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Semyon Vlasov
Ural Branch of the Russian Academy of Sciences, Yekaterinburg, Russia

Features of territorial investments concentration in the fixed capital in an industrial region (the case of Sverdlovsk region in Russia)

Abstract: The misbalance between the efforts of state and local authorities to win the financial backing of small and medium-sized enterprises and the lack of the significant change in indicators of the pattern and total volume of investments in the fixed capital is a highly topical issue nowadays. The purpose of the study is to identify the territorial features of the investments concentration in the fixed capital in an industrial region. The study is based on the following methodological approaches. Firstly, the main industry specifics of small and medium-sized enterprises, their contribution to the total volume of capital investments were identified. Secondly, the total volume of investments of large-scale and medium-sized enterprises in fixed capital for each municipality was estimated on the example of an industrial region – Sverdlovsk Oblast in the Russian Federation. The period from 2010 to 2020 is analysed. The rating of territories was compiled depending on the total volume of the attracted investments. Moreover, the obtained data on the investments by territories were compared with the geography of the industrial agglomerations of the region. Methods of statistical comparative analysis and territorial analysis were used. The study has proved that the determining factor affecting the volume and territorial distribution of investments in fixed capital in the industrial region is the concentration of economic activity of large-scale enterprises in agglomerations. A direct dependence of the volume of investments on the number of enterprises in small business has been established.

Keywords: agglomeration; capital investments; distribution of productive forces; industrial policy; regional investments; regional features

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Introduction

It is important to have a stable inflow of domestic investments to ensure long-term economic growth in a country. In Russian regions investment activity is stimulated by

creating a profitable investment climate and implementing programmes of small and medium-sized businesses support. However, the established stable sectoral and territorial features of the investments allocation in fixed capital are not taken into account due to the existing territorial structure of the production facilities placement and the influence of agglomerations. The novelty of the research is in a comprehensive analysis of the sectoral and spatial specifics of the investments of small, medium, large businesses in agglomerations and districts of an industrial region. The originality of the study, unlike other papers on this topic, lies within the author's methodological approach, which combines sectoral and spatial analysis and makes it possible to identify the specifics and causal relationships in the concentration of investments on the example of a particular region.

The investments deficit obliges local authorities to clearly define territorial and sectoral priorities in programmes that stimulate investments in fixed capital depending on the categories of the enterprises that ensure a crucial contribution to the investment growth and patterns of agglomeration processes.

The purpose of this paper is to identify the territorial specifics of the investment activity in an industrial region. It is necessary to solve the following tasks to achieve the purpose:

- to form and test a methodological approach that makes it possible to determine the contribution of various categories of enterprises to capital investments,
- evaluate the contribution of small, medium, and large enterprises to the growth of the investments in fixed assets,
- to determine the features of the spatial concentration of the investments in the agglomerations of the industrial region.

The object of the analysis is Sverdlovsk Oblast in Russia, an industrial region.

The current research has the following structure: the Literature review and Theoretical Basis part reveals the topic of a new economic geography and other theoretical foundations for the impact of SMEs on economic growth, and then a review of the literature is provided. The applied author's methodological approach is described in the Method and Data section. The main results of the study, analytical tables and graphics are presented in the Results section, and the main conclusions are formulated in the final section of the Conclusion.

Literature review and Theoretical Basis

There is a predominant approach in strategic planning documents and among Russian economists, according to which small and medium-sized enterprises can become the key subject of the economic growth ensuring the fixed capital renovation (Glinskiy, Serga, 2008; Strizhakova, Strizhakov, 2019; Sharshova, 2015; Luk'yanova, 2018). Medovnikov and others (2015) suggested that the reason for this attitude is in Birch's study, in which he classified companies as "elephants", "mice" and "gazelles".

The research notes the flexibility, response rate and strong motivation of small enterprises (Bryalina, 2014; Loginova, Korneyko, 2019; Rudenko, 2019), and draws attention to the European experience of small enterprises occupying a significant share in the industry from 38% to 75% (Korolev, 2017). In Russia it is suggested to use this US and European experience of effective work of SMEs (Kuzubov et al., 2018). According to the scholars, the region's strong growth is possible through the accelerated

development of small and medium-sized enterprises through the replacement of imported socially significant food products with local ones (Fraymovich, 2021; Korchagina, 2017; Mirkin, 2020).

The development of small and medium-sized enterprises, in addition to a direct effect on economic growth, also has an additional effect through stimulating the development of institutions (Khalilov, Yi, 2021). Moreover, one of the directions of the new economic geography, the influence of small and medium-sized manufacturing enterprises on the environment is in the focus of the research (Gandhi, Thanki, Thakkar, 2018).

The research uses the criterion for classifying companies as SMEs by the number of employees less than 250, approved in Russian economic and statistical practice and comparable to the criteria used by OECD and Eurostat. In particular, in Russia, the affiliation of an organisation to SMEs is determined by the values of two main indicators: the number of employees and the amount of income. Small business includes micro-enterprises (with up to 15 employees and annual income not exceeding 120 million rubles or 1.6 million US dollars) and small enterprises (with 16 to 100 employees and annual income not exceeding 800 million rubles or 10.6 million US dollars). Medium businesses are companies with 101 to 250 employees and an annual income not exceeding 2 billion rubles or 26.4 million US dollars.[1]

The statistics developed by the OECD distinguish 4 categories of enterprises depending on the number of employees: 1–9 employees; 10–19 employees; 20–49 employees; 50–249 employees. If we proceed only from the number of employees (not taking into account the income criterion), OECD statistics make it possible to accurately identify the SME sector comparable to the Russian one, since the criterion for classifying companies with less than 250 employees as SMEs is also used by OECD and Eurostat.

The use of such a border is generally a common international cut-off (Beck, Demirguc-Kunt, Levine, 2005). However, the number of companies whose revenue exceeds the threshold of 2 billion, while having less than 250 employees, for the Sverdlovsk region is about 150 in different years, which corresponds to about 1% of all medium-sized companies in the region. Comparative research on this topic provides the most complete overview of the existing differences and approaches in the practice of classifying companies as SMEs, for example, Barinova, Zempsov (2019).

The European and Chinese economists studying SMEs note their innovative potential (Delbridge, Edwards, Munday, 2001; Leskovar et al., 2013; Matejun, 2017) as well as their high innovative efficiency compared to large-scale enterprises (Xu et al., 2008). However, according to Rifkin (2015) and Schwab (2018), the implementation of ground-breaking projects is possible only for large corporations, which matches Florence's conclusions about the predominant size of the plant in any industry (Florence, 1948; Maizels, 1948).

International and Russian studies have shown that high economic growth rates are associated with industry development and its high concentration ratio in a country (González-Val, Pueyo, 2009; Dubenetskiy, 2013). The industrial policy in the developed countries is based on the principle of synergy and integration (Galiullina, Sharamko, Andreeva, 2017). As some economists pointed out, the industrial policy should be related to the investment policy (Animitsa, Animitsa, Glumov, 2011; Tatarkin, Romanova,

[1] Calculated by the author at the official US dollar exchange rate according to the data of the Bank of Russia as of February 20, 2022.

2014). The absence of this relation leads to the misbalance in regions and creates the unworkable competition for investors (Galiullina, 2019; Kuznetsov, Kuznetsova, Galiullina, 2019). The regional industry in turn tends to concentrate under the influence of various agglomeration processes (Brezis, Krugman, 1993; Lapo, 2010), and regions are a perfect object for studying this phenomenon (Wandel, 2009). The problems of identifying factors influencing the formation of agglomeration belong to the promising areas of research in the new economic geography (Redding, 2010). Agglomeration processes reflect the differentiation of territories by the level of social and economic development (Animitsa, Animitsa, Denisova, 2014; Shevchenko, Goretskaya, 2007), and influence the formation of territorial priorities of the investment policy (Mokrushin, Prokhorova, Shalatov, 2019). Sverdlovsk Oblast in Russia is of a great interest as an object of the research as it is a large industrial region, it possesses formed agglomerations and has the basic premises to become a region of technological breakthrough (Tatarkin, 2016; Silin, Animitsa, Novikova, 2019) basing its economy on the increase of investments in the fixed capital (Silin, Animitsa, 2021; Silin, Animitsa, Novikova, 2016; Ulyanova, 2017).

Methods and Data

The author's methodological approach is based on a comprehensive data analysis on investments in the fixed capital in the context of municipalities and industrial agglomerations covering the period from 2010 to 2020. As the first stage, a comparative analysis of indicators and statistics of small and medium-sized enterprises since 2000 has been carried out in order to identify the category of enterprises that contribute more to the investments growth in the fixed capital. The analysis included the statistical data on the number of enterprises, on their share in the economic activities, on the enterprises turnover, on the average number of employees, and on the volume of fixed capital investments in Russia and Sverdlovsk Oblast. In order to establish the correlation of indicators, a logarithmic scale was used.

During the second stage, the investments in Sverdlovsk Oblast were analysed. The study was based on the statistics on the accumulated volume of the investments of large-scale and medium-sized enterprises in the fixed capital for each municipality, which was sufficient to obtain the relevant results. The relative rating of each territory was calculated depending on the volume of the disbursed investments. Obtained data on the rating of the investments by territories was then compared to the geography of the industrial agglomerations in Sverdlovsk Oblast and with the location of large-scale industrial enterprises.

Results

The statistical data on Russia and Sverdlovsk Oblast was analysed to assess the contribution of SMEs to the volume of capital investments for the study. According to the official statistics published in 2019, there are 2.659.943 small enterprises and 13.682 medium-sized enterprises in Russia with 12.184.000 employees. The small enterprises at the end of 2018 had the turnover of 53.314.2 billion rubles, the medium-sized enterprises had the turnover of 7.464.6 billion rubles. The investments in the fixed capital amounted to 1.557.4 billion rubles for the small enterprises and 374.0 billion rubles for the medium-sized enterprises.

As Table 1 shows, there has been a significant increase in the key indicators of the activity of small enterprises since 2000: an increase in the number of small enterprises from 879.3 thousand to 2 million 659 thousand units (by 67%). Moreover, there is an increase in the average number of employees (by 38%), in the investments (by 91%), in the enterprises turnover (98.8%). An additional increase in the number of enterprises by 56% was due to the tertiary sector, such as wholesale and retail trade; repair of motor vehicles and motorcycles. The trade share among the small enterprises in 2000 was 46.3%, among the manufacturing it was 15%. By 2018, the trade share in the total number of small enterprises decreased and amounted to 34.8%, but the share of manufacturing industries has halved over 18 years and amounted to 8%. Statistical data on medium-sized enterprises in Russia for 2000–2009 is not available.

Table 1. Key performance indicators of small and medium-sized enterprises in Russia

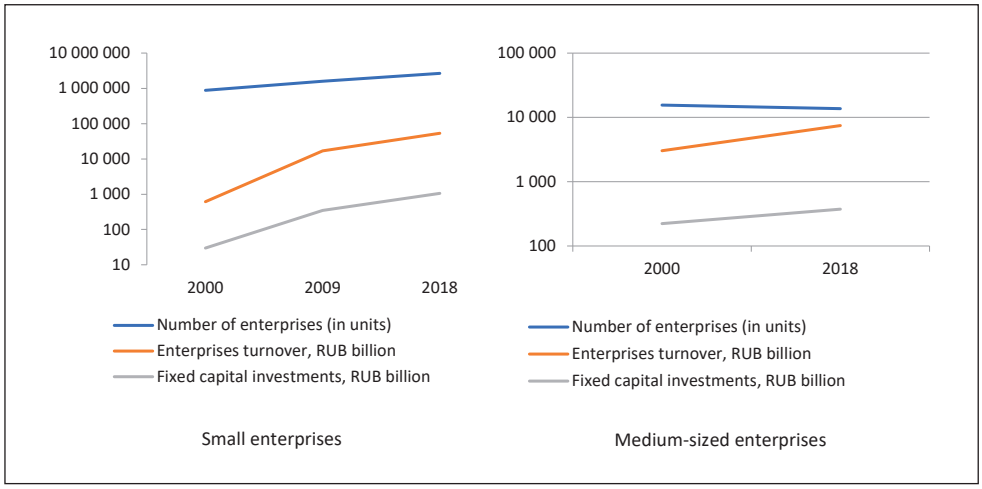
Name of the indicator, units of measurement	Small enterprises			Medium-sized enterprises	
	2000	2009	2018	2009	2018
Number of enterprises (in units), including:	879.300	1.602.491	2.659.943	15.547	13.682
Dynamics of indicator change, +/–%	100	+82.2	+202.5	100	–12
Wholesale and retail trade; repair of motor vehicles and motorcycles, in units	407.500	658.297	926.215	3.116	3.609
Dynamics of indicator change, +/–%	100	+61.5	+127.3	100	+15
Manufacturing, in units	134.200	165.263	224.530	3.682	3.508
Dynamics of indicator change, +/–%	100	+23.1	+67.3	100	–4.7
Average number of employees (excluding external part-timers), thousand people	6.596.8	10.247.5	10.719.9	1.976.3	1.464.9
Dynamics of indicator change, +/–%	100	+55.3	+62.5	100	–25.9
Enterprises turnover, RUB billion	613.7	16.873.1	5.3314.2	3.030.5	7.464.6
Dynamics of indicator change, +/–%	100	+2.649.4	+8.587.3	100	+146.3
Fixed capital investments, RUB billion	29.8	346.1	1.057.4	222.8	374.0
Dynamics of indicator change, +/–%	100	+1.061.4	+3.448.3	100	+67.9

Source: compiled by the author

An analysis of the dynamics of SME indicators by years relative to 2000 for small businesses and 2009 for medium-sized businesses shows a trend of growth in indicators in small businesses in terms of investment, turnover, average headcount relative to the growth in the total number of small enterprises. So, for example, the number of small enterprises increased by 202.5% by 2018, the growth in investments was also positive and amounted to +3.448.3%, the turnover of enterprises shows an increase of +8.587.3%, the number of employees increased by +62.5% .

In medium business, the number of enterprises decreased by 12% from 2009 to the level of 2018. The increase occurred in the trade segment by 15%, in manufacturing industries the number of enterprises decreased by 4.7%. At the same time, the indicator of the number of employees decreased by 25.9%, but the indicators of turnover and investments in medium-sized businesses show an increase – +146.3% and +67.9%, respectively.

Figure 1. Correlation of the main indicators of small and medium-sized enterprises for 2000–2018



Source: compiled by the author

In order to establish a correlation between the indicators of the number of enterprises, turnover and investments, a logarithmic scale was compiled (Figure 1). As can be seen in the figure, data on the number of small enterprises have a linear positive correlation with indicators on turnover and investment. For medium-sized enterprises, the correlation between the number of enterprises and the indicators of turnover and investment is negative.

Table 2 demonstrates the data analysis of the dynamics of the SMEs relative share in the key economic indicators. With a share in total employment of less than 30%, the contribution of small and medium-sized enterprises to the employment in the region is significantly below the global average of 60% (Gandhi, Thanki, Thakkar, 2018). This may be partly due to the more widespread practice of informal employment, as well as the historical past of the region, whose economy is focused on large industrial production.

Table 2. Relative share of SMEs in leading economic indicators in Russia (in percentage terms)

Name of indicator	Small enterprises			Medium-sized enterprises	
	2000	2009	2018	2009	2018
Average number of employees (excluding external part-timers)	12.9	21.7	24.3	4.2	3.3
Enterprises turnover	5.4	24.5	25.6	4.4	13.0
Fixed capital investments	2.6	4.4	6.0	2.8	2.1

Source: compiled by the author

As Table 2 shows, SMEs as a whole have 27.6% of the average number of employees, 38.6% of the enterprises turnover, but only 8.1% of the fixed capital investments. Over 18 years, the small enterprises relative share in investments has changed insignificantly from 2.6% to 6%. The increase in investments from 2009 to 2018 was only 1.6%, in turnover – 1.1%, in the number of employees – 2.6%. Medium-sized enterprises

reduced their share in terms of the number of employees by 0.9%, increased their turnover by 8.6% in total, and the share of the investments decreased even more: from 2.8% to 2.1%.

The volume of investments in the fixed capital by the end of 2020 in Sverdlovsk Oblast amounted to 381.1 billion rubles. The largest share in the region investments is occupied by the large-scale and medium-sized enterprises investments (295.4 billion rubles or 78% of the total). These enterprises are involved in such areas as manufacturing (71.1 billion rubles), transportation and storage (56.5 billion rubles), real estate operations (45.3 billion rubles), electricity, gas and steam supply (21.6 billion rubles), information technology and telecommunication services (18.6 billion rubles). The share of large-scale and medium-sized enterprises in the total volume of investments over the period of 10 years only increased from 60% in 2010 to 78% in 2020 and did not fall lower than 63% (Table 3).

Table 3. Fixed capital investments in Sverdlovsk Oblast in 2010–2020

Name of the indicator, units of measurement	Years										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Fixed capital investments (in current prices), RUB billion	264.5	333.5	351.6	350.6	371.6	350.0	328.4	320.1	378.6	450.4	381.1
excluding small business enterprises and volume of investments observed by direct statistical methods, RUB billion	157.6	259.4	267.9	247.6	257.1	241.7	235.2	237.9	239.1	290.6	295.4
Volume of investments of large-scale and medium-sized enterprises from the total volume of fixed capital investments, %	60	78	76	71	69	69	72	74	63	65	78

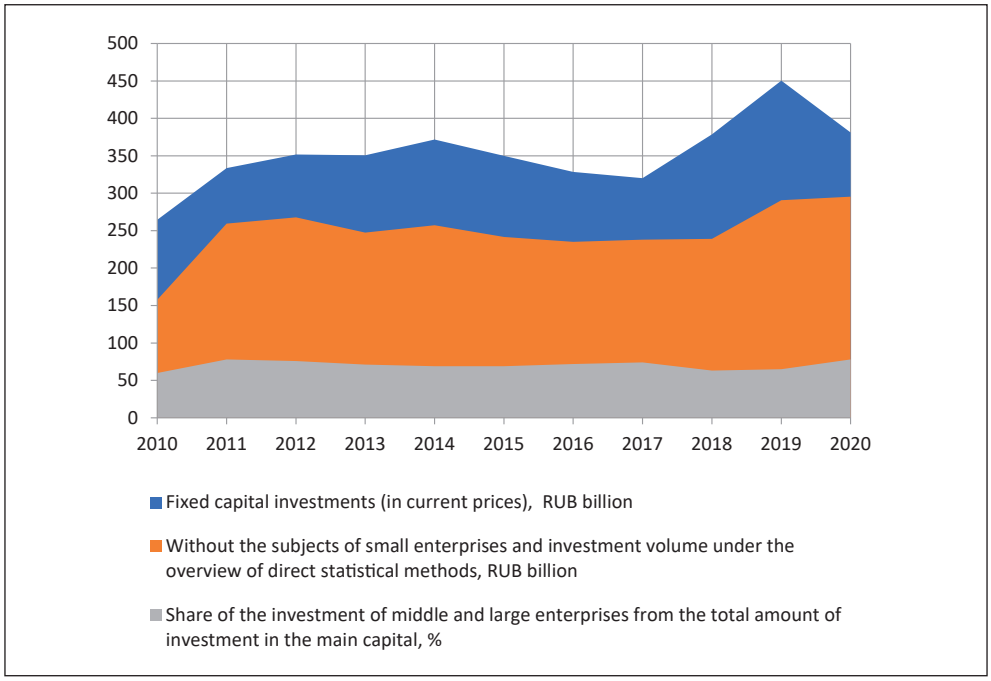
Source: compiled by the author

The dynamics of changes in indicators for investments in fixed assets in the Sverdlovsk region since 2010 is shown in the graph (see Figure 2). Figure 2 shows that the curved line of the graph, which reflects the volume of investments of enterprises without small businesses and the volume of investments not observed by direct statistical methods, repeats the upper curve of the graph, which reflects the total volume of investments in fixed capital.

The SMEs features are the following:

1. In terms of the number of enterprises, distributive trade dominates in small enterprises, having the low number of manufacturing industries. The medium-sized enterprises trade share is also significant – 26.4%, but the number of manufacturing industries is three times higher than that of small enterprises – 25.6%. The industry groups that dominate in medium-sized enterprises are food production – 5.5%, production of other non-metallic mineral products – 3%, production of finished metal products, except machinery and equipment – 2.5%.

Figure 2. Dynamics of investment in fixed assets in the Sverdlovsk region in 2010–2020



Source: compiled by the author

2. The main volume turnover of small enterprises is concentrated in the distributive services – 59.0% or 31.434.0 billion rubles, and of medium-sized – 44.3%. The turnover of small and medium-sized enterprises in agriculture is significantly lower in proportion – 1.8% and 6.4%, respectively. The small enterprises share in manufacturing turnover is 8.9%, the medium-sized enterprises share is 23.9%.
3. Research and development activities as an economic activity in small enterprises amount only to 0.7%, and in medium-sized enterprises – 0.8%.
4. It is worth noting that the insignificant SMEs contribution both in Russia and in Sverdlovsk Oblast is in terms of "fixed capital investments", while there is a significant SMEs contribution to the economy in terms of the enterprises turnover and the number of employees.
5. A direct positive linear dependence of the volume of investments on the number of enterprises in small businesses has been established; no such correlation has been found in medium-sized enterprises.

In this study, the territorial distribution and investments concentration in Sverdlovsk Oblast for the period from 2010 to 2020 was analysed. Sverdlovsk Oblast is divided into administrative districts and municipalities that are the parts of these districts. In total, 2.674.359.675 thousand rubles were invested in the fixed capital counting all financing sources during that period in the region, 1.276.655.897 thousand rubles accounted for Yekaterinburg and 1.397.703.778 thousand rubles for other municipalities in the region, which is 47.7% and 52.3% by share. In order to identify the territorial features of the investments distribution and concentration, a rating of the administrative districts and municipalities of the region was compiled (see Table 4).

Table 4. Rating of the municipalities according to their fixed capital investments in 2010–2020 (large-scale and medium-sized enterprises)

Rating position	Name of the administrative district, municipality	Total volume of investments, RUB thousand
I	Municipal formation City of Yekaterinburg	1.276.655.897
II	Yuzhniy Upravlencheskiy Okrug	408.597.943
1	Zarechny Urban Okrug	148.111.618
2	City of Kamensk-Uralsky	106.544.657
3	Reftinsky Urban Okrug	52.409.370
4	Sukhoy Log Urban Okrug	24.739.802
5	Bogdanovich Urban Okrug	14.707.690
6	Asbest Urban Okrug	14.274.242
7	Beryozovsky Urban Okrug	12.692.497
8	Sysertsky Urban Okrug	12.437.413
9	Beloyarsky Urban Okrug	9.004.677
10	Kamensky Urban Okrug	6.394.666
11	Aramil Urban Okrug	5.855.511
12	Verkhneye Dubrovo Urban Okrug	898.199
13	Malyshevsky Urban Okrug	527.601
III	Gornozavodskoy Upravlencheskiy Okrug	282.535.735
1	Nizhny Tagil Urban Okrug	174.345.682
2	Verkhnesaldinsky Urban Okrug	41.706.392
3	Verkhny Tagil Urban Okrug	31.309.124
4	Kushva Urban Okrug	8.998.571
5	Nevyansky Urban Okrug	8.185.794
6	Kirovgrad Urban Okrug	7.281.531
7	Gornouralsky Urban Okrug	3.235.750
8	Verkhnyaya Tura Urban Okrug	2.709.745
9	Verkh-Neyvinsky Urban Okrug	2.440.141
10	Nizhnyaya Salda Urban Okrug	2.323.005
IV	Zapadniy upravlencheskiy Okrug	250.679.383
1	Verkhnyaya Pyshma Urban Okrug	85.450.759
2	Pervouralsk Urban Okrug	39.736.941
3	Polevskoy Urban Okrug	39.348.924
4	Sredneuralsk Urban Okrug	34.694.063
5	Revda Urban Okrug	23.543.030
6	Nizhneserginsky District	7.439.855
7	Krasnoufimsk Urban Okrug	4.911.139
8	Krasnoufimsky Urban Okrug	3.411.859
9	Shalinsky Urban Okrug	3.041.004
10	Achitsky Urban Okrug	2.957.148
11	Artinsky Urban Okrug	2.695.914
12	Bisert Urban Okrug	1.802.051
13	Degtyarsk Urban Okrug	1.246.944
14	Staroutkinsk Urban Okrug	399.752
V	Severniy upravlencheskiy okrug	180.253.868
1	Serovsky Urban Okrug	42.560.549

2	Nizhnyaya Tura Urban Okrug	24.063.830
3	Krasnoturyinsk Urban Okrug	22.295.220
4	Kachkanar Urban Okrug	21.822.871
5	Severouralsk Urban Okrug	21.686.387
6	Krasnouralsk Urban Okrug	18.024.887
7	Ivdel Urban Okrug	6.371.579
8	Garinsky Urban Okrug	6.241.376
9	Karpinsk Urban Okrug	6.176.279
10	Sosva Urban Okrug	3.574.092
11	Verkhotursky Urban Okrug	3.433.641
12	Volchansk Urban Okrug	2.151.373
13	Novolyalinsky Urban Okrug	1.728.473
14	Pelym Urban Okrug	123.311
VI	Vostochniy Upravlencheskiy Okrug	81.978.670
1	Irbitsky Municipal Formation	12.420.162
2	Rezhevsky Urban Okrug	10.239.426
3	Alapayevsk Urban Okrug	8.875.667
4	Artyomovsky Urban Okrug	7.673.277
5	Talitsky Urban Okrug	6.366.199
6	Kamyshlov Urban Okrug	5.367.977
7	Baykalovsky District	5.047.990
8	Kamyshlovsky District	4.864.005
9	Municipal Formation City of Irbit	4.719.829
10	Turinsky Urban Okrug	4.033.318
11	Pyshminsky Urban Okrug	3.402.551
12	Urban Okrug Town of Alapayevsk	3.388.696
13	Tavdinsky Urban Okrug	1.730.261
14	Tugulymsky Urban Okrug	1.343.183
15	Slobodo-Turinsky District	1.243.516
16	Taborinsky District	1.084.023
17	Makhnyovo Municipal Formation	178.590

Source: compiled by the author

Yekaterinburg accounted for 41.7% of the fixed capital investments from the average regional level in 2010. The share of the fixed capital investments in Yekaterinburg amounted to 50.5% in 2020. The increase over ten years was 8.8%. This concentration is an additional confirmation of the importance of the agglomeration factor in providing a greater diversity of small and medium-sized companies (Mutalimov, Kovaleva, Mikhaylov, Stepanova, 2021). The additional concentration of investments that has taken place over the past 10 years demonstrates the growing importance of the agglomeration effect.

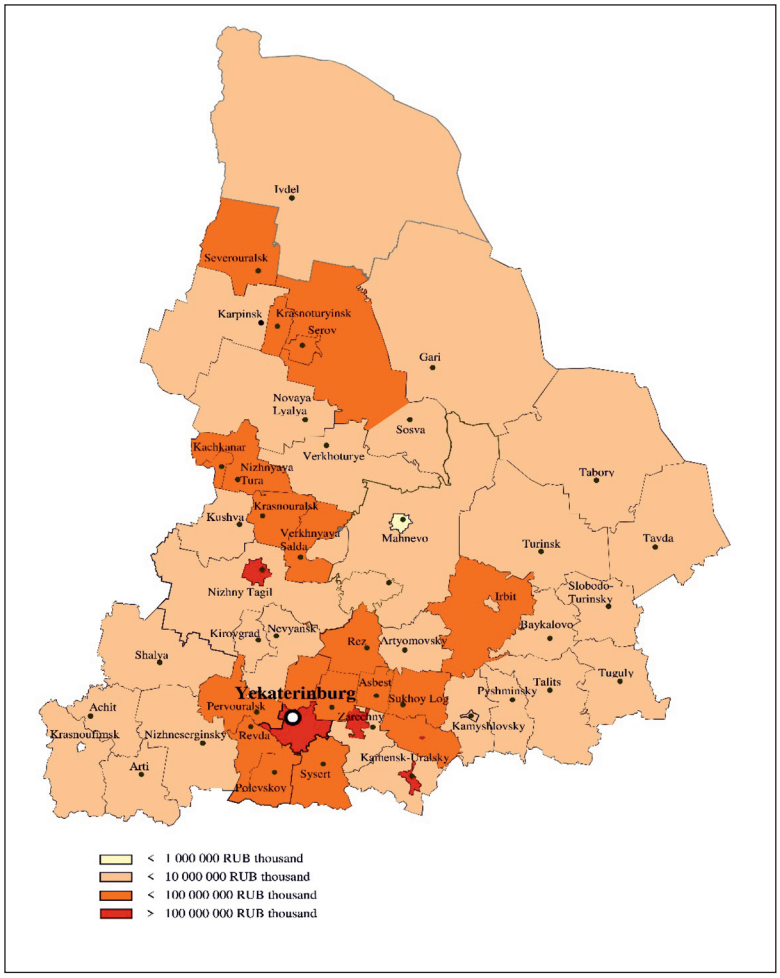
Yuzhniy Upravlencheskiy Okrug is in the second position with the city with the nuclear power industry Zarechny and the metallurgical city Kamensk-Uralsky. At the same time, Zarechny and Kamensk-Uralsky consolidate 62.3% of the total investment volume of the district. Gornozavodskoy Upravlencheskiy Okrug is in the third position of the rating with the industrial capital of Nizhny Tagil. The volume of investments in the industrial capital of the Urals amounted to 174.3 billion rubles. Zapadniy

Upravlencheskiy Okrug is in the fourth place in terms of the investment. It includes large metallurgical cities, such as Verkhnyaya Pyshma, Pervouralsk, Polevskoy, etc. The total volume of investments in the district amounted to 250.7 billion rubles.

Severniy Upravlencheskiy Okrug is in the fifth position, it includes the cities with metallurgical, mining and mechanical engineering enterprises. Serov with the investment volume of 42.5 billion rubles is almost twice ahead of its neighbouring Nizhnyaya Tura, Krasnoturinsk, Kachkanar, Severouralsk, Krasnouralsk. Vostochniy Upravlencheskiy Okrug is in the last, sixth, position with an investment volume of 81.978.670 thousand rubles. The largest investors in this district are Irbit and Rezh, where industrial plants are located.

Based on the data in Table 4, a cartogram has been compiled, which shows the territories of municipalities, depending on the volume of investments in fixed capital for 2010–2020 (see Picture 1).

Picture 1. Cartogram of the municipalities of the Sverdlovsk region in terms of investment in fixed capital for 2010–2020



Source: compiled by the author

Picture 1 shows the areas that concentrate the largest volume of investments. Yekaterinburg, Nizhny Tagil, Zarechny, Kamensk-Uralsky are highlighted in red. A second belt of territories has developed around them, which occupy the following positions in terms of investment volume, and a number of districts in the north adjoin them – highlighted in orange. The cartogram shows the concentration of investments in the space of the region in three main zones – Yekaterinburg and its neighbouring districts, Nizhny Tagil and its neighbouring districts, northern cities – Serov, Severouralsk. Separately, it is worth noting a bright investment point in the south-east of the region – the city of Kamensk-Uralsky. Let us compare the cartogram data with the location of large industry in the region.

Several traditional branches of industry were developed on the basis of industrially oriented municipalities in Sverdlovsk Oblast. Yekaterinburg agglomeration with satellite cities accumulates about 50% of the regional population, more than 55% of the manufacturing industry and more than 60% of the fixed capital investments. The second agglomeration is Gornozavodskaya with the centre in Nizhny Tagil, it provides 20% of industrial output. The cities located in the north of the region occupy 10% in the industry shipments. The fourth area of the superior operational performance can be singled out, it is Kamensk-Uralsky. It should be noted that the main economic potential of Sverdlovsk Oblast is concentrated in these agglomerations: 77.1% of the population, 87.2% of fixed capital investments, 91.1% of the industrial production of the region. Table 5 shows the comparative data on fixed capital investments in the municipalities that are parts of the industrial agglomerations.

Table 5. Fixed capital investments in the agglomerations of large-scale and medium-sized enterprises in Sverdlovsk Oblast in 2010–2020

Name of the agglomeration	Main large enterprises according to the agglomeration specialisation	Fixed capital investments, RUB thousand/ ratio of its total volume, %
Yekaterinburg agglomeration with satellite towns: (Pervouralsk, Revda, Degtyarsk, Polevskoy, Sysert, Aramil, Uralsky, Beloyarsky, Zarechny, Verkhneye Dubrovo, Berezovsky, Verkhnyaya Pyshma, Sredneuralsk)	JSC Uralmash, AO Uraltransmash, PJSC Kalinin Machine-Building Plant, AO Uralskiy Zavod Grazhdanskoy Aviatsii, JSC Production Association Urals Optical and Mechanical Plant named after E.S. Yalamov, AO Scientific and Production Association of Automatics named after Academician N.A. Semikhatov, OOO VIZ-Stal, OOO Uralshina, OOO Uralskiy Zavod Plastifikatorov, JSC Uralchimplast-Hüttenes Albertus, PJSC Uralkhimmash, factories of mechanical rubber goods, tire and hard-rubber articles, OOO Medin, OOO SP Zartek, OOO Sverdlovskiy Kamvolniy Kombinat, ZAO Sverdlesmash, OAO Pervouralskoye Rudoupravleniye, OAO Uralgidromed, ZAO Mramornyy Karat Polevskoy Karyer, OOO Berezovskoye Rudoupravleniye, Uralskiye Lokomotivy, Uralskiy Zavod Gidromashin, OOO GK Uralskiy Zavod Goryachego Tsinkovaniya, OAO Uraltrubprom, JSC Pervouralsk Pipe Plant, AO Uralelektromed, UMMC-Holding Corp is one of the top Russian metallurgical companies, Medeplavilniy Kombinat, Revdinskiy Zavod po Obrabotke Tsvetnykh Metallov, Severskiy Trubnyy Zavod, Sredneuralskiy Medeplavilniy Zavod, OOO NLMK Metalware, Zavod Khimicheskikh Reaktivov	1.531.661.979 57.3%

Name of the agglomeration	Main large enterprises according to the agglomeration specialisation	Fixed capital investments, RUB thousand/ ratio of its total volume, %
Mining agglomeration with the center in Nizhny Tagil (Nizhny Tagil, Gornouralsky, Verkhnyaya Tura, Kushva, Krasnouralsk, Verkhnyaya Salda, Svobodny, Nizhnyaya Salda, Kirovgrad, Nevyansk, Verkhny Tagil, Novouralsk, Verkh-Neyvinsky)	OAO Vysokogorskiy GOK, AO YEVRAZ KGOK, OAO Volkovskiy Rudnik Krasnouralskogo Metallurgicheskogo Kombinata, AO Safyanovskaya Med, OAO Gornoblagodatskoye Rudoupravleniye, OOO Nevyanskiy Mashinostroitelnyy Zavod – NGO, JSC UralVagonZavod, Verkhneturinskiy Mashinostroitelniy Zavod, Verkhneturinskiy Liteyno-Mekhanicheskiy Zavod, Nizhneturinskiy Elektrotekhnicheskiy Zavod, Kushvinskiy Elektrotekhnicheskiy Zavod, Nizhnetagilskiy Metallurgicheskiy Kombinat, AO YEVRAZ NMTK, PJSC Korporatsiya VSMPO-AVISMA, Nizhnesaldinskiy Metallurgicheskiy Zavod, OAO Svyatogor, Kirovgradskiy Medeplavilniy Kombinat, OOO Alapayevskiy Metallurgicheskiy Zavod, OOO TEKHMETALL-2002, Uralskiy Stekolniy Zavod, ZAO Multiteks, OOO Viyskiy DOK, Obyedineniye Nizhnetagilskoye Lesnichestvo, Meridian, Kushvinskiy Zavod Derevoobrabatyvayushchikh Stankov, Alapayevskiy Mekhanicheskiy Zavod	355.322.990 13.3%
Towns in the northern part of the region (Severouralsk, Karpinsk, Krasnoturinsk, Volchansk, Serov)	OAO Bogoslovskoye Rudoupravleniye, AO Sevuralboksitruda, Karpinskiy Elektromashinostroitelniy Zavod, Bogoslovskiy Alyuminiyeviy Zavod, OAO Uralskiy Alyuminiyeviy Zavod, OAO Metallurgicheskiy Zavod im. A.K. Serova, Serovskiy Zavod Ferrosplavov	116.342.280 4.35%
Agglomeration of high manufacturing activity – Kamensk-Uralsky	ZAO Kamensk-Uralskiy Elektromekhanicheskiy Zavod, OAO Kamensk-Uralskiy Metallurgicheskiy Zavod, Sinarskiy Trubnyy Zavod	106.544.657 4%
Total:		2.109.871.906 78.9%

Source: compiled by the author

Therefore, a comparison of the territorial data on the fixed capital investments in municipalities with the territorial distribution of productive forces in the region shows that industrial agglomerations, as well as large industrial cities, concentrate the major volume of investments – 78.9% of the fixed capital investments over 10 years. The main territories that have the largest share in terms of the attracted investments are large cities with a high concentration of large-scale enterprises and nuclear power industries.

Conclusion

The author's methodological approach was formed and tested in the course of this study. It made the analysis of the main indicators of small and medium-sized enterprises in combination with the data on fixed capital investments in the sectoral and territorial context possible. The territorial and sectoral specifics of the investments concentration in the industrial region Sverdlovsk Oblast was identified.

Based on the data obtained during the study, the following conclusions can be drawn. The degree of the influence of small and medium-sized enterprises on the diversification of the regional economy, the contribution to the capital renewals, and to the investment support for economic growth remains relatively small. It is established that a half of small enterprises and a quarter of medium-sized enterprises perform activities in the trade field. There is a confirmed tendency: with the increase in the size of

the enterprise, the share of medium-sized enterprises in manufacturing increases and the share in trade decreases. Medium-sized enterprises account for almost a quarter of the operating income in the manufacturing sector. Small and medium-sized enterprises make a significant contribution in terms of employment and gross profit, providing a quarter of workspaces and total turnover. However, in terms of fixed capital investments, SMEs have occupied a small share in the total volume of capital investments for many years. Comparison of data on the number of small and medium-sized enterprises to the gross volume of investments showed a linear positive correlation in small businesses depending on the volume of investments from the number of enterprises and a negative correlation for medium-sized enterprises. The volume of investments in small business is directly proportional to the number of enterprises in this sector, with an increase in the number of enterprises, an increase in the volume of investments is observed. No such correlation was found in medium-sized businesses. The main capital investments are carried out by large organisations, which is proved by the analysis of the statistical data for a long-term period, both in Russia and in the industrial region.

On the basis of the analysis, it is possible to draw the following conclusions on the territorial features of the concentration and distribution of investments in the region. The comparison of the data on fixed capital investments in the region by municipalities with existing agglomerations supported the hypothesis that industrial agglomerations, as well as large industrial cities and enterprises that are parts of them, are the main generators and consumers of fixed capital investments. The main volume of investments has been concentrated in the cities with the large-scale enterprises in Sverdlovsk Oblast for a decade. The coincidence of the investment analysis results by territories with the locations of industry in the region also allows us to conclude that there are stable relations between the activities of large-scale enterprises and the total investments flow in the region.

The conducted research allows us to formulate the following recommendations for business practice. The volume of capital investment in small businesses depends directly on the number of small businesses, respectively, in those regions where there is a growth trend in the number of small companies, there are prospects for expanding both their lending and making profitable deals in this business sector, since the small business segment will invest in capital investments. An analysis of such trends in individual business sectors and regions with different industry specialisations can be the subject of further research on this topic. Authorities in the region need to take into account this trend and direct their efforts to provide state support for small businesses to those measures that ensure the quantitative growth of small businesses.

For medium-sized companies, no direct dependence of capital investments on the number of companies was revealed. Investment growth took place against the backdrop of a decrease in the number of medium-sized companies. Accordingly, the logic of investing in this segment is different and is not quantitative, but targeted. It can be assumed that the conditions for doing business in the region, the prospects and risks of developing their business, the state and prospects of commodity markets, under which they begin to invest in capital investments, become important for medium-sized enterprises. The establishment and degree of influence of various factors on the capital investments of medium-sized companies can be the subject of further research on this topic.

References

Animitsa, E.G., Animitsa, P.E., Denisova, O.Yu. (2014). Эволюция научных взглядов на теорию размещения производительных сил [Evolution of Scientific Views on the Theory of the Distribution of Productive Forces]. *Ekonomika Regiona* [*Economy of Region*], *2*, 21–32.

Animitsa, E.G., Animitsa, P.E., Glumov, A.A. (2011). Особенности и приоритетные направления инвестиционной деятельности в пространстве макрорегиона [Peculiarities and Prioritized Directions of Investment Activity in Macro-Region]. *Journal of New Economy*, *4*(36), 40–48.

Barinova, V.A., Zempsov, S.P. (2019). International Comparative Analysis of the Role of Small and Medium-Sized Enterprises in the National Economy: A Statistical Study. *Voprosy Statistiki*, *26*(6), 55–71. doi: https://doi.org/10.34023/2313–6383–2019–26–6–55–71

Beck, T., Demirguc-Kunt, A., Levine, R. (2005). SMEs, growth, and poverty: Cross-country evidence. *Journal of Economic Growth*, *10*, *3*, 199–229.

Brezis, E., Krugman, P. (1993). Immigration, Investment and Real Wages. *NBER Working Papers, National Bureau of Economic Research*, *4563*.

Bryalina, G.I. (2014). Инновационные возможности российского малого бизнеса [The Innovative Capabilities of Russian Small Business]. *Vestnik Moskovskogo Universiteta*, *6*(1). 85–96.

Delbridge, R., Edwards, T., Munday, M. (2001). *Linking Innovative Potential to SME Performance: An Assessment of Enterprises in Industrial South Wales*. Zagreb: European Regional Science Association Meeting.

Dubenetskiy, Y.M. (2013). Абалкинские чтения. Научные дискуссии по теме "Социально-экономическое прогнозирование в России и идеи А.И. Анчишкина" [Readings from Albakin. Academic Discussions on Social and Economic Forecasting in Russia and A.I. Anchishkin's Ideas]. *Nauchnyye Trudy Vol'nogo Ekonomicheskogo Obshchestva Rossii* [*Scientific Works of the Free Economic Society of Russia*], *4*(171), 64–69.

Florence, P. (1948). *Investment, location, and size of plant*. London: Cambridge University Press.

Fraymovich, D.Y., Gundorova, M.A., Mischenko, Z.V., Guzhov, A.M., Sultanova, A.V. (2021). Small business development and resource use in Russian regions. *R-Economy*, *7*(2), 88–99. doi: https://doi.org/10.15826/recon.2021.7.2.008

Galiullina G.F. (2019) Comparative analysis of operational frameworks of special economic areas in Russia. *R-Economy*, *5*(1), 25–37. doi: https://doi.org.10.15826/recon.2019.5.1.004

Galiullina, G.F., Sharamko, M.M., Andreeva, F.I. (2017). Institutional-synergetic approach in benchmarking of territorial industrial policy. *R-Economy*, *3*(3), 167–175. doi: https://doi.org/10.15826/recon.2017.3.3.019

Gandhi, N.S., Thanki, S.J., Thakkar, J.J. (2018) Ranking of drivers for integrated lean-green manufacturing for Indian manufacturing SMEs. *Journal of Cleaner Production*, *171*. 675–689.

Glinskiy, V.V., Serga, L.K. (2008). К вопросу о перспективах развития малого предпринимательства в России [To the Question of Small Business Prospects in Russia]. *Sibirskaya Finansovaya Shkola* [*Siberian Financial School Journal*], *6*(71), 3–6.

González-Val R., Pueyo F. (2009). *First Nature vs. Second Nature Causes: Industry Location and Growth in the Presence of an Open-Access Renewable Resource*. MPRA Paper No. 18586.

Khalilov, L., Yi, Ch.D. (2021). Institutions and entrepreneurship: Empirical evidence for OECD countries. *Entrepreneurial Business and Economics Review*, *9*(2), 119–134.

Korchagina, I.V. (2017). Innovative potential in the small and medium-sized enterprises regional clusters in Russia. *R-Economy*, *3*(3), 139–148. doi: https://doi.org/10.15826/recon.2017.3.3.016

Korolev, V.I. (2017). Механизмы инновационного развития малого бизнеса в зарубежных странах [Mechanisms of Innovative Development of Small Business in Foreign Countries]. *Rossiiskii Vneshneekonomicheskii Vestnik* [*Russian Foreign Economic Journal*], *11*, 52–61.

Kuznetsov, B.L., Kuznetsova, S.B., Galiullina, G.F. (2019). Территории опережающего развития: институциональные и региональные противоречия [Territories of Advanced Socio-Economic Development and Industrialization]. *Journal of New Economy*, *20*(3), 23–37. doi: https://doi.org/10.29141/2658–5081–2019–20-3–2

Kuzubov, A.A., Kaba, V.O., Chzhan Tsze (2018). Основные аспекты государственной поддержки в развитии малого и среднего бизнеса России и экономически-развитых стран [The Main Aspects of Government Support in the Development of Small and Medium Business in Russia and in the Economically Developed Countries]. *Karel'skiy Nauchnyy Zhurnal* [*Karelian Scientific Journal*], *2*(23), 67–71.

Lapo, V.F. (2010). Пространственная концентрация производства и ожидания инвесторов: анализ отраслевых особенностей привлечения инвестиций в регионы [Territorial Concentration of Production and Investors' Expectations: Analysis of Industry-Specific Features of Attracting Investment to Regions]. *Prikladnaya Ekonometrika* [*Applied Econometrics*], *2*(18), 3–19.

Leskovar, R., Baggia, A., Metlikovič, P., Kuntaric, A., Polzer, W., Christl, C. (2013). Assessment of innovation potential in small and medium enterprises. In: *Conference Paper: 30th International Conference on Organizational Science Development*, 1–9.

Loginova, V.S., Korneyko, O.V. (2019). Роль малого инновационного предприятия в развитии экономики России [The Role of a Small Innovative Enterprise in the Development of the Russian Economy]. *Yevraziyskoye Nauchnoye Ob'yedineniye* [*Eurasian Scientific Association*], *6*(52), 244–246.

Luk'yanova, M.N. (2018). Институциональные факторы инновационного торможения на региональном уровне власти [Institutional Factors of Innovation Deceleration at the Regional Level of Government]. *Vestnik Yevraziyskoy Nauki* [*The Eurasian Scientific Journal*], *4*, 1–12.

Maizels A. (1948) Investment, Location and Size of Plant. *The Economic Journal*, *58*, 231, 411–414. https://doi.org/10.2307/2225973

Matejun M. (2017). The effect of innovative potential on small business performance. *People: International Journal of Social Sciences*, *3*(1), 80–100.

Medovnikov, D.S., Oganesyan, T.K., Rozmirovich, S.D. (2016). Кандидаты в чемпионы: средние быстрорастущие компании и программы их поддержки [Candidates for the Championship: Medium-Sized High Growth Companies and State-Run Programs for Their Support]. *Voprosy ekonomiki*, *9*, 50–66. doi: https://doi.org/10.32609/0042–8736–2016–9–50-66

Mirkin, Y.M. (2020). Стимулирование развития малого и среднего бизнеса: макроусловия, Международный опыт [Stimulating the Development of Small and Medium-Sized Businesses: Macro-Conditions, International Experience]. *Nauchnyye Trudy Vol'nogo Ekonomicheskogo Obshchestva Rossii* [*Scientific Works of the Free Economic Society of Russia*], *221*(1), 98–113.

Mokrushin A.A., Prokhorova V.V., Shalatov V.V. (2019). Стратегические приоритеты и инструменты реализации инвестиционной политики проблемного региона [Strategic Priorities and Instruments for Implementing the Investment Policy of the Problem Region]. *Vestnik Adygeyskogo Gosudarstvennogo Universiteta. Seriya 5: Ekonomika* [*The Bulletin of the Adyghe State University, Series "Economics"*], *4*(250), 41–52.

Mutalimov, V., Kovaleva, I., Mikhaylov, A., Stepanova, D. (2021). Assessing the regional growth of small business in Russia. *Entrepreneurial Business and Economics Review*, *9*(3), 119–133.

Redding, S.J. (2010), The empirics of new economic geography. *Journal of Regional Science*, *50*, 297–311.

Rifkin, D. (2015). *Третья промышленная революция: как горизонтальные взаимодействия меняют энергетику, экономику и мир в целом: пер. с англ. 2–е изд.* [*The Third Industr ial Revolution; How Lateral Power is Transforming Energy, the Economy, and the World*]. Moscow: Al'pina Non-Fikshn Publ.

Rudenko, L.G. (2019). Механизм инновационной инфраструктуры поддержки развития малого предпринимательства [Mechanism of Innovative Infrastructure of Support of Small Business Development]. *Vestnik Universiteta*, *1*, 64–71. doi: https://doi.org/10.26425/1816–4277–2019–1–64–71

Sharshova, T.V. (2015). Роль малого предпринимательства в развитии экономики республики Хакасия [Role of Small Business in Development of Economy of Republic of Khakasia]. *Vestnik NSUEM*, *1*, 282–292.

Shvab, K. (2018). *Технологии четвертой промышленной революции* [*Shaping the Fourth Industrial Revolution*]. Moscow: EKSMO Publ.

Silin, Y.P., Animitsa, E.G. (2021). Reflections on contemporary economic development of Russia. In: N.A. Istomina (ed.), *New industrialization of Russia: economy – science – man. Proceedings of the 8th Ural Academic Readings of Professors and Postdoctoral Researchers in Social Sciences*. Ekaterinburg: Publishing House of the Ural State Economic University, 3–10.

Silin, Y.P., Animitsa, E.G., Novikova, N.V. (2016). New normality in the Russian economy: regional specifics. *Ekonomika Regiona* [*Economy of Regions*], *3*, 714–725. doi: https://doi.org\10.17059/2016–3–9

Silin, Y.P., Animitsa, E.G., Novikova, N.V. (2019). *Ural macro-region: big cycles of industrialization*. Ekaterinburg: Publishing House of the Ural State Economic University.

Strizhakova, E.N., Strizhakov, D.V. (2019). Развитие инновационной экономики: проблемы и возможности [The Development of an Innovative Economy: Problems and Opportunities]. *Vestnik Yevraziyskoy Nauki* [*The Eurasian Scientific Journal*], *1*, 1–19.

Tatarkin, A.I. (2016). *Breakthrough into the future. Innovation profile of the Ural meta-region*. Ekaterinburg: Institute of Economics, Ural Branch of the Russian Academy of Sciences.

Tatarkin, A.I., Romanova, O.A. (2014). Промышленная политика: генезис, региональная характеристика и законодательное обеспечение [Industrial Policy: Genesis, Regional Features and Legislative Support]. *Ekonomika Regiona* [*Economy of Region*], *2*, 9–21.

Ulyanova, E. (2017) Development of regional strategies in Russia: the case of Sverdlovsk region. *R-Economy*, 3*(*3), 176–188. doi: https://doi.org/10.15826/recon.2017.3.3.020

Wandel, C. (2009). *Industry Agglomerations and Regional Development in Hungary: Economic Process during European Integration*. Hamburg: Peter Lang.

Xu, Q., Chen, J., Chen, L., Jin, L., Lou, D. (2008). Total Innovation Management competence and innovation performance in SMEs. An empirical study based on SME survey in Zhejiang Province. *Industrial Engineering and Engineering Management. International Conference on Industrial Engineering and Engineering Management*, 949–953.

Semyon Vlasov, a postgraduate student of the Institute of Economics of the Ural Branch of the Russian Academy of Sciences, Deputy Minister, Ministry of the Agro-Industrial Complex and Consumer Market of Sverdlovsk Region, Ekaterinburg, Russia. Research interests: regional investments, agglomeration, capital investments, industrial policy, investment climate, technological development.

ORCID: https://orcid.org/0000-0002-3930-5384

Address:

Ministry of the Agro-Industrial Complex and Consumer Market of Sverdlovsk Region
Rosa Luxemburg street, 60
620026, Ekaterinburg, Russia

e-mail: vlasovsv81@gmail.com