On the centenary of G.M. Lappo

Moscow Oblast: Territorial Structure of Post-Soviet Transformations

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Abstract—The article, written for the anniversary of G.M. Lappo, is dedicated to Moscow oblast as one of his key regions. The influence of Moscow on the territory of the oblast is considered, including according to cellular operator data. The emphasis is on the change in territorial structures of Moscow oblast based on a multiscale approach and detailed statistical data. It is shown that in the post-Soviet period, with the development of high-speed transport, the areal size of the Moscow agglomeration has continued to expand. With the increased volume of labor commuting migration, the scale of seasonal pulsations of the borders and population of this agglomeration has been determined. It is shown that second-order agglomerations retain their role as local centers of attraction. Multidirectional territorial shifts in population, industry, agriculture, trade, and services over the past 30 years have been identified. In the 1990s, the highest concentration was typical for industry; by 2020, it became the lowest. Retail trade and services have taken the lead, especially near the Moscow Ring Road, where demand on the part of the growing population of the capital merges with the regional. Previously dispersed agriculture is also concentrated in association with its transition to the industrial path of development within the framework of large enterprises, which does not cancel the development of small-scale farming and expansion of dacha land use. Multiscale territorial and sectoral shifts are revealed both when comparing the Moscow oblast with Moscow, and when analyzing the distribution of types of structures (agrarian, industrial, service). The directions of these shifts are shown for several intervals between 1990 and 2020. The potential of Moscow oblast, comparable to St. Petersburg, is the result not only and not so much of its removal from Moscow, but the attraction of the population and activity to it. However, in construction, trade, logistics and, especially, dacha booms signs of a wider spread are visible, partly confirming Lappo’s vision in which the growth of Moscow oblast “from the city” alternates and is combined with growth “from the region.”

Keywords: Moscow agglomeration, post-Soviet period, development, leading and outsider municipalities, territorial and sectoral structure

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FORMULATION OF THE PROBLEM

In the centenary year of the renowned Russian economic geographer, the father of Russian (Soviet) geourbanism, Georgy M. Lappo, our attention inevitably shifts to the fields of his works. His first object of research was the cities of Moscow oblast: A thesis was devoted to Dmitrov; his candidate’s dissertation, to cities near Moscow (Lappo, 1962); a review of the literature on the cities of the Industrial Center, primarily Moscow oblast, was his first scientific publication (Lappo, 1956). Subsequently, this oblast, almost the entire territory of which can be considered a suburban area of the capital, where many processes and trends appear earlier and more clearly, constantly remained within the circle of his scientific interests (Lappo, 1961, 1971, 1994, etc.). This article, which continues and develops his research, reveals changes in the territorial structure of this region that occurred over the 30-year period of post-Soviet transformations. What happened to the Moscow agglomeration and labor migration of the population? How has the composition of leading and outsider municipalities changed in terms of population and economic concentration? What has been the directions of territorial and sectoral shifts in economy?
Among studies on Soviet-era Moscow oblast, the monograph by A.A. Mintz (1961) stands out in its thoroughness. Some publications that focused on the territorial structure of Moscow oblast were written and/or edited by Lappo (Goltz et al., 1987; Lappo et al., 1988; Moskovsky ..., 1988; etc.). There are fewer studies of this kind on the post-Soviet period, but two monographs can be noted. One of them sums up the first 10 years of market reforms, when the economy and social sphere of Moscow and Moscow oblast were just beginning to emerge from the severe systemic crisis associated with the collapse of the Soviet Union and difficult adaptation to development in market conditions (Baburin et al., 2003). The second study, on Moscow oblast itself, focuses on analyzing the shifts in the territorial and sectoral structure of the oblast that occurred by the mid-2000s (Makhrova et al., 2008). Most later publications concern specific issues: industry, housing market, migration, agriculture, etc. (Goryachko, 2021; Kurichev and Kuricheva, 2020; Mkrtchyan, 2019; Nefedova, 2017; etc.).

The recent history of the development of Moscow oblast has been studied significantly less. Processes associated with the expansion of Moscow city area have been studied (Argenbright et al., 2020; Staraya ..., 2018). Changes in the territorial and sectoral structure of the oblast over the previous 10 years are shown in (Staroossovennye ..., 2021). However, there are no studies yet on the transformation in the development of the capital’s suburban area over the entire post-Soviet period. The aim of this article is to trace territorial shifts in the region over the 30 years since the collapse of the Soviet Union, updating the judgments of the Lappo’s times and our own (Makhrova et al., 2008). The authors attempt to ascertain what is happening with the Moscow agglomeration, the leaders and outsiders at the municipal level, and the territorial and sectoral proportions of the Moscow Region economy.

MATERIALS AND METHODS

The information base for writing this article comprised Rosstat data, the Rosstat database of municipal indicators, data from the Ministry of Economy and Finance of Moscow oblast, and the results of previous studies.

To analyze territorial and sectoral shifts in Moscow oblast from 1990 to 2020, a multiscale approach was used. The changes are considered both against the backdrop of the country and Moscow, and in the context of zones and sectors of the oblast, on which Lappo also focused (1987). The analysis was performed at the level of conventional districts within borders as close as possible to the administrative late Soviet ones. In addition, to delimit the borders of the Moscow agglomeration and analyze their pulsation, a more fractional territorial level was used: 500 × 500 m cells, which made it possible to consider movements of the population (cellular operator subscribers) irrespective of municipal entities.

Certain limitations are associated with the impossibility of eliminating the consequences associated with changes in the borders of Moscow and Moscow oblast in 2012, when a number of the oblast municipalities were partly included into the capital city. Besides, small changes in the borders of municipalities near Moscow periodically occurred when certain sections of their territory were transferred to neighboring districts. The results were significantly influenced by the change in the methodology of accounting for production and the transition from the OKONKH to OKVED-1 and OKVED-2 classifiers of economic activities.

RESULTS AND DISCUSSION

**Moscow Urban Agglomeration**

Over the past three decades, as the population of Moscow oblast has increased, its level of urbanization has fluctuated around 80%, having decreased slightly from 79.3% in 1989 to 78% in 2023. The number of urban population centers has also decreased from 181 in 1989 to 147 at present, primarily due to urban-type settlements with a slight increase in the number of cities (from 71 to 74). At the same time, qualitative transformations related to development of the Moscow agglomeration actively continued.

Lappo (1987) was one of the first to identify the borders of the Moscow agglomeration and second-order agglomerations in its composition, which was an undoubted innovation of the time. Later, in studies by other authors, the Moscow agglomeration, as a rule, was defined within a broader territorial framework. In doing so, like in Lappo’s studies, it went slightly beyond the borders of Moscow oblast in certain directions, most often towards Kyiv and Yaroslavl (Lola, 2005; Pertsev and Makhrova, 1988, etc.).

In the post-Soviet period, its area continued to expand, so that by 2010 it had gone beyond the administrative borders of Moscow oblast in the north (Konakovo), east (Pokrov, Petushki, Kosterevo) and south (Kremenki). In the 2010s, with the advent of high-speed and electric trains, the 2-h isochron of the capital’s transport accessibility began to reach the centers of neighboring oblasts. From Tver to Moscow, the Sapsan express train takes a little over an hour; only the considerable price of the trip hinders the growth of the centrifugal flow from there to the capital. All this has led to overlapping of agglomerations of nearby regions and the formation of the Central Russian megalopolis (Makhrova et al., 2016).

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1 The Moscow agglomeration is identified by a method developed by Lappo together with P.M. Polyan at the Institute of Geography.
The expansion of Moscow in 2012, when the city limit reached Kaluga oblast, raised the question of the borders of the agglomeration core because of the inability to associate it with the capital in its official area, as was often done before. Recently, different countries have used the OECD methodology as a universal one, according to which such a core must have population density of over 1.5 thousand people/km² everywhere (Dijkstra et al., 2019). With this approach, the core is close to the size of a “real city,” and the radius of external borders of the agglomeration, identified by the intensity of labor commuting, in some directions exceeds 200 km, including a significant part of neighboring oblasts. The adapted OECD methodology, when the core is defined by the Moscow Ring Road as its border and does not include the zone of near suburbs, has made it possible to identify the agglomeration within an outline close to the traditional ones. It does not cover the entire territory of the oblast, although it extends beyond its borders in certain directions (Makhrova and Babkin, 2019).

The instability of the Moscow agglomeration shape has been considered by many authors, but, as a rule, in connection with its socio-economic development. The appearance of data from mobile operators on daily labor commuting made it possible to assess the scale of seasonal pulsation of agglomeration borders. The part of the oblast that most closely interacts with the core is 50–60 km away from the Moscow Ring Road — it is at this distance that the zone of active commuting takes shape, where more than 15% of the employed population regularly travels to work in Moscow. Meanwhile, in the summer months a contraction of the active zone is observed, and in winter, the number of municipalities actively in contact with Moscow increases. The static, i.e., constant throughout the year, part concentrates from 6.5 to 7 mln people, and its mobile seasonal part, with a population of about 1 million, represents a kind of buffer between the suburban zone and the space outside the agglomeration. The overall centripetal flow of labor commuter migrants (from the oblast to Moscow) increased from 750000 in the late 1980s to 1–1.4 mln (Makhrova and Babkin, 2019, Makhrova et al., 2016). The main factor in the growth was persistent contrasts in the level of socio-economic development between Moscow, Moscow oblast, and neighboring oblasts.

During the post-Soviet period, while 22 second-order agglomerations have been retained (Baburin et al., 2003), there have been considerable changes in the attractiveness of individual centers depending on their distance from Moscow and the size of their local zones of gravity. Thus, in the Khimki—Zelenograd agglomeration, the flow of Zelenograd residents to Khimki is much more intense than the counterflow, although in the 1980s, the situation was the opposite (Makhrova et al., 2016). These changes are driven by the proximity of Khimki to the capital and the spreading rate of innovations, as well as by growing self-sufficiency and multifunctionality of subcenters like Khimki. In the zone of close suburbs, they begin to develop as “outlying cities,” allowing the population to satisfy the needs for work and leisure in their place of residence, which reflects the growing diversity of satellite cities, which was noted by Lappo (1987).

The remoteness of peripheral second-order agglomerations contributes to the preservation of greater autonomy of their gravity zone, which is primarily oriented towards residents of nearby territories, including those within adjacent oblasts. The attractiveness of such agglomerations is increasing due to the location of new enterprises, including industrial ones, requiring both shift workers and daily commuters. Many enterprises have shuttle buses that collect workers from other oblasts. This has led to the formation of a substitute model of labor commuting, when part of the oblast’s population goes to work in Moscow, and jobs in their municipalities are occupied by people from neighboring oblasts, as shown by the directions and intensity of labor commuting with a case study of Dmitrov (Fig. 1).

In the 2010s, significant changes in the transport system of Moscow oblast became a powerful factor of transformation in commuters’ flows. The new Moscow Circle Line (BCL), together with the subway reaching some cities near Moscow, has created prerequisites for more intensive short connections between Moscow and its close suburbs (both centripetal and centrifugal), as well as for an increase in long-distance centripetal trips and a change in their geography. The strengthening of the role of large cities in the oblast as centers of labor gravity, many of which are the cores of second-order agglomerations, is also facilitated by the Moscow Central Diameters as an integrating factor for the capital’s districts and the oblast municipalities not only of the first (near) but also of the second (middle) distance zone from Moscow. These shifts are not quite pronounced so far, but along with the spread of remote and hybrid employment, they can lead, with a high degree of probability, to essential transformations in the intensity and correspondence models of labor commuting.

Leader Districts and Outsiders

Population mobility largely depends on changing spatial distribution of economic growth and decline. In a book on Moscow oblast (Makhrova et al., 2008, pp. 119–178), as of 2005, we identified development foci and areas that lost out from the changes of the 1990s. Fifteen years later, the shifts became more striking, but not always unambiguous (Staroosvoennye ..., 2021, pp. 167–192). Let us try to trace this during the post-Soviet period as a whole.

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The concentration of the oblast’s population and economy was quite high by the end of the Soviet period. The top quarter of districts then concentrated half the total population of the oblast, almost two-thirds of its industrial production, half the trade and services volume, as well as gross agricultural output. At the same time, in a quarter of the lagging districts, the figures did not reach 3–7% of the regional volume. By 2020, the degree of concentration increased even more. The settlement pattern was somewhat more stable, although the share of the quarter and half of the leading districts also increased. However, internal shifts were significant. The population grew rapidly in the first belt of districts next to Moscow (Fig. 2), and less actively in more remote belts. The main thing for the population dynamics of the entire oblast was inter-regional and international migration (Karachurina and Mkrtchyan, 2016; Nefedova, 2020). As a result, the share of the first zone increased, and the share of the rest decreased in spite of their population growth, but smaller. As for geographic sectors, faster growth was typical of the west, where the population caught up with the south. The latter lagged behind due to the cession of its parts to New Moscow. As a result, the population progressively clustered around Moscow (Fig. 3). While the composition of the leading regions changed, their population share rose.

Soviet industry was characterized by concentration in districts closest to Moscow, which, by inertia, remained until 2000. Then the picture changed: the share of districts of the second and partly the third belt counting from the capital increased (Fig. 4a). In the 2010s, partial restoration of production began in the first belt. The contributions of sectors also varied (Fig. 4b). The eastern sector of Moscow oblast held out in the 1990s, but began to collapse in the 2000s. Instead, at this time, the northern sector strengthened, and the outputs of both sectors became equal by 2020, as it was in Soviet times, but with different structures of industrial production. The contribution of the previously less industrialized western sector grew up markedly. Figures 5a and 5b clearly show how industrial production moved away from Moscow to the sec-

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3 Due to changes in the borders and status of municipal units in Moscow oblast, for 1990–2000–2010–2020, they are reduced to the 1990 division (the reverse procedure is unrealistic). Urban areas are included in districts on the basis of being surrounded by their territory or being closely adjacent to it. In 2020, the land of New Moscow was withdrawn from the oblast. Assignment of districts to four belts of the neighborhood with Moscow and geographic sectors in the directions north–south–west–east of the oblast remains constant.
ond- and third-order districts of the neighborhood, especially in the northeast of the oblast.

The distribution of retail trade and services looks different (Figs. 6a, 6b). Their concentration was generally strengthening until 2010. Whereas in 1990, six leading medium-distant districts to the north, east, and south of Moscow concentrated 30% of the total volume, then by 2020, the regions adjacent to the capital sharply put on weight. There, trade and services crowded out industry, while the share of remote areas contracted. By 2020, the role of the western regions had especially increased, associated with the commissioning of large shopping and entertainment complexes. And yet, whereas in 2010 the six leading districts, already in the nearest suburbs, accounted for more than 57% of the total volume of trade and services in the oblast, then in 2019–2020 their share decreased to 47% due to the diffusion of tertiary activities to the districts of the second zone (Fig. 6 and 7).

Agriculture, formerly drawn to Moscow, showed a fall in the first belt, an increasing share of the second and especially of the distant fourth belt. However, its production was concentrating in certain districts with better natural conditions (Fig. 8) in accordance with the all-Russian trend (Staroosvoennye ..., 2021, pp. 46–59). The northern Yakhroma floodplain was a notable supplier of food, including vegetables, both at the end of the USSR era and in the 21st century, when the Dmitrovsky district confidently became a leader, developing new activities and providing almost 10% of regional agricultural output (Fig. 9). The second key focus was the livestock southwest, primarily the Naro-Fominsky and Odintsovsky districts. The latter is becoming more and more dacha-cottage-oriented, and the Naro-Fominsky district, together with the Mozhaisky, in terms of 2020 agricultural product, became equal to the Yakhroma group. The third focus was the southeast, from the Ramensky district to the Lukhovitsky, and the south of the oblast. They initially grew due to crop production on their sub-chernozem soil, but add more livestock farming in recent years.

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4 Taking into account the recession caused by the COVID-19 epidemic, data on services was taken on average for 2019–2020.
Concentration is even better seen at the level of large enterprises, which produce 81% of all agricultural products in the oblast. Small private farming is more typical of distant belts, especially the forested areas of the northeast, where their output share exceeds 50%. In some districts of the oblast, the number of farmers per 1000 rural residents is higher than the Russian average due to the large number of economically active population in Moscow oblast.

Despite the expansion of capital functions, there is a lot of agricultural land used here, in contrast to other oblasts of the Center, where it has been abandoned en masse (Nefedova and Medvedev, 2020). Nevertheless, the 2016 agricultural census showed vast areas of agricultural land not being used for their intended purpose, especially on the forested outskirts of the oblast. They are gradually being transferred to other land categories, mainly for construction and rest.

A special role of recreation, first of all, the dacha function of Moscow oblast was also noted by Lappo (1987). Modern cellular operator data make it possible to analyze population fluctuations associated not only with labor commuting, when Moscow oblast mainly cedes its population to Moscow, but with Muscovites leaving for their dachas in the warm season, when some areas of the oblast increase in population by 1.5–2 times (Fig. 10).

In general, the oblast is characterized by multidirectional changes in the concentration of the popula-

Fig. 5. Share of districts in Moscow oblast industrial production: 1990 (a) and 2020 (b), %. For district numbers, see Fig. 3.

Fig. 6. Volume of trade and services by distance zones from Moscow 1–4 in order of neighborhood with the capital (a) and geographic sectors (b) of Moscow oblast, 1990–2020, %.
tion and different economic sectors. In the 1990s, the highest concentration was typical for industry; by 2020, its level became the lowest. Retail trade and services have moved up, drawn to Moscow to serve growing population on either side of the Moscow Ring Road that has long become great shopping line (Makhrova et al., 2016). Previously dispersed agriculture is also concentrated, which is associated with its transition to the industrial path of development within the framework of large enterprises. Moscow oblast is at the forefront of this path, but it does not negate the development of small forms of economic activity.

**Multiscale Territorial and Sectoral Shifts**

Moscow oblast’s main asset remains its proximity to the capital, its resources and markets, which stimulates the growth of infrastructure and human capital. The positions of Moscow city, oblast and the region as a whole in Russia are different in many respects. The graphs in Fig. 11 show their shares since 1990 (since 1998 for GDP). The economic indicators are inevitably and irreparably affected by prices, accounting methods, and compositions of industries (OKONKH, OKVED), but not by the transfer of part of the oblast land to New Moscow since 2012, whose influence is almost insignificant against the backdrop of other inconsistencies in the data.

The gradual growth of population differs from jumps of other selected characteristics. However, the region’s share in Russia and the prevalence of Moscow city in the number of permanent residents are less pronounced than in industrial output. In the 1990s, it fell sharply, then increased, and since 2015 there has been a new reduction in Moscow and stabilization in Moscow oblast. The region’s contribution to Russian retail trade turnover as a key component of the tertiary sec-

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**Fig. 7.** Share of districts in total volume of trade and services of Moscow oblast in 1990 (а) and 2020 (b), %. For district numbers, see Fig. 3.

**Fig. 8.** Concentration of agricultural production in top 25% (blue) and 50% of districts (orange) in Moscow oblast. 1990–2020, % (for 2020, the levels of concentration in agricultural organizations alone are added).
tor is much more weighty. It grew during the crisis years of the 1990s and reached a third by the 21st century, when the march of this sphere across the country began, and with it, the decline in the role of the capital’s center of its post-Soviet boom. By 2020, it slowed in Moscow, and began to grow in the oblast (as already mentioned, mainly due to the immediate environs of the capital). The GRP indicator reflects fluctuations caused by the crises of the 1990s, 2008–2009, and 2014–2015, yet over the past decade, the region’s contribution to Russia has been fairly stable, typically exceeding 25%. The ratio between the two federal subjects that form the region has also changed little.

The structure of their gross products changed in favor of trade and services, i.e., in the postindustrial direction, and in Moscow oblast, in the postagrarian

5 As is known, some production facilities that are not physically located there were statistically attributed to Moscow. The separation of extractive industries from manufacturing industries in the early 2000s according to the OKVED was supposed to reduce the scale of distortions. The entire primary sector in Moscow’s GRP is a fraction of a percent, and no national statistics in the world provide an accurate distribution of the entire product across the territory.

6 The Soviet gross and net products were limited to the material sphere. For greater comparability with the GRP of the post-Soviet years, the amounts of state expenditures on education, health care, management, and science, etc., were added to the volumes of 1990, but this does not provide a full account of their contribution to the then economy of Moscow and Moscow oblast.

as well (Fig. 12). The leader of the shifts was Moscow, which is logical and understandable, but by the 2020s, the differences had smoothed out. In addition, the oblast is heterogeneous in this respect, so further analysis requires going down one step on the scale ladder, closer to the municipal level.

The conditional subregional product (CSRP) for the territories of Moscow oblast, i.e., districts in their 1990 areas, with cities added to them (hereinafter, simply districts), is calculated using the method from (Makhrova et al., 2008, pp. 287–288). All sectoral parts of the oblast GRP statistically recorded in a given year are distributed among the regions according to the available indicators, reflecting the distribution of an activity: number of workers; natural, gross or shipped products in current prices; turnover (trade); volume of investments; fixed assets (for construction and insurance); etc. If several of them are considered at once, the contribution to the breakdown by district is taken with expert weights, their own in each case.

New classifiers of types of activity have fragmented the structure of GRP, augmenting calculations for 2010 and 2020. To mitigate market vibrations, some figures are taken as averages over a couple of years.

Frequently, such a subregional (municipal, agglomeration) product is assessed more simply: by the areas’ shares of the population, which assumes an equal productivity, only adjusted in spots by experts. Our approach is somewhat more complex and closer to calculating GDP and GRP using the so-called production method.
The results for 2000 are in fact averaged for 2000–2001, and for 2020, for 2019–2020, but for simplicity they appear below as obtained for round dates.

After “scattering the stones,” they were collected by summing the subregional fragments of the all-regional product into the complete CSRP of each district using the formula

$$FSRP_i = \sum_{i=1}^{n} R_{pi} \left( \varphi_1 k_1 + \varphi_2 k_2 + \ldots + \varphi_m k_m \right),$$

where $FSRP_i$ is the full subregional product of the district $r$, $R_{pi}$ is the amount of the $i$th part (sector, fragment) of the region’s GRP $R$ in value terms, $\varphi_1 - m$ are the district’s shares of $R_{pi}$ according to selected indicators $1 - m$ of the distribution of the $i$-th part of the region’s GRP, taking into account the expert weight of the indicator’s role in fractions of a unit.

The summarized CSRP of all districts is ultimately equal to the regional GRP, which seems a stretch: GRP contains components that are not distributed across the territory, such as those that make the sum of the regions’ GRPs less than the country’s GDP. This applies to nonmarket sectors at the federal level (defense, etc.), and a number of ordinary market ones. For example, the amount of retail trade turnover recorded in the districts and cities of Moscow oblast in different years lagged by a third or more behind the overall regional turnover with the added assessment of roadside, street, and other spontaneous trade, which is not recorded in situ. We leave our full distribution of GRP by district partly in order to compare their CSRP with the GRP of Moscow as a whole, which contains the same estimates added by statisticians.

These values, albeit indicative, make it possible to calculate the contribution of districts to the oblast GRP and the enlarged composition of the CSRP in districts, divided into only three sectors—agricultural, industrial and service, in order to reduce the inevitable defects of the dataset. The service sector in this experiment (as in the previous one) includes construction.

The contributions of districts to the GRP of the Moscow oblast by concentric belts and by geographic sectors of the oblast is shown in Fig. 13a and 13b. As we can see, the share of the first belt, constantly growing, reached 40%, the second one held in the 1990s, but then began to decline, not to mention the shares of the third and fourth, which lost 5–9 percentage points each. In other words, the GRP of the oblast was concentrating near Moscow, like trade and services, the basis of the tertiary economy of the region (see Fig. 7). The sectors show the loss of leadership by the industrial east, which has given way to the north, as well as the rise of the west, which has recently surpassed the south. This sign of mitigating or even overcoming the long-standing asymmetry in the development of the region— the predominance of the industrial-urban east over the agrarian-rural, and later recreational west— is closely related to the structural transformation of the regional economy.

To compress information about the composition of regional products, its diversity is reduced to types, the criteria for identifying which are noted in the legend to Fig. 14.

The results are unexpected in places. Moscow by the 21st century has already become hyperservice, but took a “step back” to the simply service structure of the GRP (incidentally, before the expansion of the city’s borders) under partial reindustrialization of the city. The same was noted in the Khimki and Domodedovo districts, which ended up being hyperservice. Districts of both types cluster either around Moscow or farther from it in the west and southeast of the oblast, where such a structure is resulting from the decline in material production rather than from the powerful growth of the service sector. Nevertheless, more than half the districts are of service and hyperservice types, whereas in 1990, there were none, although this may be due to underestimation of the contribution of the tertiary activities to the Soviet product at all levels of its calculation.

Instead, in 1990, the west, southeast, and other sectors of Moscow oblast contained many areas that we classified as agro-industrial type and even agrarian— the farthest genetically from service ones under
a consistent change of types without its straightening by a direct way from an agrarian structure straight to a service one, bypassing industrial stages. A sign of such a bypass were several agro-service districts “wandering” throughout the region. However, they, like all agro-industrial districts previously, disappeared, whereas agrarian ones remained on the outskirts of Moscow oblast back in 2010.8

The industrial-type districts were dissolving, and hyperindustrial ones, initially closed into a dense “outlier” in the east-northeast, seemed to be forever by the 21st century. Suddenly, in 2010, a new hyperindustrial center arose in the Ruzsky district, based on large sand and gravel reserves, their extraction and production of construction materials. The district then stood out in the oblast as an industrial one.

Post-Soviet times witnessed an expansion of industrial-service type, transitional according to the evolutionary scheme and structurally mixed. In 1990, its features were already found in more than a quarter of districts, especially around industrial cores in the east, south, and north of the oblast. In 2000, every second one became such, and in 2020, under the pressure of service types, 16 out of 39, i.e., over 40%. The contribution of the latter to the region’s GRP increased from 27% at the turn of the century to 67% two decades later, and the share of industrial and industrial-service districts over these years fell from 70 to 33%. The proportions changed even for industrial output: in 2010, the districts with industrial specifics, industrial-service included, provided 68% of the oblast total, and those with a dominance of services, near 32%. In 2020, their shares became almost equal (51 and 49%, respectively).

Stadial logic prompts an analysis of the typological succession and its particular failures. In this logic, we take transitions from industrial or (bypassing) directly from agricultural to service structures, with an increase in their signs, as the mainstream. Then, the deviations will be, on the one hand, a leap forward over one or two stairs, and on the other, stagnation with no change in type for a period of time, and even more so, a step back in the logic of the scheme. The distribution of the oblast districts along these types of trajectories in three intervals is shown in Fig. 15.

As one would expect, the main rebuilding of types occurred in the 1990s, when two-thirds of the districts, due to deindustrialization or “de-agrarization”, caused by the crisis of transition, quickly moved towards a service structure, of which more than half “jumped through the steps”. In the next 2000s interval, the shifts slowed: few districts did change their type, while 13% moved up one or more levels. The movement towards a service economy then continued, but less actively, since the change in types did not happen in almost half the districts, and only two, namely Mytishchinsky and Pavlovo-Posadsky, went backwards.

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8 Their number may be underestimated, together with the contribution of the agricultural sector to the regional GRP, due to undervalued outputs of people’s homesteads, including vacation houses of urbanites.
During the entire post-Soviet period, 25 out of 39 districts followed the mainstream, but only Krasnogorsky and Lukhovitsky—through all three intervals. Among the other 14 districts, in 4 (from Sergiev Posad to Serpukhov) no change in type was found between extreme dates, and in 10, fluctuations with a retrograde movement were noted at one or another interval. As has already been said, Moscow was one of them. The geographical picture here is inexpressive: areas of all types are scattered across different parts of the oblast.

CONCLUSIONS

In the post-Soviet time, the Moscow agglomeration continued to expand, particularly after the advent of high-speed intercity and suburban trains in the 2010s. With the increasing mass of labor commuting, the scale of seasonal pulsations of the area and population of the Moscow agglomeration is demonstrated, and the borders of the zone of daily commuting are delineated (50–60 km from the Moscow Ring Road). Second-order agglomerations have retained their role as local poles of gravity, continuing to attract migrants, including from adjacent oblasts, but the attractiveness of their subcenters could change. Prospects for the growth of commuter flows influenced by progressing public transport have been identified.

Against the backdrop of dominating concentration in population and economy partial deconcentration was noted in certain activities. The population, conditional subregional product, trade and services were...
concentrated near the region’s core, while industry and agriculture more likely moved to the periphery. Disproportions along the west–east line have been generally weakening. In the 1990s, the highest concentration was typical for industry; by 2020, it has become the lowest. Retail trade and services took the lead. Previously dispersed agriculture is also being concentrated in specific areas.

The economy of the oblast was changing in a post-industrial and post-agrarian directions. Shifts did not occur equally and consistently everywhere, especially in the 21st century. As a result, the Moscow oblast’s districts retained a certain structural diversity, though less than before. The fact that some of them have surpassed the city of Moscow in terms of tertiary development is also explained in different ways: both by the growth of transport functions associated with the capital, trade and services, and by the decline of real sector.

Finally, let us touch on a very difficult question: was G.M. Lappo right in considering that Moscow oblast is not just a suburban zone of Moscow, as it is moving from the role of a complementary and serving territory to the role of a partner (Moskovsky ..., 1988, pp. 73, 260)? It seems that the answer, as before, is unclear. If this is an appendix to the capital, it is clearly of an extraordinary, St. Petersburg-type size, but pressed against or scattered around Moscow. Having a GRP equal to St. Petersburg’s and a larger population, the Moscow oblast is increasingly ahead of it in a number of indicators, such as housing construction, and inferior in a few, such as the capacity of universities concentrated in Moscow itself.

In the vicissitudes of post-Soviet crises and reforms, Moscow oblast has retained its subjectivity, although it gave up 1500 km² to New Moscow, and projects for the unification of the two federal subjects were and, perhaps, will be put forward.

Still, the potential of Moscow oblast is the result not only and not so much of its removal from Moscow, but of the attraction of population and activity to it. However, in such booms as construction, dacha, trade, and logistics, signs of a splash or spattering of the capital’s activity are visible. Moscow is forced to share its position in the country (in every sense: geographical, status, etc.), in particular, if its implementation involves land-intensive projects.

Historically, the growth of the capital region “from the city” has alternated and been combined with its growth “from the environs” (these are also Lappo’s terms) more evidently than in the case of St. Petersburg. And if the urban content of Moscow miraculously vanishes or moves somewhere else, bringing Moscow oblast into first place in the country in terms of population and second in GRP (behind Tyumen oblast with its okrugs), then the “sacred place” definitely will begin to be filled with the forces of its environment.

**Fig. 13.** Conditional subregional product by distance zone from Moscow 1-4 in order of neighborhood with the capital (a) and geographic sector (b) of Moscow oblast, 1990-2020, %.
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**Fig. 14.** Structural types of conditional subregional product by district of Moscow oblast. For district numbers, see Fig. 3.
Fig. 15. Directions of change in structural types of conditional subregional product by 3 time intervals.


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CONFLICT OF INTEREST

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