KNOWLEDGE ECONOMY FORMATION IN RUSSIAN REGIONS IN 2000TH

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The aims

- To analyze the **regional structure of potential of knowledge economy formation** in Russia during 1998 – 2012 (Putin's era)

- To identify the **main factors** of knowledge economy development in 1998 – 2012

- To identify the **main types** of regions according the rate and factors of growth

- To introduce **new** Russian knowledge economy **index**

Method

$$RKI = \frac{GRP\_gr + GRP\_p\_c + Stud + Educ + \mathrm{Re}\,search + PCT + Mob + Web\_comp}{8}$$

where
(1) indicators of economic and social development:
- *GRP_gr* - GRP growth rate
- *GRP_p_c* - GRP per capita
(2) indicators of education and human capital:
- *Stud* - the number of students per 1000 inhabitants
- *Educ* - the average number of years of education of employees
(3) indicators of Science and Innovation:
- *Research* - the number of researchers per 10,000 inhabitants
- *PCT* - the number of PCT applications 1 million. Inhabitants
(4) indicators of information infrastructure:
- *Mob* - number of cell phones per 100 people
- *Web_comp* - the proportion of workers with the Internet access computers
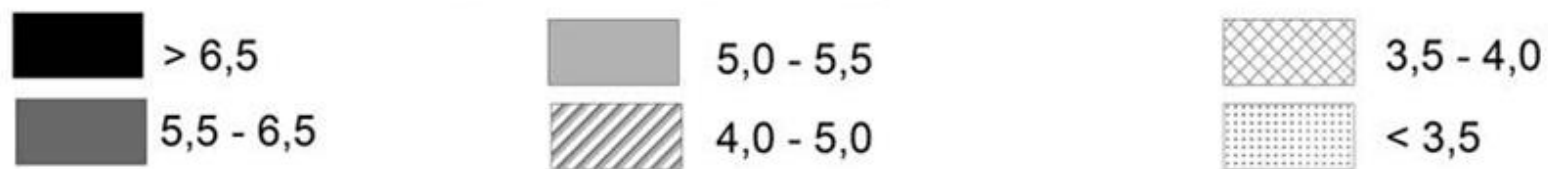
Method

$$R_{i,t} = \frac{R_{low,T}}{R_T} \times 10$$

Rlow is the number of regions with a lower rank than the region *i* in the period *T* (1998-2012) of the subject indicator and *RT* is the total number of regions in the period *T* (83 subjects * 15 = 1245)
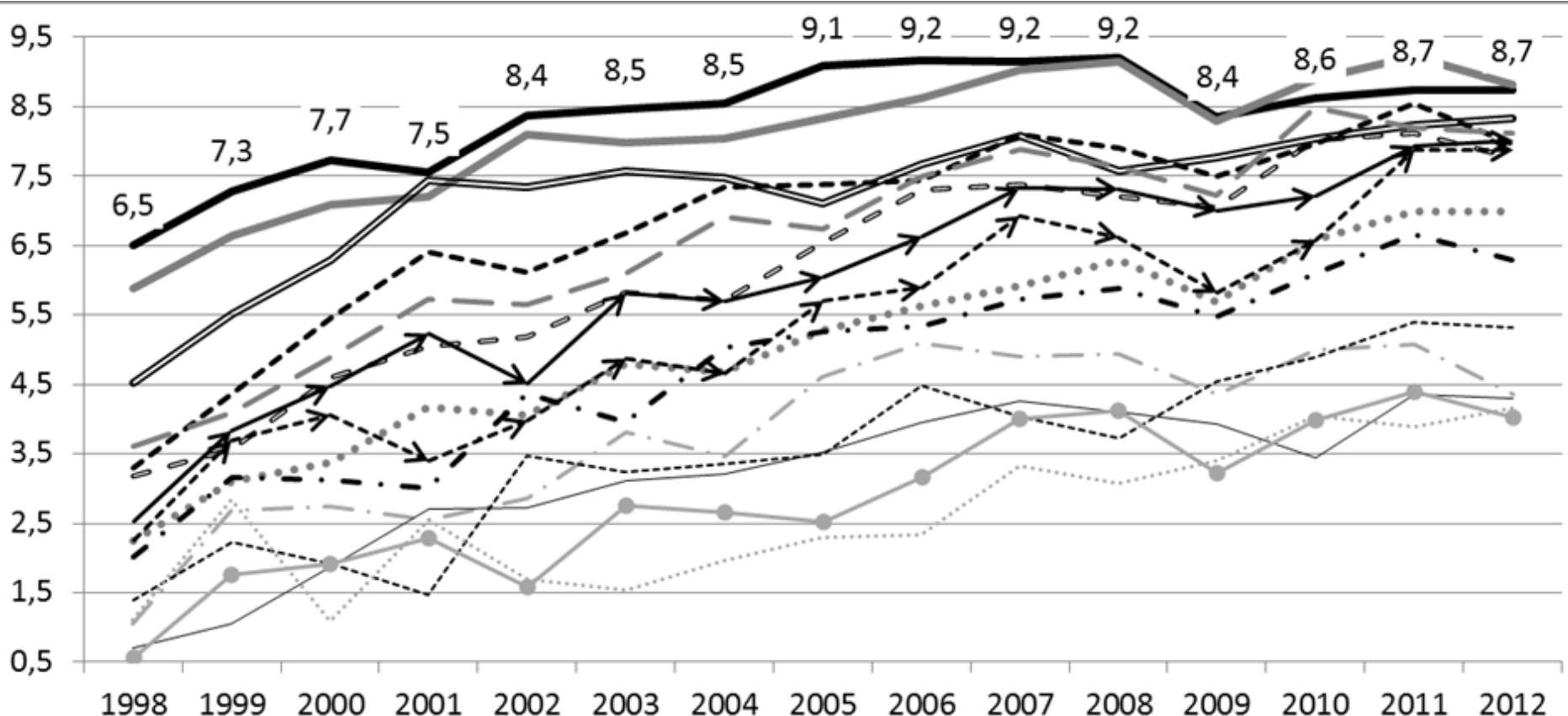
$$AR_{i,t} = \frac{\sum_{i=1}^{k} R_{i,t}}{k} \times 10$$

where *k* - is the number of selected indicators

The Russian knowledge index (average mean during 1998-2012)

■ > 6,5	▨ 5,0 - 5,5	▨ 3,5 - 4,0
▨ 5,5 - 6,5	▨ 4,0 - 5,0	▨ < 3,5

6,5	7,3	7,7	7,5	8,4	8,5	8,5	9,1	9,2	9,2	9,2	8,4	8,6	8,7	8,7

Years: 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012

Legend:
— Moscow
— Saint Petersburg
— Tomsk region
- - - Novosibirsk region
— — Samara Region
— — Nizhny Novgorod Region
→ Republic Of Tatarstan
···· Republic Of Bashkortostan
- -→ Voronezh region
-·- Krasnodar region
— ·— Kemerovo region
---- Lipetsk region
— The Republic Of Dagestan
······ Republic of Tyva
—●— Transbaikal region

Regions-leaders of knowledge economy formation in 2012

| №	Regions	GRP_gr	GRP_p_c	Stud	Educ	Research	PCT	Mob	Web_comp	RKI 2012
1	Saint Petersburg	**4,2**	9,2	9,7	9,8	9,7	10	9,9	7,9	8,8
2	Moscow	3,2	9,3	9,7	9,9	9,8	10	9,9	**8**	8,7
3	Tomsk region	3,6	8,5	**9,6**	8,9	**9,3**	**9,7**	9,1	**7,9**	8,3
4	Samara Region	4,9	8,5	7,2	**9,6**	8,5	9,1	**9,4**	7,7	8,1
5	Republic Of Tatarstan	**5,4**	8,9	8,5	**9**	7,4	8,7	8,7	7,4	8
6	Novosibirsk region	2,3	7,9	8,5	9	**9,2**	**9,7**	9,1	7,9	7,9
7	Sverdlovsk region	6,7	9	6,4	7	8,2	9,1	9,3	7,5	7,9
8	Magadan region	3,6	**9,1**	**9,2**	7,1	7,5	8,9	**9,7**	7,8	7,9
9	Kaluga region	**8,4**	7,1	3,3	8,9	**9,4**	**9,2**	9,2	7,5	7,9
10	Voronezh region	**8,2**	6	8,6	7,8	8,1	8,8	8,5	7	7,9

New method

Group of Variables	Variables
Common variables	I. Rank of the region in Human Development Index in 2013. [15]
Quality of life and sustainable development of the region	II. Rank of the region in quality of life RIA Novosti index in 2013 III. Rank of the region in ecological-economic rating in 2012 [3]
Science and technology, human capital	IV. Rank of the region in Rating of innovative regions of Association of innovative Russian regions (AIRR) in 2013 [5]
Remote services (e-services and e-government)	V. Rank of the region in the ranking of innovativeness for Russian regions in 2012 [2] VI. Rank of the region in the index of open government in 2012 (http://eregion.ru/opengov)

	HDI	Life quality	Ecology	Innovation creation	Diffusion of innovation	Open government	RKEI
Regions with the highest value of the RKEI (≥7,5)							
Moscow	1	1	30	2	1	2	9,4
Saint Petersburg	2	2	41	1	2	58	8,0
Krasnodar region	19	5	6	44	8	27	7,9
Novosibirsk region	22	21	45	14	6	10	7,8
Kaluga region	34	17	14	11	39	6	7,7
Republic of Tatarstan	6	4	53	3	23	33	7,7
Moscow region	35	3	34	7	13	39	7,5
Regions with a medium-high value of the RKEI (6.5-7.5)							
Voronezh region	43	7	29	17	29	14	7,3
Tomsk region	9	30	67	6	9	18	7,3
Nizhny Novgorod Region	33	10	21	4	7	66	7,3
Ulyanovsk region	48	42	26	16	11	1	7,2
Sverdlovsk region	12	11	64	12	15	32	7,2
Samara Region	25	14	62	8	10	30	7,1
Perm Region	26	28	55	9	21	15	7,0
Yaroslavl region	23	12	19	5	30	70	6,9
Kaliningrad region	32	13	23	40	19	40	6,8
Rostov region	40	16	44	29	20	23	6,7

The Russian knowledge economy index

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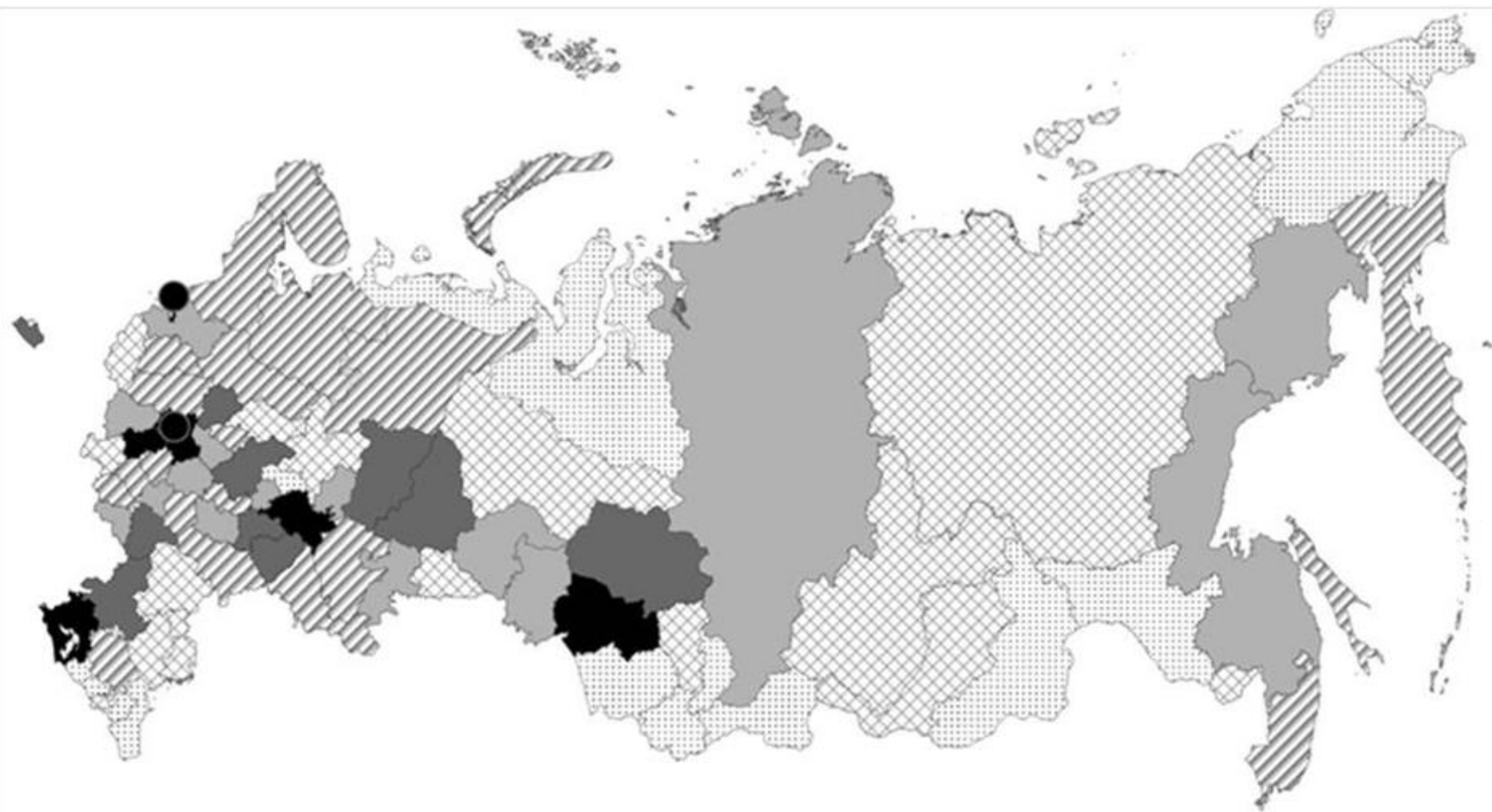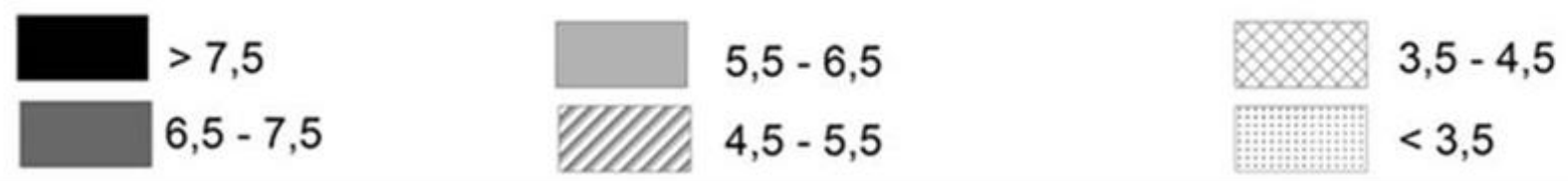
Conclusions

- **Core-periphery structure** of knowledge economy potential (agglomeration core, agrarian and northern periphery)

- **Formation of knowledge economy** in all regions in 1998-2012 was **based on GRP and ICT-sector growth**

- Introduced method for calculation of **Russian knowledge economy index** (RKEI) was based on sustainable development and open government concepts