Competition between the regions of the center of Russia for migration flows of the population: assessment and consequences

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Abstract. The paper contains the comparative analysis of migration indicators in the regions of Central Russia. The aim of the study is to analyse population migration in the regions of Central Russia, to assess youth migration activity and to identify measures to retain young people in the regions. The socio-economic development strategies and SWOT-analysis of the regions show advantages and disadvantages of the regions due to their proximity to the Moscow agglomeration. Residents of Moscow, the Moscow, Vladimir, Kaluga, Tver and Tula regions are much more involved into interregional migration than in regional one. The regions around the Moscow agglomeration are competing to attract investment, skilled labour and talented young people. But the proximity to the Moscow metropolitan area creates economic and labour market opportunities for the regions. They related to the increasing pace of relocation of production and office functions from Moscow to the neighbouring regions, the arrival of investors, the strengthening of interregional links for supplies of food and textile industry, the migration of Moscow and the Moscow region residents to the country houses, etc. The study concludes and recommends the measures to retain young people in the regions.

Keywords: migration of population, positive (negative) migration balance, youth, youth educational migration, youth labour migration, Moscow agglomeration.

JEL codes: H52, J11, J21, J24, J61

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Introduction

The modern regions economic development dwells on creating of efficient economy based primarily on innovation and the production of high-tech products and services. There is a trend of staff shortages, especially in blue-collar occupations, in mechanical engineering, metalworking, construction, utilities and agriculture (Babkova, 2018). Also there are conditions for increased competition between regions for skilled labour. At the same time by the Strategy of socio-economic development of the Smolensk region (hereinafter referred to as the Strategy) economic sectors and territories with higher wages, social security and decent working conditions will have a certain advantage.

The reasons for population migration are: education (especially at the youngest working age), the higher wages, family reasons (marriage, family break-up, moving as part of the family, e.g. children, unemployed members of the household); after retirement people return to the previous place of residence, desire to live in more favourable natural and climatic conditions, etc. Educational migration is related to education, skills development, various internships and other forms of human capital accumulation.

The economic factors of national and regional development primarily influence on migration. On the one hand, migration can be a factor of economic growth of the region. On the other hand, the migration of

residents, especially young people, from small towns to larger cities, from regional capitals to metropolitan areas reduces the labour and overall economic potential of regions and municipalities. The migration from the single-industry towns is particularly important. The main issues of single-industry towns in Russian regions are declining population, low employment opportunities; low investment attractiveness, etc. Largely, a single-industry town is a settlement located at a considerable distance from other towns and cities. The main economic risks of single-industry towns are related to the crisis of city-forming enterprises, narrow specialization of economic activities (Elizarova & Berendeeva, 2018).

It is necessary to study regional and interregional migration flows leading to the outflow of population from the region, the educational and labour migration of young people, to make forecasts and develop measures allowing to retain young people in the regions.

At present, residents of many regions in Central Russia migrate permanently or temporarily (on a rotational basis) to the metropolitan area of Moscow and the Moscow region, which is explained by the availability of a large number and variety of jobs, higher wages in the Moscow agglomeration, etc. by M. Kartseva, N. Mkrtchyan and Y. Florinskaya (2020): "migration is an important tool by which households counteract negative social phenomena such as unemployment and poverty".

The section "Spatial competition for human resources" of the Kaluga Region Strategy, noted "the Moscow agglomeration is constantly demanding new qualified middle and senior level human resources This need is met both by own resources and the population of the regions closest to Moscow. Over time, this workforce will be concentrated mainly on the technological services of the agglomeration. The formation of a technology zone in the Moscow region, where logistics, repair and processing facilities will be concentrated, is already underway. One of the main problems for the regions surrounding Moscow will be the problem of labour retention".

The impact of the Moscow agglomeration on migration is ambivalent. By the Kaluga Region Strategy, while 10-15 years ago the population of Central Russia and other regions of the Russian Federation, as well as citizens of the Commonwealth of Independent States (CIS), came to the capital region, in recent years a counter process began: Moscow is a source of settlement in the surrounding areas; the next 7-15 years a 'new settlement' trend will ensure a 'new habitat' at the border of the Moscow and Kaluga regions. The number of new settlers, according to expert estimates, could reach 300,000 by 2030.

Thus, the aim of this study is to analyze population migration in the regions of Central Russia (their "losses" and "gains" as a result of migration), the migration activity of young people (school, college and university graduates), and to identify measures to retain young people in the regions (the role of economic and social factors).

Methodology

The methodological basis for the study was a comparative analysis of regional strategies, including competitive advantages, strengths, weaknesses, opportunities and threats (SWOT-analysis). Also we used the statistical indicators of the Federal State Statistics Service of the Russian Federation on migration in the constituent entities of the Russian Federation, as well as scientific papers devoted to the analysis of the problems of the interrelation of migration processes and socio-economic development of territories (regions, municipalities). At the same time, the experts note a) the poor quality of migration general in Russia and in the Moscow and St. Petersburg agglomerations especially. The migrants have the greatest difficulty in getting registered (for example, differences in the statistics of migrants according to the data of the Ministry of Internal Affairs and Rosstat), b) difficulties in direct assessment of the intensity of the impact of migration processes on the formation of the region's population, due to which an indirect assessment using forecast methods is used (Doronina, 2019).

We identified 5 main items of our research.

Firstly, the "costs" of migration outflows from municipalities and regions, and the causes and negative consequences of these outflows are studied. Thus, A. Tebekin's research article shows a chain of socio-demographic problems and economic losses typical for the most regions of the country: reduction of jobs in

schools and hospitals as a result of their optimization, the need for labour migration of teachers and doctors, the search for spatially accessible other educational and medical institutions, the need for labour migration for part of the working-age population. It can be concluded that "the availability of social infrastructure facilities – schools and hospitals – is the basis for the development of settlements in the Russian Federation" (Tebekin, 2021).

The scientific works of A. Gayazov, G. Akhmetova, I. Utyasheva and N. Shamsutdinova (2020) concern the socio-territorial peculiarities of population migration, the demographic development gap between urban and rural areas. The authors believe that "reduction of negative trends in rural areas is possible with a comprehensive solution of territorial development issues, implementation of effective economic and social policy measures in the region, primarily in rural areas".

Secondly, there is a view of the significance of contemporary migration for Russia and the Russian regions, and the possibilities for attracting labour resources from outside. By T. Nefedova and A. Starikova (2020), the migration of the population serves as an indicator of the socio-economic well-being of a region. The authors point out "the spatial mobility of the population is one of the main ways in which it adapts to territorial socio-economic contrasts" and investigate the formation of vital hubs as a result of resettlement and labour migration and the partial level of its "landscape" through dacha, tourist and partly international migration.

L. Rybakovsky and N. Kozhevnikova (2019) examine international migration between the former USSR republics which are the modern Near Abroad countries. Also the authors discuss the reduced opportunities for Russia to attract immigrants from the countries of the Near Abroad.

Thirdly, the sources of population growth in metropolitan areas are studied. The article by K. Doronina (2019) dwells on the migration is not only compensated for natural decrease, but it also ensured quite a significant increase the Moscow agglomeration population, primarily due to Moscow's central position according to the location of the population of the Russian Federation and the adjacent territories. Long-term studies identify the consistent pattern of migration increasing in Moscow occurs at the age of 15-50 years. The age structure changes are due to migration of working-age younger population groups. Moscow has the most significant contribution of migration to births: 20% of the population aged 0-22 are children of migrants born in Moscow, another 20% are children of migrants were not born in Moscow, and children of the original population account for only 60%.

Fourth, the impact of the COVID-19 pandemic on migration in Russia is explored. N. Pokrovsky, A. Makshanchikova and E. Nikishin (2020) note the 2020 pandemic had a significant impact on migration flows in Russia. It led to an increase in atypical migration processes, above all the mass outflow of urban dwellers to non-urban spaces. The March-early May 2020 moves of city dwellers from Moscow to short-, medium- and long-distance suburban homes in the Moscow, Vladimir, Kostroma, Vologda and Nizhny Novgorod regions were investigated. The authors discuss the problem of reverse migration and de-urbanization, "life after the life in city" and the corresponding transformation of lifestyles. According to the authors, at least 50-60 million people in Russia today own a "second" country house. The concept of crisis epidemic de-urbanization migration to non-urban spaces within the parameters of the new migrants' life world" is introduced.

Fifthly, it is important to study the motivational migration intentions of young people, which is important for the further socio-economic development of regions and municipalities in terms their labour potential.

The migration flow mostly consists of active working age people. Young people constitute the main share of those who leave, many of them are also among those who stay yet, but plan to leave. For example, those who did not leave after school may leave after graduating from secondary / higher education institution, i.e. there are two main peaks of youth migration: "school – university" and "university – labour market" (Byuraeva, 2020; Gabdrakhmanov et al., 2019). It is therefore important to study the level of potential migration of young people. The study by Y. Byuraeva (2020) on the example of the Republic of Buryatia analyzes intra- and inter-regional movements of young people, the consequences of youth attrition, especially school leavers, for the region.

T. Doroshenko and G. Leonidova (2019) studied educational migration of school graduates in the Vologda region, indicated differences in educational migration of urban and rural school graduates, identified three groups of municipal districts, in which schoolchildren had different attitudes to educational migration outside the region.

The study by N. Gabdrakhmanov, N. Nikiforova and O. Leshukov (2019) substantiates the thesis of the high university attractiveness for young people, including remaining the main resource for retaining and attracting talent to the regions. At the same time, studies show more than half of the students in Russia study mainly in 2 of the 8 federal districts – the Central and Volga one. In Russia, 10 regions with the largest share of students in the population can be conventionally called the "student" regions: St. Petersburg and the Leningrad region, Moscow and the Moscow region, Republic of Tatarstan, the Oryol, Omsk, Tomsk, Tyumen, Kursk, Novosibirsk and Voronezh regions.

The paper analyzed the regional higher education systems demand and employment of university graduates. Also the authors introduced the regional universities demand indicators among school graduates, postgraduate mobility of university graduates (Gabdrakhmanov et al., 2019).

Results

We analyze the migration indicators of the regions of Central Russia according to the Statistical Collection "Regions of Russia".

By Table 1, in the period of 2013 and 2020 only the Kaluga and Moscow regions had notable positive migration balance (68 persons per 10,000 of population, respectively). In compare with 2018 and 2019, it decreased twice in the Moscow region and increased significantly in the Kaluga one. There is an excess of migration outflow over inflow, which leads to the population negative migration balance. Many regions are characterized by fluctuating the migration balance coefficient, especially in the Ivanovo, Kaluga, Ryazan and Tver regions.

In the pre-COVID-19 period (up to 2020) negative migration balance occurred in the Kaluga, Kostroma, Smolensk and Tula regions. Migration was affected by 2020, characterizing by the coronavirus pandemic, which due to travel restrictions declined the migration rate in all regions under study (except the Kaluga and Kostroma regions).

Table 1 – Coefficients of migration balance per 10,000 population[1]

Period	2013	2014	2015	2016	2017	2018	2019	2020
Moscow	90	57	92	24	89	79	38	1
Moscow region	140	149	120	141	111	140	144	68
Vladimir region	-4	-1	-11	-2	-21	-24	20	-13
Ivanovo region	-5	-7	-22	-13	-22	-33	8	-1
Kaluga region	24	94	17	77	16	19	-11	68
Kostroma region	-5	2	-10	-15	-33	-43	-5	3
Ryazan region	16	4	0.01	17	8	-4	21	7
Smolensk region	-18	21	-6	2	24	-2	-4	-47
Tver region	1	-12	-14	4	-30	-34	5	-13
Tula region	4	19	19	21	25	-9	-4	-3
Yaroslavl region	38	35	37	28	7	3	8	-9

1) The sign (-) indicates a decrease

Source: Regions of Russia. Socio-economic indicators. 2020

By Figure 1, coefficient of the migration balance per 10,000 people in the regions under study differs significantly: the migration situation is most favourable in the Moscow and Kaluga regions even under the pandemic conditions of 2020. In recent years positive migration balance in the Yaroslavl region in 2020 is replaced by negative one. The Vladimir and Ivanovo regions, after showing the positive migration balance in

2019, in 2020 returned to the negative one, too.

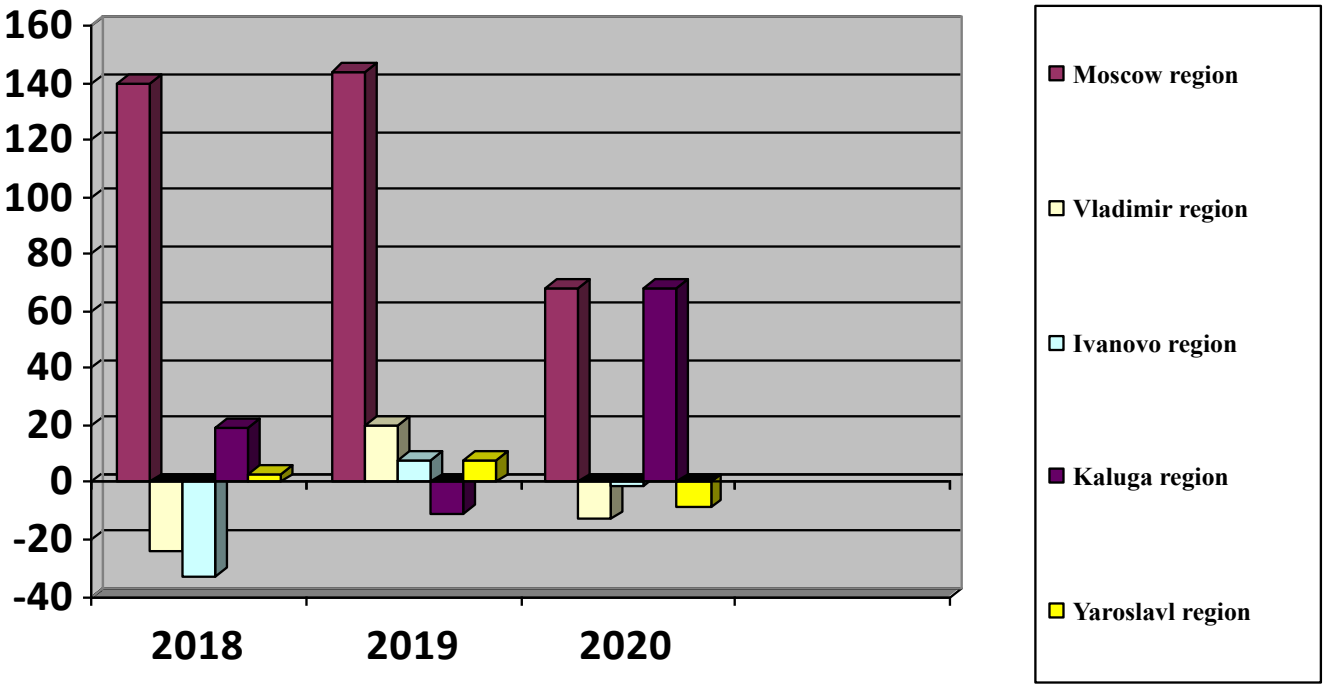

Figure 1. Coefficients of migration balance per 10,000 population in the 5 regions of Central Russia in the period of 2018-2020

Source: Regions of Russia. Socio-economic indicators, 2020

By Table 2, the main flow of arrivals to Moscow and the Moscow region are from other regions (in 2020, the percentages were 90.6 and 63.9, respectively). A high percentage of people from other regions also came from the Vladimir (48.4%) and Tver (43.1%) regions.

Table 2 – Distribution of arrivals by the aim of trip (as a percentage of total arrivals)

Period	Within the region			From other regions of Russia			From outside of Russia		
	2018	2019	2020	2018	2019	2020	2018	2019	2020
Moscow	3.0	3.6	1.8	86.0	87.8	90.6	11.0	8.6	7.6
Moscow region	18.8	18.0	18.6	71.8	66.5	63.9	9.4	15.5	17.5
Vladimir region	44.4	38.2	35.2	48.9	43.0	48.4	6.7	18.8	16.4
Ivanovo region	54.8	50.4	49.6	42.9	40.2	39.7	2.3	9.4	10.7
Kaluga region	26.4	23.6	22.6	37.1	37.4	38.2	36.5	39.0	39.2
Kostroma region	59.3	56.0	54.3	34.2	34.2	37.3	6.5	9.8	8.4
Ryazan region	47.4	43.8	45.0	41.4	37.0	38.9	11.2	19.2	16.1
Smolensk region	40.3	40.9	41.3	29.4	31.0	36.8	30.3	28.1	21.9
Tver region	41.2	41.0	41.1	46.3	39.9	43.1	12.5	19.1	15.8

Period	Within the region			From other regions of Russia			From outside of Russia		
	2018	2019	2020	2018	2019	2020	2018	2019	2020
Tula region	37.3	37.3	36.1	32.7	34.2	36.3	30.0	28.5	27.6
Yaroslavl region	47.7	48.4	49.0	44.5	42.5	42.6	7.8	9.1	8.4

Source: Regions of Russia. Socio-economic indicators, 2021

E. Nikolaeva's (2021) research shows that about 40,000 migrants arrived in the Ivanovo region in 2020. Most are from Central Asia. The Ivanovo region is attractive (in descending order) for citizens of Tajikistan, Ukraine, Uzbekistan, Azerbaijan and Armenia. During the pandemic, about 65,000 people of the Ivanovo region work outside the region. In particular, the mobilization of doctors and nurses during the pandemic to work in hospitals in the capital significantly increased staff attrition, especially from regions closer to Moscow. Medical institutions in the Central Federal District (CFD) lost almost 3,000 staff – doctors and nurses – in just a few months of 2020. The greatest loss of health workers in the CFD is observed in the Tver, Smolensk, Vladimir, Ryazan and Ivanovo regions. In the Ivanovo region in January-December 2020 there was an intra-Russian (interregional) migration outflow of population in the amount of 1,631 people.

By Table 3, the main flow of departures in 2018-2020 in Moscow, the Moscow Region and the Vladimir Region are those who left for other regions of Russia (87.1; 64.7 and 55.2 percent, respectively). Interregional migration prevails in the Tver (46.7%), Tula (39.4%) and Kaluga (39.9%) regions. Intraregional migration also prevails in the Ivanovo, Kostroma, Ryazan and Yaroslavl regions. The percentages of departures within the region are 49.7; 55.0; 46.1 and 47.6, respectively. The Kaluga region is characterized by a predominance of migration to other regions, but with slight deviations in other directions. Over the past 3 years, the largest share of those who left Russia were from the Kaluga (32.7%), Smolensk (29.9%) and Tula (24.7%) regions, while the smallest share was from the Ivanovo region (4.4%). It can indicate the main stages of migration: people firstly leave the Ivanovo region and lately some of them leave Russia.

Table 3 – Distribution of arrivals by the directions of trip (as a percentage of total arrivals)

Period	Within the region			To other regions of Russia			Outside Russia		
	2018	2019	2020	2018	2019	2020	2018	2019	2020
Moscow	4.1	4.3	1.8	85.6	85.2	87.1	10.3	10.5	11.1
Moscow region	26.1	25.5	22.1	66.9	67.5	64.7	7.0	7.0	13.2
Vladimir region	40.8	41.1	33.4	56.9	55.7	55.2	2.3	3.2	11.4
Ivanovo region	49.1	51.8	49.7	50.6	47.7	45.9	0.3	0.5	4.4
Kaluga region	27.6	22.9	27.4	43.1	44.3	39.9	29.3	32.8	32.7
Kostroma region	53.2	55.3	55.0	41.0	39.8	37.9	5.8	4.9	7.1
Ryazan region	46.9	46.5	46.1	44.7	41.5	38.6	8.4	12.0	15.3
Smolensk region	40.1	40.5	36.1	38.3	36.2	34.0	21.6	23.3	29.9
Tver region	37.2	41.7	39.5	54.7	50.4	46.7	8.1	7.9	13.8
Tula region	36.4	36.9	35.9	43.2	41.0	39.4	20.4	22.1	24.7
Yaroslavl region	48.2	49.7	47.6	42.1	42.4	43.4	9.7	7.9	9.0

Source: Regions of Russia. Socio-economic indicators, 2021

The study of Central Russia regional strategies shows the Moscow agglomeration (Moscow City and the Moscow region) is a strong centre of attraction for labour, investment and innovation. Thus, the Central Russia Strategies of the regions (Vladimir, Ivanovo, Kostroma, Ryazan, Yaroslavl, etc.) by the SWOT-analysis

consider the migration outflow of the most qualified personnel to Moscow and neighbouring regions as a threat or weakness, and note it is associated with significant interregional differentiation in wage levels. The Moscow region has a higher standard of living and quality of life and a higher labour market supply.

The Strategies of the regions under study mention, for example, pendular migration of the economically active population from the Vladimir region to the Moscow and Nizhny Novgorod agglomerations; centripetal processes of population migration between the Ivanovo region and Moscow; low migration attractiveness of the region for highly qualified labour migrants from the Yaroslavl region; migration outflow of the most qualified personnel from the Ryazan region to Moscow and neighbouring regions.

The Strategy of the Vladimir region states the reason for the migration outflow of the working-age population, primarily to the Moscow region, as a reduction of the number of employees at existing enterprises and high rates of underemployment at the region's enterprises. Although the Vladimir Region itself has a high level of registered unemployment compared to other subjects of the Central Federal District. There is a shortage of qualified workers and qualified managers in the administration of municipalities. The skills shortages, in turn, limit the growth of the productive and innovative sectors of the economy.

Advantages and disadvantages of the Ivanovo region's Strategy include the high attractiveness of the Moscow agglomeration for young people; tensions at the labour market; and competition from neighbouring regions. There are centrespinning processes in population migration between the Ivanovo region and Moscow. "There is both resettlement for permanent residence (insignificant scale) and temporary migration for employment purposes (pendulum and rotational migration), which has significant dimensions".

The reasons are the low level of income in the Ivanovo region and the higher level of wages in the Moscow one, which contributes to significant migration of the working-age population and the outflow of specialists to Moscow and neighbouring regions.

One of the Ivanovo region's main problems is interregional differentiation – a significant lagging behind a number of neighbouring CFD regions in terms of per capita GRP, average per capita income and average wages; and investment attractiveness. By the Strategy, the need to reduce commuting will encourage regional authorities to pay more attention to increasing wages in the region's organisations and enterprises and to create conditions for increasing the number of jobs.

The SWOT analysis of the Ryazan region considers the migration outflow of the most qualified personnel to Moscow and neighbouring regions as a threat. The "transformation of Ryazan into a densified, uncomfortable megalopolis, which has lost its competitive advantages in terms of urban environment compared to the Moscow agglomeration" takes place.

There are three main points of attraction for the Ryazan region's population: Moscow ranked the first as a major scientific and educational centre, the labour market and the sales market. Ryazan ranked the second as an intraregional centre of population attraction especially from small towns of the region (Kasimov, Rybnoye, Ryazhsk, Sasovo, Skopin). The third ranked the centres of neighbouring regions, which are within 2-4 hours reach (Voronezh, Lipetsk, Nizhny Novgorod, Tula).

By the SWOT analysis, the advantages of the Yaroslavl region affecting the interregional movement of labour force include the lack of labour force and the low migration attractiveness of the region for highly-skilled labour migrants.

The one of the disadvantages is growing competition from neighbouring regions in the investment and labour markets.

However, proximity to the Moscow region is mentioned among the competitive advantages of these regions in their strategies (Berendeeva & Korobova, 2021).

We assess the positive role of the Moscow agglomeration in the Ivanovo Region Strategy. By it "the growth of the population's income will be ensured by expanding the agglomeration influence of Moscow, which will manifest itself in increased investment in various areas of tangible and intangible production". This territorial proximity to the metropolitan megalopolis can have a positive impact on the development of the region through the strengthening of interregional connections for the supply of food and textile industry products.

Thus, the Yaroslavl region Strategy concerns a wide range of opportunities for the region's economic and labour market development is linked to the metropolitan area, namely the increasing pace of withdrawal of production and office functions from the congested and "expensive" Moscow region to other regions; the increasing inflow of investors from the metropolitan area; the presence of foreign companies aiming to locate their production facilities in Russian regions (not only in Moscow region); the availability of mobile skilled labour in other regions, etc.

Strategic development priorities include advantages of the proximity to the Moscow agglomeration to occupy the market in order to transfer office functions and production facilities of Moscow companies. Locating Moscow-based production facilities in the regions is relevant because the regions with a higher level of production activity more actively involve labour resources in production activities, attract more investment and conduct more active innovation activities (Babkova, 2018).

Studies examine the balance of internal labour migration of Russians is most influenced by the development of the labour market and social development of the regions (Kartseva et al., 2020). By A. Tebekin's paper, the "optimization" of the network of schools and hospitals in rural areas led to a migration outflow of the population, which emphasizes the importance of preserving and developing social infrastructure (Tebekin, 2021). In many regions the labour market is experiencing serious problems: while there is a high demand for workers, the labour supply does not meet employers' requirements. But vacancies do not match applicants' demands in terms of skills, salary and working conditions. The imbalance of supply and demand in the labour market forces people to leave (Berendeeva, 2020).

The research article by Nikolaeva raises the urgent problem of employment of university graduates who cannot find jobs in their specialization due to de-industrialization and low wages in those sectors of the economy (services, trade, construction), where jobs are still appearing. By the author, "university graduates are unable to find jobs because they do not want to accept existing offers due to dissatisfaction with the salaries offered and the employer's lack of prestige by the opinion of the applicant and society as a whole". According to Rosstat, the unemployment rate of graduates of higher and secondary vocational education institutions in 2016-2018 is trending upwards. According to a sample survey of the labour force in 2019, among university graduates in 2016-2018 unemployment increased from 5.1% to 12.6%; among those with secondary vocational education: in the programme for training specialists of secondary level increased from 7.9% to 15.2%; in the programme for training qualified workers (employees), including primary vocational education – from 10.2% to 17.4% (at the same time, the indicators in rural areas are higher than in cities) (Nikolaeva, 2021).

Byuraeva's research, based on a survey of full-time undergraduate students of colleges and universities in the Republic of Buryatia and an analysis of statistical data, showed a preferential direction (centripetal for intraregional movements and westward for interregional movements). Young people in the constituent entities of the Russian Federation are primarily characterized by intraregional movements, which have a pronounced centripetal character, with young people striving for the regional capital with its resources. Other parts of the region are losing population every year due to the negative balance of young people, especially school leavers seeking to continue their education. The study concerns the types of youth migration, such as educational and labour ones; the age peaks are highlighted: 15-19 (age of entry to vocational education institutions) and 25-29 (searching for a job). The danger of youth migration is the most often irretrievable (the percentage of applicants who have left the region is insignificant) (Byuraeva, 2020).

The author concludes the consequences of the growing outflow of young people are dramatic, since the demographic situation is declining, the lack of professional workers is increasing, and the border region is becoming depopulated. By author's opinion, "the region risks facing serious problems in terms of competitiveness and economic security in the nearest future, since the quantitative indicators of youth migration directly affect the workforce (human resources), while its qualitative parameters (education, competences, knowledge, etc.) on the region's human capital" (Byuraeva, 2020).

A study by N. Gabdrakhmanov, N. Nikiforova and O. Leshukov analyses the changing demand for regional higher education systems. If the region number of the 1st year students exceeds the number of school graduates, the region is considered in high demand among the applicants. So, if the number of 1st year

students is lower than the number of school graduates, the region is in insufficient demand for the applicants (Gabdrakhmanov et al., 2019).

Monitoring of graduates employment (but it does not take into account the incoming flow of graduates), in the regions the postgraduate mobility of graduates is studied. It is calculated by comparing the number of graduates of the region leaving to find work in other regions and was employed within 1 year after graduation to the total number of graduates of the region who were employed within 1 year after graduation – indicator "share of graduates who left the region in the total number of graduates."

By the study, the biggest outflow is characteristic for the Kursk and Ivanovo regions, as there is a more socioeconomically developed region/city nearby. It draws the most graduates to its labour market – it is primarily the Moscow agglomeration (Gabdrakhmanov et al., 2019).

The authors give a typology of regions in Russia as a whole (based on the 2014 and 2015 research base):

1. Magnet regions are a group of regions with a high demand for school graduates and at the same time a relatively low postgraduate migration rate (10 regions of the country, with Moscow and the Moscow region as permanent leaders from the Central Federal District, and the Yaroslavl region in 2015).

2. Transition regions are a group of regions with a high demand for universities among school graduates and at the same time a relatively high rate of postgraduate migration (4 regions, from the Central Federal District – in 2014; the Voronezh, Ivanovo and Orel regions, and the Ivanovo and Orel regions in 2015).

3. Looped regions are a group of regions with relatively low demand for higher education infrastructure and low postgraduate migration, where looped systems "higher education – labour market" have developed, and the reasons for this situation are different for the regions within this group. (40 regions, from the Central Federal District it was the Lipetsk region in 2014 and the Belgorod, Bryansk, Kostroma, Lipetsk, Tambov and Tula regions in 2015).

4. Exporting regions is a group of regions with relatively low demand for higher education and high postgraduate migration (the Bryansk, Vladimir, Tambov, Tver regions in 2014, none in 2015).

5. Border regions is a group of regions whose postgraduate migration or demand indicators are close to the highlighted borderline values (the Belgorod, Kaluga, Ryazan, Kostroma, Kursk, Tula and Yaroslavl regions in 2014; the Vladimir, Kaluga, Kursk, Ryazan, Smolensk, Tver regions in 2015) (Gabdrakhmanov et al., 2019).

The authors conclude the necessity of taking into account the population projection of the 17-21 age group, especially 18-year-olds, and the availability of educational infrastructure in the context of demographic change (Gabdrakhmanov et al., 2019). The authors give a population projection for 18-year-olds in Russia's regions.

We sampled data from a study by N. Gabdrakhmanov, N. Nikiforova and O. Leshukov (2019) for the surveyed regions of Central Russia. By Table 4, the number of young people aged 18+ in 2016 was characteristic only of the Moscow region, the Vladimir, Tver, Tula and Yaroslavl regions. In the other regions, the number of young people of that age was no more than 8,000, and in the Kostroma region it was less than 6,000. A projected increase of more than 20% in 2026 is expected in many regions, including the Vladimir, Kaluga, Kostroma, Moscow, Tver and Yaroslavl regions. In the Ivanovo region it will exceed 30%. The exceptions are the Ryazan, Smolensk and Tula regions, with a rate of 15% and below.

Table 4 – Projected number of 18-year-olds in the under study regions of Central Russia

Entities of the Russian Federation	Population 2016, people	Projected increase, 2026, %
Vladimir region	11303	24.15
Ivanovo region	7993	30.06
Kaluga region	8092	23.29
Kostroma region	5776	23.27
Moscow region	57242	22.63

Entities of the Russian Federation	Population 2016, people	Projected increase, 2026, %
Ryazan region	9368	12.78
Smolensk region	7872	15.08
Tver region	10806	22.06
Tula region	11544	13.01
Yaroslavl region	10496	20.81
Moscow	86295	17.80

Source: Gabdrakhmanov et al., 2019

By Table 5, the coefficient of demand for universities by school graduates regions under study in 2017 was highest in the Moscow region (1.44), followed by the Ryazan (1.21), Ivanovo (1.15), Kostroma (1.11) and Yaroslavl (1.09) regions. For other regions the coefficient is lower than 1. The rate of postgraduate migration in 2015-2016 was highest in the Ivanovo region (0.41). It was 0.3 and higher in the Vladimir, Kaluga, Ryazan, Smolensk, Tver and Yaroslavl regions.

Table 5 – Coefficient of demand for universities by school graduates, and postgraduate migration rate of graduates in the under study regions of Central Russia

Entities of the Russian Federation	The coefficient of demand for higher education institutions by school graduates				Postgraduate migration rate of graduates	
	2014	2015	2016	2017	2014-2015	2015-2016
Belgorod region	0.69	0.82	0.84	0.99	0.26	0.25
Vladimir region	0.69	0.63	0.54	0.44	0.31	0.31
Ivanovo region	1.13	1.29	1.17	1.15	0.37	0.41
Kaluga region	0.27	0.27	0.30	0.62	0.33	0.32
Kostroma region	0.83	0.72	0.68	1.11	0.27	0.27
Moscow and Moscow region	1.60	1.54	1.48	1.44	0.32	0.29
Ryazan region	1.21	1.01	1.17	1.21	0.31	0.31
Smolensk region	0.59	0.53	0.58	0.69	0.32	0.33
Tver region	0.82	0.75	0.70	0.71	0.30	0.31
Tula region	0.78	0.75	0.78	0.78	0.27	0.26
Yaroslavl region	1.26	1.14	1.11	1.09	0.30	0.30

Source: Gabdrakhmanov et al., 2019

According to Rosstat, the number of students enrolled in programmes to train mid-level professionals in 2020/2021 will be, for example, 24,500 in the Vladimir region, 15,900 in the Ivanovo and 26,200 in the Yaroslavl regions. The number of students enrolled in Bachelor, Specialist and Master programmes in these fields is 25.4, 24.3 and 31.3 thousand, respectively (Regions of Russia. Socio-economic indicators, 2021). The graduation of mid-level specialists and the graduation of bachelors, specialists and masters in 2020 in the Vladimir region was 4.9 and 5.9 thousand people respectively, in the Ivanovo region - 3.2 and 4.8 thousand people, in the Yaroslavl region - 5.0 and 5.5 thousand people (Regions of Russia. Socio-economic indicators, 2021).

Educational institutions of the region develop new areas of training specialists. For example, in 2021, four colleges in the region developed new educational programs for the specialty "Operator of Knitting and Sewing Equipment" due to the demand of the region's enterprises. The first 15 students began studying at this specialty in 2021 at the expense of budgetary funds.

The primary and secondary vocational educational institutions of the region are training qualified

personnel by 125 specialties, interacting with 280 employers and training professionals at the secondary level and skilled workers (employees) programs. The 5 resource centers work on the basis of Ivanovo College of Textile Industry, Ivanovo Technical College, Ivanovo Industrial and Economic College, Ivanovo College of Services, Ivanovo Energy College; there are also 6 multifunctional centers of applied qualifications.

But the average salary in the region remains low. According to the Ivanovo region Committee for labor, promotion of population employment and labor migration, as of December 31, 2021 in the region is 62,2%, or 8676 vacancies by working professions with an average salary of only 20,2 thousand rubles; 37,8%, or 5272 vacancies are civil servant professions with an average salary of only 21,3 thousand rubles.

Discussion

Our study on migration flows in Central Russia by Rosstat data shows the residents of Moscow, the Moscow, Vladimir, Kaluga, Tver, and Tula regions participate much more actively in interregional migration than in intraregional one. The regions around the Moscow agglomeration are competing to attract investment, skilled labour and talented young people.

The Strategies of socio-economic development of the Central Russian regions consider the migration outflow of the most qualified personnel to the Moscow agglomeration as a threat and weakness.

But the proximity to the Moscow metropolitan area creates economic and labour market opportunities for the regions related to the increasing pace of relocation of production and office functions from Moscow to the neighbouring regions, the arrival of investors, the strengthening of inter-regional links for supplies of food and light industry, the migration of Muscovites and the Moscow region residents to the country houses, etc.

Conclusions

It is necessary to implement a set of measures to retain young people in the regions. First of all, it is the creation of jobs with decent salaries and working conditions, since it is labor migration, both international and internal, is most dependent on the complex development of regions (Doronina, 2019).

It is necessary to develop manufacturing industries because the regions with a higher level of production activity more actively involve labour resources in production activities, attract more investment and conduct more active innovation activities (Babkova, 2018). The regional labor market should motivate young people to come back, since irretrievable youth migration can have serious consequences for the region's economy.

The development of the science and education sector is necessary to reduce the migration outflow, preserve young people and the inflow of highly qualified personnel. Educational institutions (colleges, universities) have to develop new areas of training in accordance with the needs of the market, to train specialists in STEM professions (Berendeeva, 2019), which can retain young people within the region and attract them from other ones. It is important to create a modern educational infrastructure, student campuses.

Since the universities are attractive for the young people, it is necessary to pay serious attention to the development of regional systems of higher education, to study the factors of educational migration in specific regions of Russia. It is relevant to develop regional universities and make them competitive with universities in the capital and other major cities.

It is necessary to intensify work on the study of the migration intentions of young people and involve school teachers and lectures of the other educational institutions (colleges, universities), students themselves in it in order to make such research practical (for example, for students studying in the field of "Sociology", "Statistics", etc.).

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