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55th Congress

SME'S CLUSTER IDENTIFICATION IN RUSSIA

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Lisbon, 2015

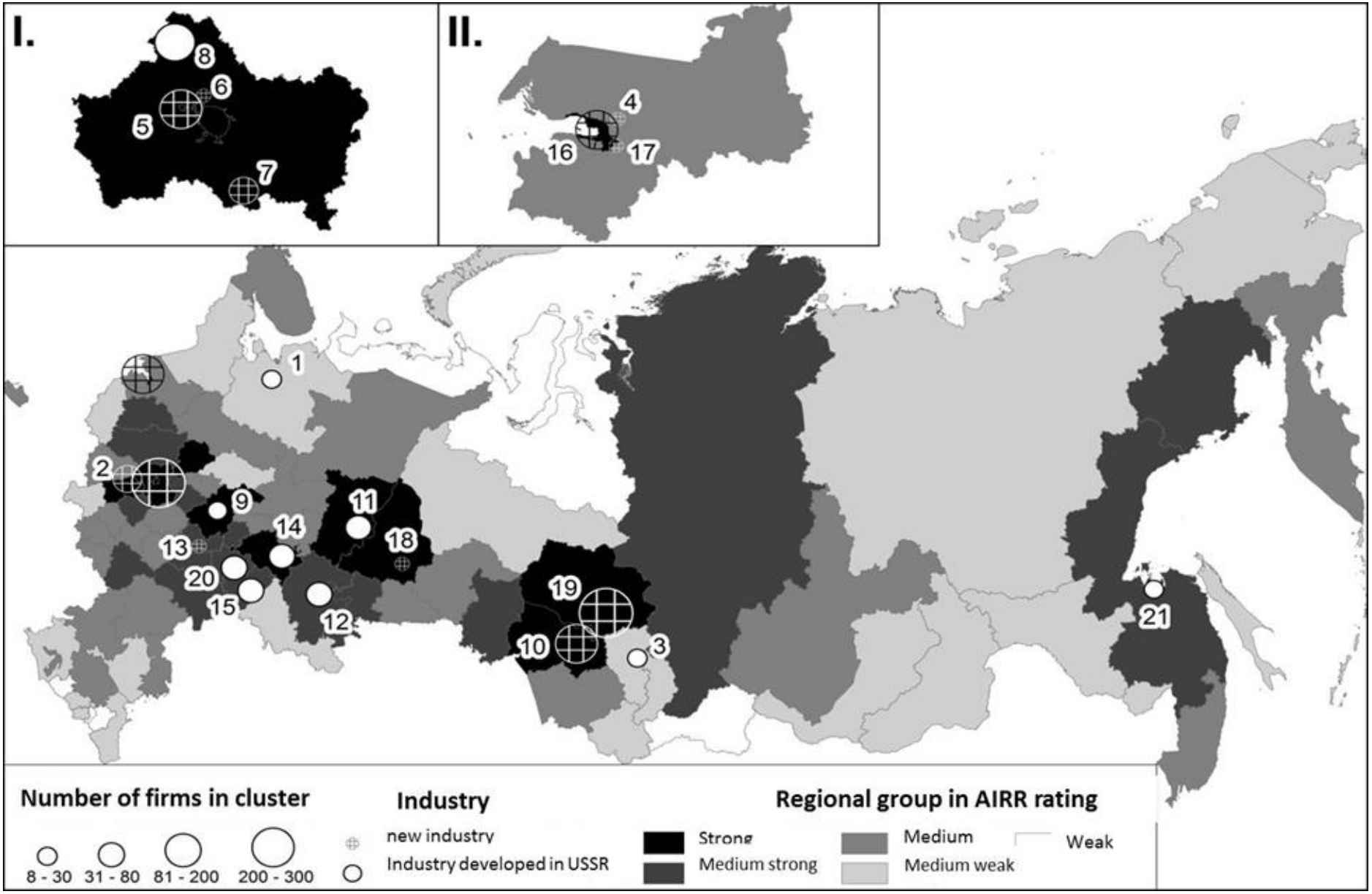
The aims

- To analyze **existing methods of cluster identification**
- To choose the **proper method** for cluster identification for Russia
- To analyze **cluster policy** in Russia
- To identify **SME's clusters** in Russia

Definition	Authors	Possible specification	Identification methods
group of firms from one industry, concentrated in one area (for example, in borders of the region, city, etc.)	Porter, 1998, Enright, 1999, Duranton, Overman, 2005; Duranton, Overman, 2008; Ellison, Glaeser, 1997	Potential cluster	indexes of localization (concentration) of economic activity: Ellison-Glaeser, Duranton-Overman and others
group of the firms concentrated in one area from one or several interconnected industries	Porter, 1998; Kutsenko, 2009	Protocluster	calculation of coefficient of localization and the subsequent correlation coefficients between different industries, application of a balance method is possible
group of the interacting firms concentrated in one area from one or several interconnected industries	Porter, 1998; Kutsenko, 2009	Protocluster	methods of sociological polls, analysis of cluster initiatives and network analysis for interaction identification

Definition	Authors	Specification	Identification methods
group of the interacting firms concentrated in one area form one or several technologically interconnected industries	Kolosovskiy, 1947	Territorial-production complex (TCP)	method of power-production cycle analysis, balance methods, elements of the graph theory for the analysis of technological interaction in a cluster
group of the interacting firms concentrated in one area from one or several technologically interconnected industries within scientific-industrial complex	Feldman, 2001, Lindqvist, 2009, Kutsenko, 2009	Territorial innovative cluster	analysis of patent citation, joint publications of firms in a cluster, studying of objects of intellectual property, elements of the graph theory
group of the interacting firms concentrated in one area from one or several technologically interconnected industries within scientific-industrial complex with management	Ketels et al., 2012	Territorial innovative cluster with management	official demands for receiving subsidies from clusters initiatives; analysis of information on web-sites, sociological methods (in particular case-study), etc.
group of the interacting firms concentrated in one area from one or several technologically interconnected industries within scientific-industrial complex with management, having the synergetic (cluster) effects and forming a system with high efficiency	Bresci, Lissoni, 2001a	Efficient territorial innovative cluster with management	methods of mathematical statistics, SFA, DEA for efficiency assessment

Russian territorial innovative clusters



Russian territorial innovative clusters

- Regional administrations declared more than 100 cluster initiatives among which 25 got support from the federal budget for infrastructure development
- Innovative territorial clusters are located generally in regions with the high level of innovative development
- The main problem of the identified clusters is the insignificant number of the SMEs and insufficient level of interaction between them
- Eleven clusters are developed based on new industries (information technologies and pharmaceutics), while twelve clusters based on the former large Soviet enterprises in traditional high-tech industries (aerospace, shipbuilding, nuclear technologies, petrochemistry)

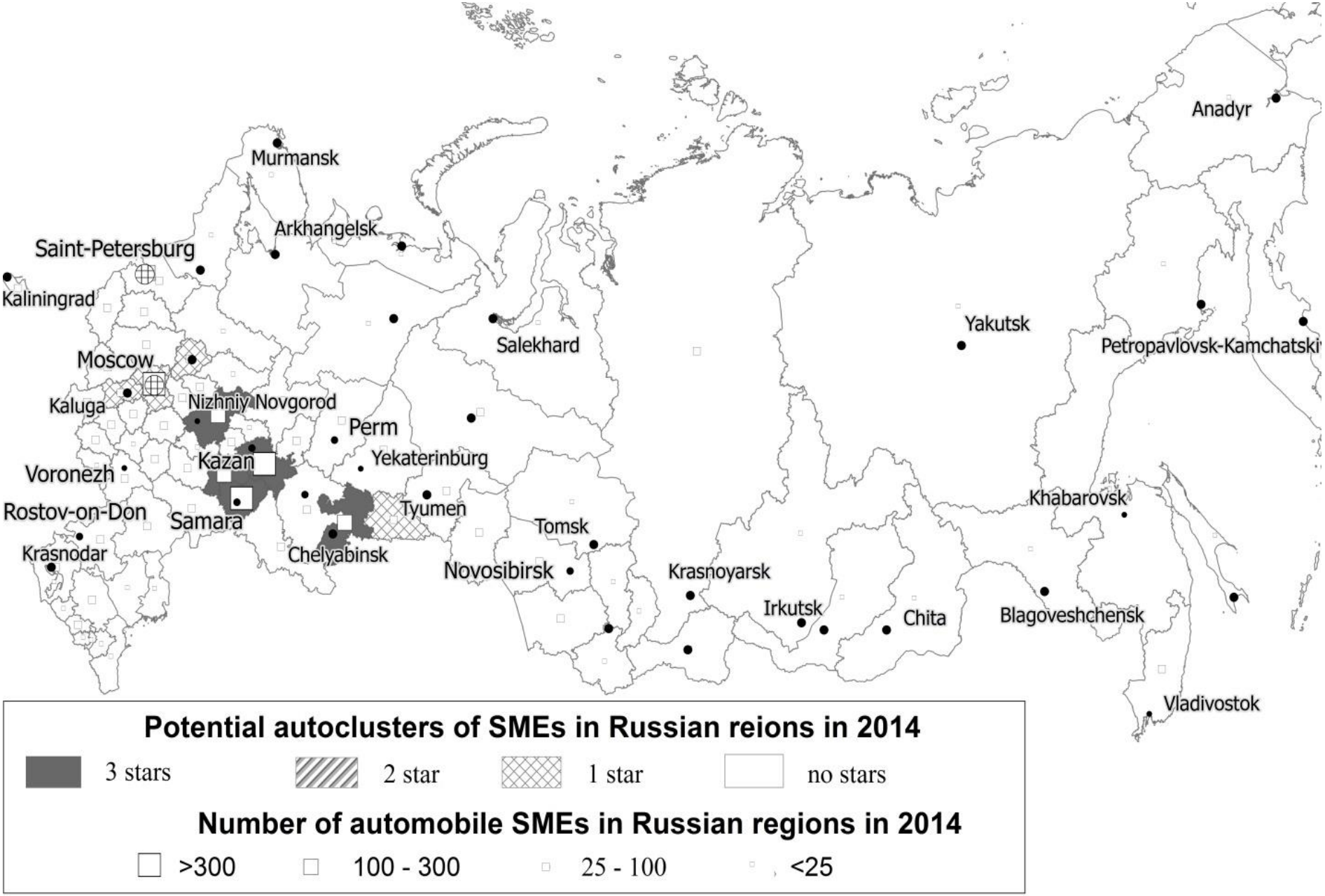
Method

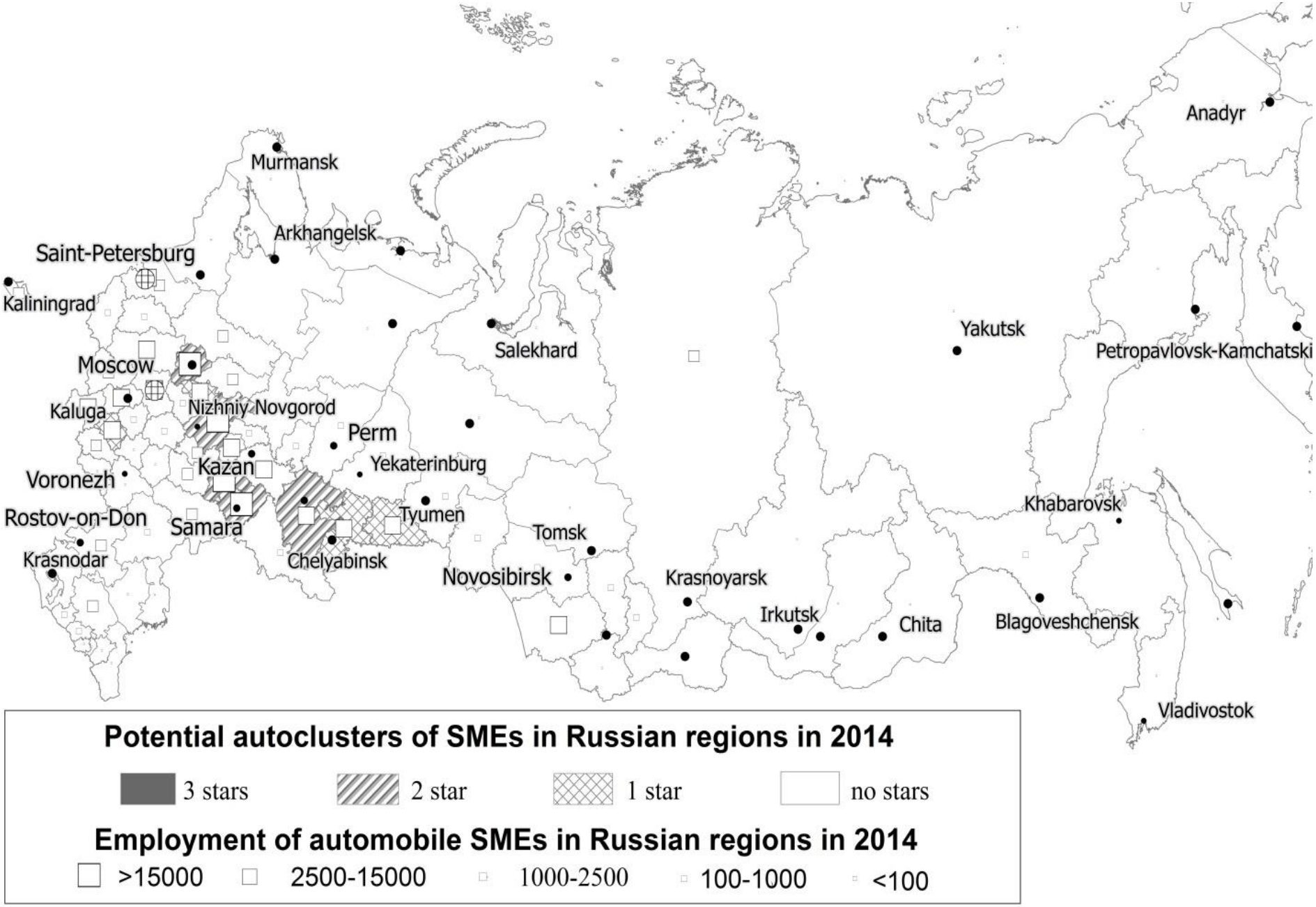
Equation	Description
$LQ = \frac{Emp_{ig}}{Emp_g} \Big/ \frac{Emp_i}{Emp}$	LQ – «localization coefficient» Emp_{ig} – number of SMEs' employees (firms, sales) in industry i in region g Emp_g – number of SMEs' employees (firms, sales) in the region g Emp_i – number of SMEs' employees (firms, sales) in industry i in Russia Emp – total number of SMEs' employees (firms, sales) in Russia
$Size = \frac{Emp_{ig}}{Emp_i}$	$Size$ – size of industry i in region g Emp_{ig} – number of SMEs' employees (firms, sales) in industry i in region g Emp_i – number of SMEs' employees(firms, sales) in industry i in Russia
$Focus = \frac{Emp_{ig}}{Emp_g}$	$Focus$ – «focus» of industry I in region g Emp_{ig} – number of SMEs' employees (firms, sales) in industry i in region g Emp_g – number of SMEs' employees (firms, sales) in region g

Source: Porter, 2003; Kutsenko, 2009; Kisilev at al., 2011

Every region gets a 'star' for an industry if:

- The region has "Localization Coefficient" ≥ 2;
- The region is among 10% of the regions, leading on an indicator "Size";
- The region is among 10% of the regions, leading on an indicator "Focus".


Anadyr
Murmansk
Arkhangelsk
Saint-Petersburg
Kaliningrad
Salekhard
Yakutsk
Petropavlovsk-Kamchatski
Moscow
Kaluga
Nizhniy Novgorod
Perm
Kazan
Yekaterinburg
Voronezh
Rostov-on-Don
Samara
Tyumen
Khabarovsk
Tomsk
Krasnodar
Chelyabinsk
Novosibirsk
Krasnoyarsk
Irkutsk
Chita
Blagoveshchensk
Vladivostok
Potential autoclusters of SMEs in Russian reions in 2014
3 stars
2 star
1 star
no stars
Number of automobile SMEs in Russian regions in 2014
>300
100 - 300
25 - 100
<25


Anadyr
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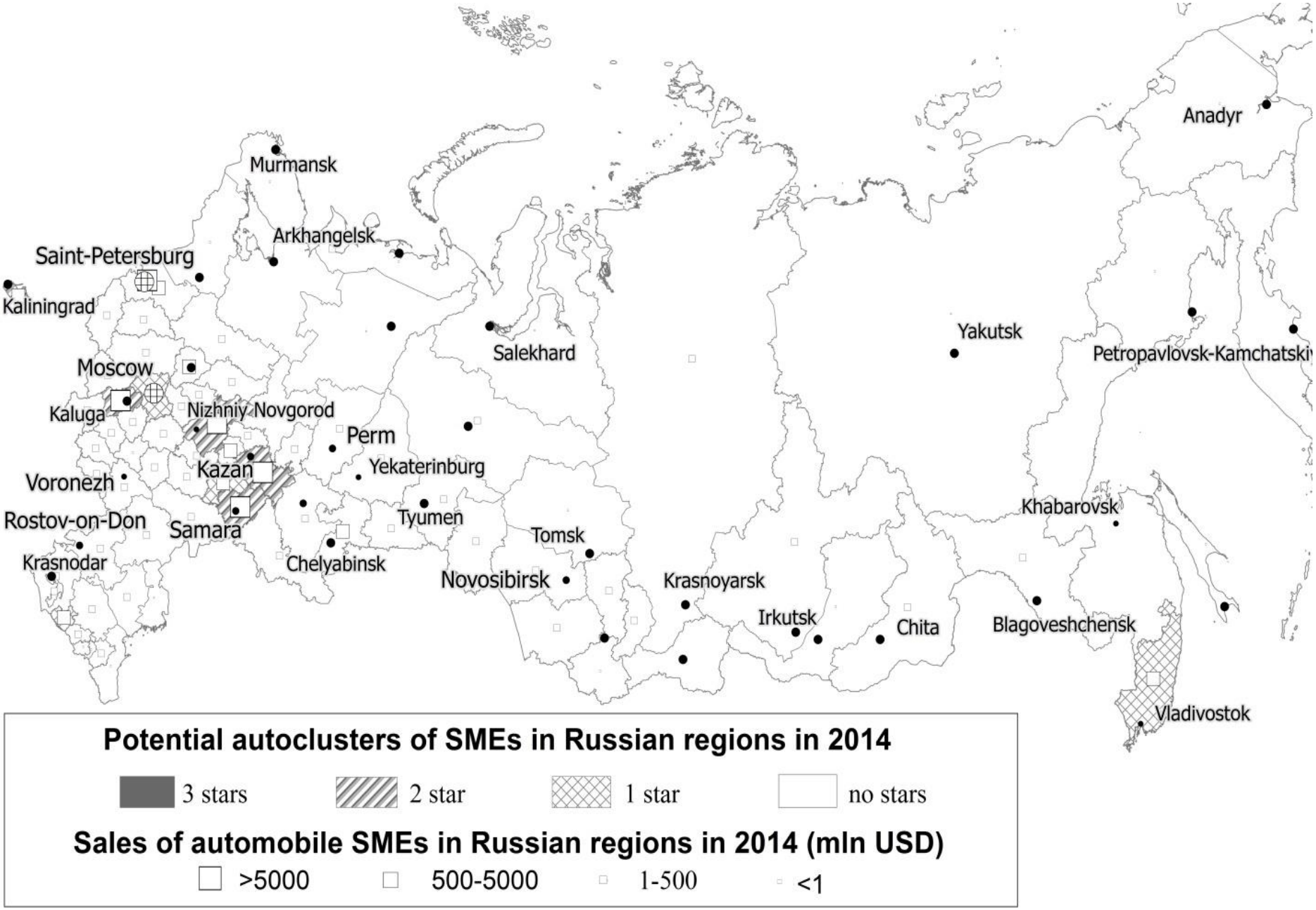
Saint-Petersburg
Kaliningrad
Salekhard
Yakutsk
Petropavlovsk-Kamchatski
Moscow
Kaluga
Nizhniy Novgorod
Perm
Kazan
Yekaterinburg
Voronezh
Rostov-on-Don
Samara
Tyumen
Khabarovsk
Tomsk
Krasnodar
Chelyabinsk
Novosibirsk
Krasnoyarsk
Irkutsk
Chita
Blagoveshchensk
Vladivostok
Potential autoclusters of SMEs in Russian regions in 2014
3 stars
2 star
1 star
no stars
Employment of automobile SMEs in Russian regions in 2014
>15000
2500-15000
1000-2500
100-1000
<100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Tyumen
Khabarovsk
Tomsk
Krasnodar
Chelyabinsk
Novosibirsk
Krasnoyarsk
Irkutsk
Chita
Blagoveshchensk
Vladivostok
Potential autoclusters of SMEs in Russian regions in 2014
3 stars
2 star
1 star
no stars
Sales of automobile SMEs in Russian regions in 2014 (mln USD)
>5000
500-5000
1-500
<1

Regions-leaders	Number of firms	Stars (firms)	Employment	Stars (employ ment)	Sales (mln USD)	Stars (sales)	All stars (max=9)
Nizhny Novgorod Region	271	3	18253	2	8589	2	7
Samara Region	436	3	25040	2	7818	2	7
Ulyanovsk region	143	3	29576	2	1656	1	6
Republic Of Tatarstan	319	3	5805	0	5784	2	5
Chelyabinsk region	237	3	11658	1	1267	0	4
Moscow	448	1	14733	1	5778	1	3
Saint Petersburg	206	1	7557	1	8772	1	3
Kaluga region	43	1	2728	0	9110	2	3
Yaroslavl region	51	1	21767	2	755	0	3
Kaliningrad region	43	0	2022	0	4581	2	2
Kurgan region	20	1	6086	1	244	0	2
Moscow region	160	1	4253	0	3828	1	2
Republic Of Bashkortostan	72	0	14769	2	483	0	2
Ivanovo region	16	0	4082	1	277	0	1
Oryol Region	17	0	3026	1	118	0	1

Conclusions

- The **minimum condition** for cluster identification is ***high concentration of an industry on an area***. The definition for the most developed cluster is significantly broader, but about 95% of all clusters, studied in literature, do not correspond to the last definition
- Russian **cluster policy** based only on **regional cluster initiatives** and does not take into account the scientific methods ща cluster identification
- Most of identified Russian **clusters are small, weakly developed** and based **on soviet technologies**
- Porter (Izard) method of cluster identification can be used with some modifications on Russian case
- Cluster identification in automobile industry shows that **new clusters**, based on transnational corporations' factories, are less developed than soviet-founded