,52***	0,0247	0,309***	44124	44254
2008	-1483,12***	1,51***	0,01	2,6***	8312,11***	11504,2***	-184,41	160,07	-2,85	-1068,79***	0,0255	0,3714***	44254	44455
2009	-1677,41***	1,39***	0,13***	2,39***	7020,99***	15105,41***	-144,19	75,86	-1,95	-880,87	0,0263	0,4226***	44674	44943
2010	-2233,4***	1,33***	0,17***	2,83***	7789,6***	17642,97***	-101,69	82,13	-1,6	-1275,94***	0,034***	0,4122***	45360	45637
2011	-2830,56***	1,33***	0,17***	2,85***	8375,56***	22820,49***	-109,21	115,69	-2,42	-1559,55***	0,044***	0,4031***	46166	46434
2012	-3281,81***	1,4***	0,16***	2,57***	11601,46***	22453,45***	-175,7	172,68	-3,64	-2071,08***	0,047***	0,3613***	46957	47176

Employed per capita in working age
Positive and significant



¹ per capita; ² per productive age population; ³ dummy variable

Source: Own results, estimated in R with packages spdep (Bivand, 2014)

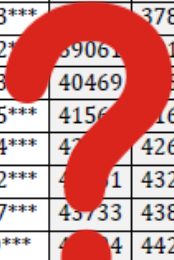


Method 3: Cumulative simultaneous spatial autoregressive model SAC (4)

Table 1: Estimation of cumulative simultaneous spatial SAC model

	(Intercept)	Investment expenditures ¹	PIT revenues ²	CIT revenues ²	Employed ²	Business units ²	SEZ active ³	SEZ potential ³	DIST	Regional core city ³	rho	lambda	AIC Spat.	AIC Lm
1995	-42,15***	1,16***	102,47***	-1,04***	201,14***	-33,09	-5,68***	-6,05				1918***	24695	24742
1996	-57,07***	1,05***	0,07	0,3***	268,03***	226,5***	-9,3	-9,29				1829***	28580	28634
1997	-130,83***	1,04***	0,02	0,69***	754,29***	-29,22	-43,55***	-43,88***				1071***	31905	31929
1998	-157,54***	1,05***	-0,12***	2,54***	1257,32***	-349,63***	-98,36***	-76,4***				1124***	34577	34595
1999	-133,03***	1,04***	-0,13***	2,89***	1830,96***	263,82	114,65***	-96,02***				1936***	36179	36223
2000	-157,02***	1,07***	-0,22***	2,25***	3419,64***	249,77	154,52***	-141,51**				1803***	367824	37824
2001	-68,23	1,14***	-0,31***	2,74***	4666,82***	-225,64	50,81***	125,52**				2532***	39061	4140
2002	-165,87	1,21***	-0,36***	3,24***	6135,54***	524,33	10,82	10,82				2523***	40469	41547
2003	-298,5***	1,29***	-0,31***	3,92***	7141,31***	443,82	19,7***	-49,47				2555***	4156	41645
2004	-585,57***	1,38***	-0,28***	3,7***	8656,17***	1476,3	212,2***	-29,1				2504***	4171	42661
2005	-903,58***	1,49***	-0,23***	2,98***	9334,69***	3429,81***	210,56***	28,15				2622***	4181	43242
2006	-1144,21***	1,51***	-0,13***	3,47***	8639,21***	5304,05***	256,6***	63,33				2747***	43733	43832
2007	-1325,43***	1,5***	-0,07	3,25***	8555,09***	8619,99***	-238,29	82,84				309***	4384	44254
2008	-1483,12***	1,51***	0,01	2,6***	8312,11***	11504,2***	-184,41	160,07				3714***	4434	44455
2009	-1677,41***	1,39***	0,13***	2,39***	7020,99***	16105,41***	-144,19	75,86				4226***	44674	44943
2010	-2233,4***	1,33***	0,17***	2,83***	7789,6***	17642,97***	-101,69	82,13				4122***	45360	45637
2011	-2830,56***	1,33***	0,17***	2,85***	8375,56***	22820,49***	-109,21	115,69				44031***	46166	46434
2012	-3281,81***	1,4***	0,16***	2,57***	11601,46***	22453,45***	-175,7	172,68	-3,64	-2071,08***	0,047***	0,3613***	46957	47176

Business units
 Positive and significant after 2004,
 earlier insignificant – why?



¹ per capita; ² per productive age population; ³ dummy variable
 Source: Own results, estimated in R with packages spdep (Bivand, 2014)



Method 3: Cumulative simultaneous spatial autoregressive model SAC (4)

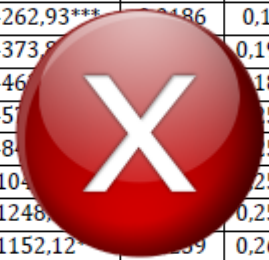
Table 1: Estimation of cumulative simultaneous spatial SAC model

	Investment	PIT	CIT	Employed2	Business units2	SEZ active3	SEZ potential3	DIST	Regional core city3	rho	lambda	AIC Spat.	AIC Lm
1995	201,14***	-33,09	-5,68***	-6,05	0,06***	-4,15	0,0269	0,1918***	24695	24742			
1996	268,03***	226,5***	-9,3	-9,29	0,1	-38,39	0,0361	0,1829***	28580	28634			
1997	754,29***	-29,22	-43,55***	-40,88***	0,1	-118,59***	0,042***	0,1071***	31905	31929			
1998	1257,32***	-349,63**	-98,36***	-75,4***	0,03	-262,93***	0,0486	0,124***	34577	34595			
1999	1830,96***	263,82	-114,65***	-90,02***	-0,41	-373,8***	0,1936***	0,1803***	36179	36223			
2000	3419,64***	249,77	-154,52***	-140,51***	-0,84***	-460,8***	0,1803***	0,1803***	37778	37824			
2001	4666,82***	225,64	-153,21***	-130,52***	-1,24***	-510,8***	0,1532***	0,1532***	39061	39140			
2002	5114,33***	14,33	-186,49***	-119,82	-1,89***	-800,8***	0,1523***	0,1523***	40469	40547			
2003	7113,82***	13,82	-198,7***	-109,47	-1,83	-1000,8***	0,2555***	0,2555***	41564	41645			
2004	8656,17***	1476,3	-212,2***	-91	-2,69***	-1248,8***	0,2504***	0,2504***	42579	42661			
2005	9334,69***	3429,81**	-210,56***	28,15	-3,19***	-1152,12***	0,2622***	0,2622***	43151	43242			
2006	8639,21***	5304,05**	-256,6***	63,33	-3,02***	-1308,96***	0,0244	0,2747***	43733	43832			
2007	8555,09***	8619,99**	-238,29	2,84	-2,9	-1376,52***	0,0247	0,309***	44124	44254			
2008	8312,11***	11504,2**	-184,41	70,07	-2,85	-1068,79***	0,0255	0,3714***	44254	44455			
2009	7020,99***	16105,41**	-144,19	75,86	-1,95	-880,87	0,0263	0,4226***	44674	44943			
2010	7789,6***	17642,97**	-101,69	82,13	-1,6	-1275,94***	0,034***	0,4122***	45360	45637			
2011	8375,56***	22820,49***	-109,21	115,69	-2,42	-1559,55***	0,044***	0,4031***	46166	46434			
2012	1601,46***	22453,45***	-175,7	172,68	-3,64	-2071,08***	0,047***	0,3613***	46957	47176			

Active SEZ

Negative and significant till 2006

After 2006 negative and insignificant (increase in variance – differentiation because of EU funds)



1 per capita; 2
Source: Own results, estimated in R with packages spdep (Bivand, 2014)



Method 3: Cumulative simultaneous spatial autoregressive model SAC (4)

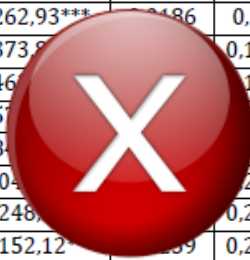
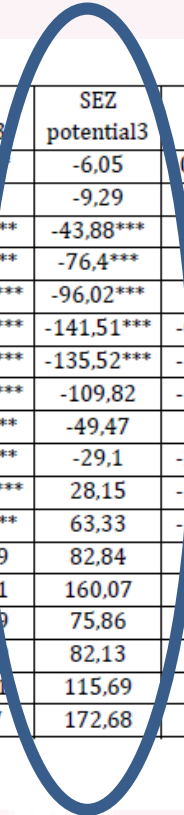
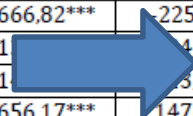
Table 1: Estimation of cumulative simultaneous spatial SAC model

	Investment	PIT	CIT	Employed ²	Business units ²	SEZ active ³	SEZ potential ³	DIST	Regional core city ³	rho	lambda	AIC Spat.	AIC Lm	
1995	201,14***	-33,09	-5,68**	-6,05	0,06***	-4,15	0,0269	0,1918***	24695	24742				
1996	268,03***	226,5***	-9,3	-9,29	0,1	-38,39	0,0361	0,1829***	28580	28634				
1997	754,29***	-29,22	-43,55**	-43,88***	0,1	-118,59***	0,042***	0,1071***	31905	31929				
1998	1257,32***	-349,63***	-98,36**	-76,4***	0,03	-262,93***	0,1486	0,124***	34577	34595				
1999	1830,96***	263,82	-114,6***	-96,02***	0,41	-373,8***	0,1936***	0,1803***	36179	36223				
2000	3419,64***	249,77	-154,52***	-141,51***	-0,84***	-46,8***	0,1803***	0,1803***	37778	37824				
2001	4666,82***	225,64	-153,21***	-135,52***	-0,24***	-5,7***	0,1532***	0,1532***	39061	39140				
2002	5171,43	14,33	-186,49***	-109,82	-0,89***	-8,1***	0,1523***	0,1523***	40469	40547				
2003	7171,382	198,8***	-198,8***	-49,47	1,83	-10,4***	0,2555***	0,2555***	41564	41645				
2004	8656,17***	1476,3	-212,8***	-29,1	-0,69***	-1248,8***	0,2504***	0,2504***	42579	42661				
2005	9334,69***	3429,81***	-210,55***	28,15	-0,19***	-1152,12***	0,2622***	0,2622***	43151	43242				
2006	108639,21***	5304,05***	-256,6***	63,33	-0,02***	-1308,96***	0,0244	0,2747***	43733	43832				
2007	128555,09***	8619,99***	-238,9	82,84	-2,9	-1376,52***	0,0247	0,309***	44124	44254				
2008	148312,11***	11504,2***	-184,1	160,07	-2,85	-1068,79***	0,0255	0,3714***	44254	44455				
2009	17020,99***	16105,41***	-144,19	75,86	-1,95	-880,87	0,0263	0,4226***	44674	44943				
2010	197789,6***	17642,97***	-101,6	82,13	-1,6	-1275,94***	0,034***	0,4122***	45360	45637				
2011	228375,56***	22820,49***	-109,21	115,69	-2,42	-1559,55***	0,044***	0,4031***	46166	46434				
2012	3281,81***	1,4***	0,16***	2,57***	11601,46***	22453,45***	-175,7	172,68	-3,64	-2071,08***	0,047***	0,3613***	46957	47176

Potential SEZ

Negative and significant till 2001

After 2005 positive and insignificant (on average better municipalities than the other)



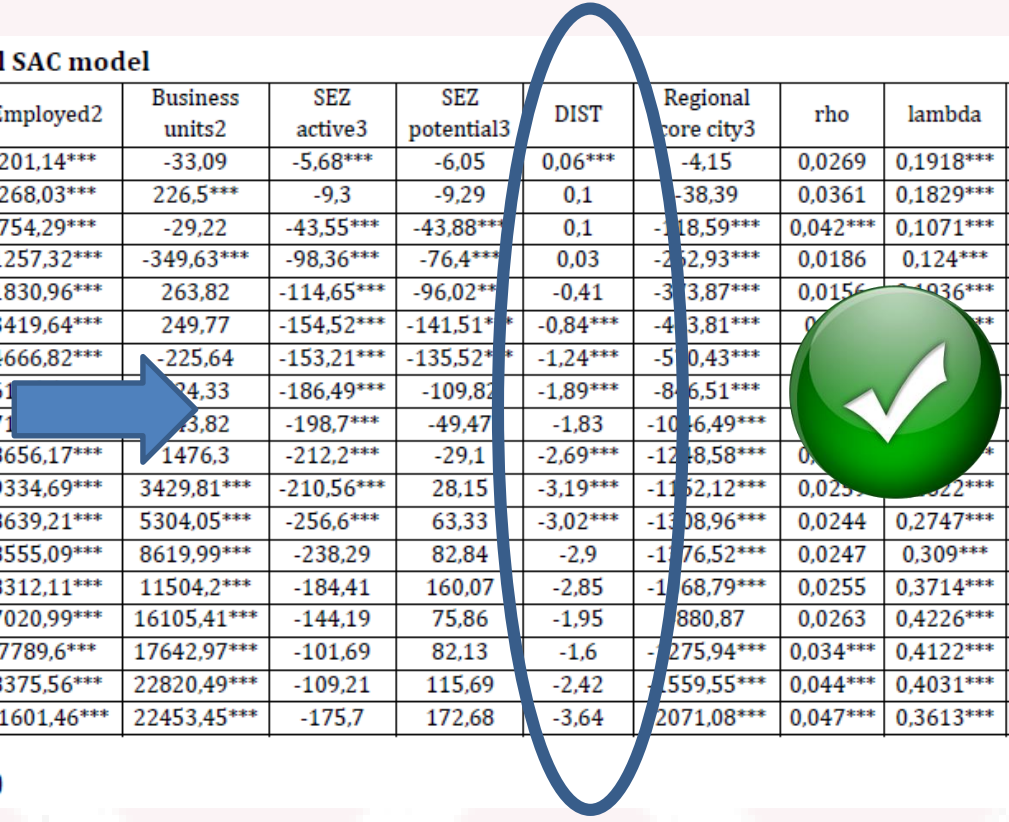
1 per capita; 2 per productive age population; 3 dummy variable
 Source: Own results, estimated in R with packages spdep (Bivand, 2014)



Method 3: Cumulative simultaneous spatial autoregressive model SAC (4)

Table 1: Estimation of cumulative simultaneous spatial SAC model

	Distance	Employed2	Business units2	SEZ active3	SEZ potential3	DIST	Regional core city3	rho	lambda	AIC Spat.	AIC Lm
1995	<p>Negative</p> <p>Significant till 2006</p> <p>Insignificant after 2006</p> <p>(increase in variance – differentiation because of EU funds)</p> <p>Peripheral locations are weaker!</p>	201.14***	-33.09	-5.68***	-6.05	0.06***	-4.15	0.0269	0.1918***	24695	24742
1996		268.03***	226.5***	-9.3	-9.29	0.1	-38.39	0.0361	0.1829***	28580	28634
1997		754.29***	-29.22	-43.55***	-43.88***	0.1	-118.59***	0.042***	0.1071***	31905	31929
1998		1257.32***	-349.63***	-98.36***	-76.4***	0.03	-252.93***	0.0186	0.124***	34577	34595
1999		1830.96***	263.82	-114.65***	-96.02***	-0.41	-313.87***	0.0156	0.1936***	36179	36223
2000		3419.64***	249.77	-154.52***	-141.51***	-0.84***	-413.81***	0.0156	0.1936***	37778	37824
2001		4666.82***	-225.64	-153.21***	-135.52***	-1.24***	-510.43***	0.0156	0.1936***	39061	39140
2002		6112.43***	24.33	-186.49***	-109.82***	-1.89***	-816.51***	0.0156	0.1936***	40469	40547
2003		7113.82***	1476.3	-198.7***	-49.47	-1.83	-1016.49***	0.0156	0.1936***	41564	41645
2004		8656.17***	1476.3	-212.2***	-29.1	-2.69***	-1218.58***	0.0156	0.1936***	42579	42661
2005		9334.69***	3429.81***	-210.56***	28.15	-3.19***	-1362.12***	0.0255	0.3714***	43151	43242
2006		8639.21***	5304.05***	-256.6***	63.33	-3.02***	-1308.96***	0.0244	0.2747***	43733	43832
2007	8555.09***	8619.99***	-238.29	82.84	-2.9	-1176.52***	0.0247	0.309***	44124	44254	
2008	8312.11***	11504.2***	-184.41	160.07	-2.85	-1168.79***	0.0255	0.3714***	44254	44455	
2009	7020.99***	16105.41***	-144.19	75.86	-1.95	-880.87	0.0263	0.4226***	44674	44943	
2010	7789.6***	17642.97***	-101.69	82.13	-1.6	-275.94***	0.034***	0.4122***	45360	45637	
2011	8375.56***	22820.49***	-109.21	115.69	-2.42	-559.55***	0.044***	0.4031***	46166	46434	
2012	11601.46***	22453.45***	-175.7	172.68	-3.64	-2071.08***	0.047***	0.3613***	46957	47176	



1 per capita: ...
Source: Own ...

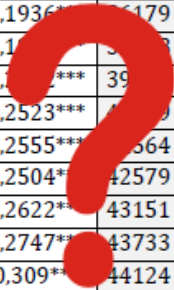
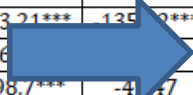


Method 3: Cumulative simultaneous spatial autoregressive model SAC (4)

Table 1: Estimation of cumulative simultaneous spatial SAC model

	(Intercept)	Investment expenditures1	PIT revenues2	CIT revenues2	Employed2	Business units2	SEZ active3	SEZ potential3	DIST	Regional core city3	rho	lambda	AIC Spat.	AIC Lm
1995	-42,15***	1,16***	102,47***	-1,04***	201,14***	-33,09	-5,68***	-6,05	0,06***	-4,15	0,0269	0,1918***	24695	24742
1996	-57,07***	1,05***	0,07	0,3***	268,03***	226,5***	-9,3	-9,29	0,1	-38,39	0,0361	0,1829***	28580	28634
1997	-130,83***					-29,22	-43,55***	-43,88***	0,1	-118,59***	0,042***	0,1071***	31905	31929
1998	-157,54***					-349,63***	-98,36***	-76,4***	0,03	-262,93***	0,0186	0,124***	34577	34595
1999	-133,03***					263,82	-114,65***	-96,02***	-0,4	-373,87***	0,0156	0,1936***	36179	36223
2000	-157,02***					249,77	-154,52***	-141,51***	-0,84**	-463,81***	0,032	0,1	37824	37824
2001	-68,23					-225,64	-153,21***	135,9***	-1,24**	-570,43***	0,0249	0,1	39140	39140
2002	-165,87					524,33	-186,7***	-135,9***	-1,89**	-846,51***	0,0265	0,2523***	40547	40547
2003	-298,5***					443,82	-198,7***	-41,47	-1,8	-1046,49***	0,0255	0,2555***	41645	41645
2004	-585,57***					1476,3	-212,2***	-29,1	-2,69**	-1248,58***	0,0276	0,2504**	42579	42661
2005	-903,58***					3429,81***	-210,56***	28,15	-3,19**	-1152,12***	0,0259	0,2622**	43151	43242
2006	-1144,21***					5304,05***	-256,6***	63,33	-3,02**	-1308,96***	0,0244	0,2747**	43733	43832
2007	-1325,43***					8619,99***	-238,29	82,84	-2,9	-1376,52***	0,0247	0,309**	44124	44254
2008	-1483,12***					11504,2***	-184,41	160,07	-2,85	-1068,79***	0,0255	0,3714***	44254	44455
2009	-1677,41***					6105,41***	-144,19	75,86	-1,95	-880,87	0,0263	0,4226***	44674	44943
2010	-2233,4***	1,33***	0,17***	2,83***	7789,6***	17642,97***	-101,69	82,13	-1,6	-1275,94***	0,034***	0,4122***	45360	45637
2011	-2830,56***	1,33***	0,17***	2,85***	8375,56***	22820,49***	-109,21	115,69	-2,42	-1559,55***	0,044***	0,4031***	46166	46434
2012	-3281,81***	1,4***	0,16***	2,57***	11601,46***	22453,45***	-175,7	172,68	-3,64	-2071,08***	0,047***	0,3613***	46957	47176

Regional Core City
 Negative and significant
 Own revenues lower in core cities than in other municipalities – why?



1 per capita; 2 per productive age population; 3 dummy variable
 Source: Own results, estimated in R with packages spdep (Bivand, 2014)



Method 3: Cumulative simultaneous spatial autoregressive model SAC (4)

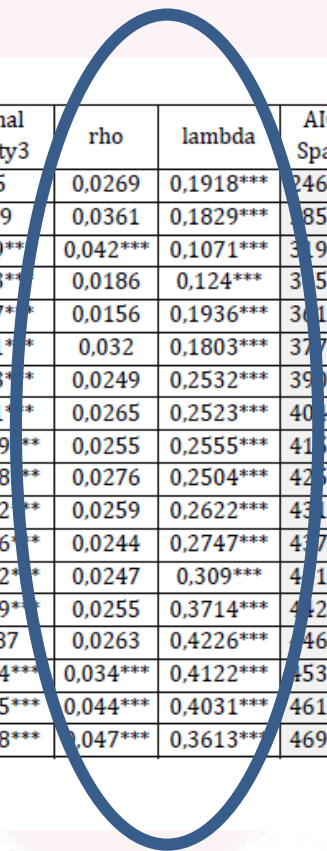
Table 1: Estimation of cumulative simultaneous spatial SAC model

	(Intercept)	Investment	PIT	CIT	Business	SEZ active3	SEZ potential3	DIST	Regional core city3	rho	lambda	AIC Spat.	AIC Lm
1995	-42,15***					-5,68***	-6,05	0,06***	-4,15	0,0269	0,1918***	24695	24742
1996	-57,07***					-9,3	-9,29	0,1	-38,39	0,0361	0,1829***	28580	28634
1997	-130,83***					-43,55***	-43,88***	0,1	-118,59**	0,042***	0,1071***	31905	31929
1998	-157,54***					-98,36***	-76,4***	0,03	-262,93**	0,0186	0,124***	31577	34595
1999	-133,03***					-114,65***	-96,02***	-0,41	-373,87**	0,0156	0,1936***	36179	36223
2000	-133,03***					-154,52***	-141,51***	-0,84***	-463,81**	0,032	0,1803***	37778	37824
2001	-133,03***					-153,21***	-115,52***	-1,24***	-570,43**	0,0249	0,2532***	39061	39140
2002	-133,03***					-115,52***	-115,52***	-1,89***	-846,51**	0,0265	0,2523***	40269	40547
2003	-133,03***					-198,7***	-9,47	-1,83	-1046,49**	0,0255	0,2555***	41164	41645
2004	-133,03***					-212,2***	-29,1	-2,69***	-1248,58**	0,0276	0,2504***	42579	42661
2005	-133,03***					-210,56***	28,15	-3,19***	-1152,12**	0,0259	0,2622***	43151	43242
2006	-1144,21***					-256,6***	63,33	-3,02***	-1308,96**	0,0244	0,2747***	43733	43832
2007	-1325,43***					-238,29	82,84	-2,9	-1376,52**	0,0247	0,309***	44124	44254
2008	-1483,12***					-184,41	160,07	-2,85	-1068,79**	0,0255	0,3714***	44254	44455
2009	-1677,41***					-144,19	75,86	-1,95	-880,87	0,0263	0,4226***	44674	44943
2010	-2233,4***					-101,69	82,13	-1,6	-1275,94***	0,034***	0,4122***	45360	45637
2011	-2830,56***					-109,21	115,69	-2,42	-1559,55***	0,044***	0,4031***	46166	46434
2012	-3281,81***					-175,7	172,68	-3,64	-2071,08***	0,047***	0,3613***	46957	47176

Spatial coefficients

Rho – rhoWy – own revenues similar in neighbourhood after 2009

Lambda – lambdaWu – unobservable spatial effects in error term (or omitted) positive and significant (always)



1 per capita; 2 per productive
Source: Own results, estimate



Method 3: Cumulative simultaneous spatial autoregressive model SAC (4)

Table 1: Estimation of cumulative simultaneous spatial SAC model

	(Intercept)	Investment expenditures1	PIT revenues2	CIT revenues2	Employed2	Business units2	SEZ active3	SEZ potential3	DIST	Regional core city3	rho	lambda	AIC Spat.	AIC Lm
1995	-42,15***	1,16***	102,47***	-1,04***	201,14***	-33,09	-5,68***	-6,05	0,06***	-4,15	0,0269	0,1918***	24695	24742
199	<h2>Results</h2> <ul style="list-style-type: none"> - SEZ does not cause a significant improvement in the economic situation of municipalities in the long run - Potential municipalities for SEZ perform better then others 													
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2011	-2830,56***	1,33***	0,17***	2,85***	8375,56***	22820,49***	-109,21	115,69	-2,42	-1559,55***	0,044***	0,4031***	46166	46434
2012	-3281,81***	1,4***	0,16***	2,57***	11601,46***	22453,45***	-175,7	172,68	-3,64	-2071,08***	0,047***	0,3613***	46957	47176

1 per capita; 2 per productive age population; 3 dummy variable
 Source: Own results, estimated in R with packages spdep (Bivand, 2014)



Impacts in spatial model

Spatial lag models allow for estimation of spillover effects

→ Spillover: Impact of given variable x in analyzed region on studied phenomena in neighbourhood

→ *Direct impact* : impact of x in i on y in i

→ *Indirect impact*: impact of x in i on y in j

→ *Total impact* : sum of both effects



Impacts in spatial lag model: spillover effects

Table 2: Impacts in cumulative simultaneous spatial SAC model

	Investment expenditures ¹		PIT revenues ²		CIT revenues ²		Employed ²		Business units ²		SEZ active ³		SEZ potential ³		DISTANCE		Regional core city ³	
	direct	indirect	direct	indirect	direct	indirect	direct	Indirect	direct	indirect	direct	indirect	direct	indirect	direct	indirect	direct	indirect
1995	1.15	0.03	102.48	2.81	-1.04	-0.02	201.17	5.53	-33.09	-0.91	-5.67	-0.16	-6.04	-0.16	0.06	0.001	-4.15	-0.11
1996	1.05	0.04	0.06	0.002	0.30	0.01	268.09	9.97	226.55	8.43	-9.30	-0.34	-9.29	-0.34	0.097	0.003	-38.40	-1.43
1997	1.04	0.04	0.02	0.001	0.69	0.03	754.52	32.57	-29.22	-1.26	-43.56	-1.88	-43.89	-1.89	0.09	0.004	-118.62	-5.12
1998	1.05	0.02	-0.12	-0.002	2.53	0.04	1257.4	23.78	-349.64	-6.61	-98.37	-1.86	-76.40	-1.44	0.026	0.0004	-262.94	-4.97
1999	1.04	0.02	-0.13	-0.002	2.88	0.04	1831.0	28.86	263.83	4.16	-114.65	-1.81	-96.02	-1.51	-0.41	-0.006	-373.88	-5.89
2000	1.07	0.03	-0.22	-0.007	2.25	0.07	3420.2	112.30	249.82	8.20	-154.54	-5.07	-141.53	-4.64	-0.84	-0.02	-463.89	-15.23
2001	1.13	0.03	-0.31	-0.008	2.74	0.07	4667.3	118.83	-225.67	-5.74	-153.22	-3.90	-135.53	-3.45	-1.24	-0.03	-570.49	-14.52
2002	1.21	0.03	-0.36	-0.009	3.24	0.08	6136.3	166.58	524.39	14.23	-186.51	-5.06	-109.83	-2.98	-1.887	-0.05	-846.61	-22.98
2003	1.28	0.03	-0.30	-0.008	3.91	0.10	7142.1	186.21	443.87	11.54	-198.72	-5.18	-49.47	-1.29	-1.83	-0.04	-1046.6	-27.27
2004	1.37	0.04	-0.27	-0.008	3.70	0.10	8657.3	244.82	1476.5	41.75	-212.23	-6.00	-29.10	-0.82	-2.69	-0.07	-1248.7	-35.31
2005	1.49	0.04	-0.23	-0.006	2.98	0.08	9335.7	247.35	3430.2	90.88	-210.58	-5.58	28.15	0.74	-3.18	-0.08	-1152.2	-30.53
2006	1.51	0.04	-0.12	-0.003	3.47	0.08	8640.1	215.24	5304.6	132.14	-256.62	-6.39	63.33	1.57	-3.02	-0.07	-1309.1	-32.61
2007	1.50	0.04	-0.07	-0.002	3.25	0.08	8555.9	215.95	8620.9	217.59	-238.31	-6.01	82.84	2.09	-2.89	-0.07	-1376.6	-34.74
2008	1.51	0.04	0.006	0.0001	2.59	0.07	8313.2	216.56	11505	299.72	-188.44	-4.80	160.00	4.17	-2.85	-0.07	-1068.9	-27.84
2009	1.39	0.04	0.13	0.003	2.38	0.06	7021.8	189.05	16107	433.66	-144.21	-3.88	75.86	2.04	-1.94	-0.05	-880.97	-23.71
2010	1.33	0.05	0.17	0.007	2.83	0.11	7791.7	320.43	17647	725.75	-101.73	-4.18	82.15	3.38	-1.56	-0.06	-1276.3	-52.48
2011	1.33	0.06	0.17	0.008	2.85	0.13	8378.3	382.12	22828	1041.1	-109.24	-4.98	115.73	5.27	-2.42	-0.11	-1560.1	-71.15
2012	1.41	0.07	0.16	0.007	2.57	0.12	11605	566.2	22462	1095.7	-175.76	-8.57	172.75	8.42	-3.64	-0.17	-2071.9	-101.1

¹ per capita; ² per productive age population; ³ dummy variable

Source: Own results, estimated in R with packages spdep (Bivand, 2014)



Impacts in spatial lag model: spillover effects

Table 2: Impacts in cumulative simultaneous spatial SAC model

	Investment expenditures ¹		PIT revenues ²		CIT revenues ²		e ³	SEZ potential ³		DISTANCE		Regional core city ³						
	direct	indirect	direct	indirect	direct	indirect		direct	indirect	direct	indirect	direct	indirect					
1995	1.15	0.03	102.48	2.81	-1.04	-0.01	0.16	-6.04	-0.16	0.06	0.001	-4.15	-0.11					
1996	1.05	0.04	0.06	0.002	0.30	0.01	0.34	-9.29	-0.34	0.097	0.003	-38.40	-1.43					
1997	1.04	0.04	0.02	0.001	0.69	0.03	1.88	-43.89	-1.89	0.09	0.004	-118.62	-5.12					
1998	1.05	0.02	-0.12	-0.002	2.53	0.04	1.86	-76.40	-1.44	0.026	0.0004	-262.94	-4.97					
1999	1.04	0.02	-0.13	-0.002	2.88	0.04	1.81	-96.02	-1.51	-0.41	-0.006	-373.88	-5.89					
2000	1.07	0.03	-0.22	-0.007	2.25	0.07	5.07	-141.53	-4.64	-0.84	-0.02	-463.89	-15.23					
2001	1.13	0.03	-0.31	-0.008	2.74	0.07	3.90	-135.53	-3.45	-1.24	-0.03	-570.49	-14.52					
2002	1.21	0.03	-0.36	-0.009	3.24	0.08	5.06	-109.83	-2.98	-1.887	-0.05	-846.61	-22.98					
2003	1.28	0.03	-0.30	-0.008	3.91	0.10	5.18	-49.47	-1.29	-1.83	-0.04	-1046.6	-27.27					
2004	1.37	0.04	-0.27	-0.008	3.70	0.10	6.00	-29.10	-0.82	-2.69	-0.07	-1248.7	-35.31					
2005	1.49	0.04	-0.23	-0.006	2.98	0.08	5.58	28.15	0.74	-3.18	-0.08	-1152.2	-30.53					
2006	1.51	0.04	-0.12	-0.003	3.47	0.08	6.39	63.33	1.57	-3.02	-0.07	-1309.1	-32.61					
2007	1.50	0.04	-0.07	-0.002	3.25	0.08	6.01	82.84	2.09	-2.89	-0.07	-1376.6	-34.74					
2008	1.51	0.04	0.006	0.0001	2.59	0.07	4.80	160.00	4.17	-2.85	-0.07	-1068.9	-27.84					
2009	1.39	0.04	0.13	0.003	2.38	0.06	3.88	75.86	2.04	-1.94	-0.05	-880.97	-23.71					
2010	1.33	0.05	0.17	0.007	2.83	0.11	7791.7	320.43	17647	725.75	-101.73	-4.18	82.15	3.38	-1.56	-0.06	-1276.3	-52.48
2011	1.33	0.06	0.17	0.008	2.85	0.13	8378.3	382.12	22828	1041.1	-109.24	-4.98	115.73	5.27	-2.42	-0.11	-1560.1	-71.15
2012	1.41	0.07	0.16	0.007	2.57	0.12	11605	566.2	22462	1095.7	-175.76	-8.57	172.75	8.42	-3.64	-0.17	-2071.9	-101.1

Spillover
2%-4%
**Increasing over time –
stronger impact on
neighbourhood, more
connected local
economies**

¹ per capita; ² per productive age population; ³ dummy variable
Source: Own results, estimated in R with packages spdep (Bivand, 2014)



Conclusions

- SSE did not become a clear exogenous factor in development of municipalities. There is no global shift process due to the existence of the SEZ in the municipalities. Data prove rather structural stability of the economic situation in the municipalities with SEZ and without SEZ.
- It cannot be confirmed that there is a clear impact of SEZ on economic environment. It failed to confirm the significant positive spillover effects resulting from the SEZ.
- It should be noted that the impact of the SEZ is limited to a group of employees and their business performance. One should assume that the SEZ internalize the benefits, as well as they externalise costs.
- Municipalities with SEZ failed to significantly increase their own revenues due to activity of SEZ. Hypothesis of quasi "gift exchange" that they attract local investors to invest and hope to increase their own revenue in the future cannot be confirmed.
- The results indicate that municipalities profit more when investing in infrastructure that attracts investors than to deprive the own revenues as tax exemptions for SEZ.



Thank You!

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