===== **URBAN STUDIES** =====

The Latest History of the Development of Kazakhstan's Urban Agglomerations

A. Zh. Abilov[a], *, A. G. Makhrova[b], **, and S. G. Safronov[b], ***

[a] *Kazakh National Research Technical University, Almaty, 050000 Kazakhstan*
[b] *Faculty of Geography, Moscow State University, Moscow, 119991 Russia*
*e-mail: aabilov1@mail.ru
**email: almah@mail.ru
***e-mail: saffff@mail.ru

Abstract—The article studies the current stage of development of Kazakhstan's agglomerations, the incentivized formation of which has become a state policy priority. Due to the lack of criteria, the boundaries of potential agglomerations are determined by 1.5-h isochrons of transport accessibility around cities with populations of 100000 or more. Of these cities, eight centers were selected, based on a modified development coefficient that takes into account, in addition to urban satellites, villages with populations of more than 3000 people. A number of socioeconomic indicators were used to analyze the level of separation of cores of agglomerations from their suburbs and regions. The example of Kazakhstan has shown that the inherited structure of the economy and low level of comfort of the environments of cities do not contribute to the development of most agglomerations. During the post-Soviet period, their share in the population of the republic increased from 43 to 52%, while the administrative option of creating agglomerations works only when there are objective prerequisites and evolutionary work in progress. Among agglomerations fixed in government documents with the status of points of growth, the Almaty agglomeration has been deemed developed. The attraction zone of Shymkent includes mainly large villages, some of which have recently become towns. The metropolitan agglomeration of Astana is significantly inferior even to the neighboring Karaganda in terms of development. Aktobe is able to attract residents only form the northwestern regions due to low transport connectivity with the rest of the country. In socioeconomic development indicators, metropolitan agglomerations stand out, and third largest, Shymkent, dominates in the degree of tertiarization of the economy. The other agglomerations retain increased industrial employment, and population growth, owing to low attractiveness, comes from natural growth and intraregional migration. Except for Almaty, in surroundings of which there are features of suburbanization, core cities are growing faster than the zones of influence. The suburbs are distinguished by a lack of job opportunities, weak social infrastructure, and a lower level of household income. This situation, typical of the initial stages of development, hinders agglomerations from realizing their advantages.

Keywords: urban agglomeration, level of development, population, economy, social sphere, Republic of Kazakhstan

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INTRODUCTION AND FORMULATION OF THE PROBLEM

Kazakhstan is a country with a sparse settlement system and relatively small ranges of well-developed areas promising for comfortable living conditions and attracting business. In such territories with dynamic development, increased population density, and the concentration of postindustrial and innovative sectors of the economy, conditions are emerging for the formation of urban agglomerations (UA).

With the transition to the market and growth of spatial unevenness in socioeconomic development, the largest cities strongly attracted migrants from rural areas, urban-type settlements, and small and medium-sized towns, which not only spurred population growth, but also accelerated the formation of agglomerations, turning them into major centers of growth. In turn, these processes increased the interest of the authorities in UA.

Since the 2000s, incentivized growth and the formation of UA to take advantage of agglomeration effects has become a priority area in state policy: urban agglomerations were presented as a key form of territorial organization. The status of agglomerations and their division into two levels based on degree of importance were enshrined in a number of government doc-

uments.[1] However, one of the most developed urban settlement systems of Kazakhstan, Karaganda, was not among them, while at the same time, the Aktau agglomeration was numbered among centers of the second level.

The main problem recognized and formuated by the authorities of the country so far is the creation of an effective system for administering UA,[2] which is one of the main goals adopted on January 1, 2023, in the Law no. 181-VII of the Republic of Kazakhstan On Development of Urban Agglomerations.[3] The market situation with prices for hydrocarbon raw materials allowed Kazakhstan in the 2000s to formulate quite ambitious goals for development of these urban settlement systems in the hope of catching up with more developed states (a similar policy is typical of the Russian Federation). However, in the absence of officially fixed criteria for delimiting UA,[4] a question remains open: how many UA have formed (are being formed) within the republic? At best, analysts are expected to confirm the correctness of decisions already made and the identified boundaries of agglomerations.

As a result, two realities and two concepts of UA coexist: academic, as a holistically functioning and developing settlement system according to a certain logic, identifed on the basis of certain criteria; and as an element of the administrative system, the boundaries of which are determined by decisions on the part of authorities. In practice, as in other countries of the post-Soviet space, including the Russian Federation, more and more frequently, the second option prevails, dealing with normative or administrative agglomerations, which are only formally related to the original scientific concept. At the same time, an idea is being introduced: the development of agglomerations can be quite effectively managed, regardless of the absence or presence of objective factors of their development. In most official documents, the achieved level and prospects for the development of UA are assessed from data only for their centers, while the situation in other elements of the system, primarily, in suburban areas, remains outside the scope. Therefore, the objective of this study is to analyze the dynamics of Kazakhstan's urban agglomerations in the post-Soviet period based on the degree of development using coefficients tested in Russian practice an on the level of differences in the socioeconomic situation in central cities and in the UA as a whole. This reveals contrasts in the level of development of the main elements of the agglomeration, demonstrating the potential for strengthening or weakening integrative ties within these urban systems.

DEPTH OF STUDY

As noted above, at present, urban agglomerations are most frequenetly studied in two directions: as a category of scientific analysis of self-organizing settlement systems or as an operational element of an administrative system. Moreover, the second approach does not necessarily imply the existence of an objectively existing agglomeration; rather, it is a certain vision of development prospects for the territory in the zone of influence of the leading urban centers and awareness of the need to coordinate administrative decisions in relation to a specific area of the settlement system.

Despite the fact that urban agglomerations in Kazakhstan have already been declared a state policy priority, they have been studied rather poorly. And despite unconditional interest in the Republic of Kazakhstan, there are relatively few articles devoted directly to UAs. Most researchers working in Kazakhstan itself restrict themselves to analyzing the settlement and urbanization processes, focusing on increasing differentiation in the urban settlement network, dynamics of the level of urbanization, concentration of the population in million-plus cities, and the impact of the cost of living and housing affordability[5] (Iskaliev, 2016; Nyussupova and Sarsenova, 2012; OECD ..., 2017; Seitz, 2021; Zhumasultanov and Ibraev, 2000). At the same time, the problem of the formation and development of agglomerations is considered only indirectly, as one aspect of a broader topic, and is limited in most cases to their population dynamics (Afontsev and Zubarevich, 2012; Iskaliyev, 2016).

As an independent subject of research, the UA of Kazakhstan are analyzed in relatively few studies. The

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[1] "Basic Provisions of the General Scheme for Organization of the Territory of the Republic of Kazakhstan" (2013); "On Approval of the Program for Development of Regions until 2020" (2014); "Forecast Scheme of Territorial and Spatial Development of the Country until 2030" (2019); "Strategic Plan for Development of the Republic of Kazakhstan until 2025" (2018); and "National Development Plan of Kazakhstan until 2025" (2021).

[2] Atoyants-Larina, V., Growing into an agglomeration, *Ekspert-Kazakhstan*, July 8, 2015. http://expertonline.kz/a13764. Accessed April 23, 2022.

[3] https://online.zakon.kz/Document/?doc_id=37910629&pos=38.

[4] In the already mentioned Law On the Development of Agglomerations, the criteria for classifying population centers as an agglomeration are formulated, as is typical of this kind of documents, which in a general form are oriented towards the existence of everyday labor, production, sociocultural, and other ties with the center of an agglomeration, as well as on the tendency towards territorial merging with the center of an agglomeration (Article 4).

[5] Aitkazina, Z.N., Formation of urban settlement systems in Kazakhstan, Demoscope Weekly, no. 245–246. May 1–21, 2006. http://www.demoscope.ru/weekly/2006/0245/analit04.php; Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan. https://stat.gov.kz/; Nadyrov, Sh.M., Nyusupova, G.N., Mylkaydarov, A.T., Sarsenova, I.B., and Zhang Bin., Spatial organization of the territory of Kazakhstan from the perspective of geopolitics in a changing world, Sauran Information and Analytical Center. http://cc-sauran.kz/rubriki/safety/367-prostranstvennaya-organizaciya-territorii-kazahstana-v-rakurse-geopolitiki-v-menyayuschemsya-mire.html.

main focus is also the UA population, although the issues of delimitation, dynamics of the level of development, and possible scenarios for the future of agglomeration processes in the republic are also considered (Kirillov and Makhrova, 2011; Makhrova and Safronov, 2021). Issues of socioeconomic development are considered only on the example of individual UAs (Abilov et al., 2017; Akimzhanov and Safronov, 2014). Some studies compare only the core cities of two metropolitan agglomerations—Almaty and Astana—with other capitals of the countries of the post-Soviet space based on a number of socioeconomic indicators, including population, migration, economic structure (GRP, industry, investment, housing), and differences in consumption and income (Golubchikov and Bad'ina, 2016; Nefedova et al., 2016; Zubarevich, 2018).

MATERIALS AND METHODS

To assess the real agglomeration processes in the economy and social sphere, researchers usually seek to identify the presence of the so-called urbanization effects (Jacobs effects) and localization effects (MAR effects) (Jacobs, 1969; Marshall, 1961), which require data at the level of subjects of economic activity. Lacking information on individual enterprises, this study used official statistics, including in the context of municipalities of the TALDAU information and statistical system.[6]

A limited number of indicators were selected from it that characterize the main aspects of the socioeconomic development of agglomerations, including demography, migration, the economy (industrial production, trade, housing construction), the labor market and employment. Then a comparative analysis of the state of agglomerations, their cores and suburban areas was carried out in relation to the average regional and average republican values (these data are easier and more clearly interpreted). The time horizon of the study covered the post-Soviet period with an emphasis on the last two decades. At the same time, in order to level the shock impact of COVID-19 on the economy and behavior patterns of the population, information as of 2019 was used as the last starting point.

To identify the boundaries of a UA in the absence of data on labor commuting, the transport accessibility isochron method was used, which was widely used in the Soviet, and now in the modern Russian practice of urban studies and planning, not only in Kazakhstan, but also in the Russian Federation (Lappo, 1978; Polyan, 2014; Antonov and Makhrova, 2019). Hour and a half isochrons of road transport accessibility were constructed around all cities with populations of more than 100000 people, which were considered as potential UA cores.

For the selected 19 large urban settlement clusters, the modified development coefficient was calculated (K_{dev}), which, in addition to satellite urban settlements, took into account large villages with populations of over 3000 people[7] in order to avoid underestimates due to a sharp decline in the number of urban-type settlements (by almost 40% from 1989 to 2019). Most of these villages are typical residential satellites in which a significant part of their population works in the city center.[8]

$$K_{\mathrm{dev}} = P*(Mm + Nn),$$

where P is the UA population (million people), M is the number of cities and towns, N is the number of urban-type settlements and villages with populations of over 3000 people in the UA, and m and n are their shares in the total population of the UA.

For UA of Kazakhstan, which, with the exception of Almaty, formed in relatively less comfortable living conditions, development is largely inherited, associated with industrial construction or resource development of the territory; therefore, in the post-Soviet period, in many agglomerations, it occurred slowly or even decreased (Table 1).

Verification of the identified formations showed that only eight agglomerations with a development coefficient greater than 1 can be considered formed.[9] These included three first-level centers: Almaty, Astana, and Shymkent; the oldest agglomeration of Kazakhstan, Karaganda; the second-level agglomeration Aktobe; and formations around Ust-Kamenogorsk, Kostanay, and Kokshetau. The remaining 11 urbanized territories can only be considered potential agglomerations: most of their centers are represented by cities with populations of less than 250000 people, and the socioeconomic potential in conditions of a sparse settlement network and large distances between cities is insufficient to form a suburban zone. It can be seen that Russian agglomerations are also characterized by such a low level of development, especially those in the Asian part of the country (Antonov and Makhrova, 2019).

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[6] https://taldau.stat.gov.kz/ru.

[7] The criterion of population size of urban-type settlement adopted in Kazakhstan is 3000 people.

[8] The densest network of large villages, the backbone of which was formed back in the Soviet period, is located around Almaty and Shymkent (84 and 76, respectively). In the makeup of other UA, such settlements are far fewer. Around the capital, there are few such villages, but among them are the rapidly growing Kosshy, Koyandy, and Talapke, the populations of which exceeds several tens of thousands, and the inhabitants are oriented towards labor commuting to Astana (Abilov et al., 2017).

[9] According to (Polyan, 1988), the following agglomeration development classes are distinguished: the most developed (K_{dev}, over 50), highly developed (10–50), developed (5–10), underdeveloped (from 2.5 to 5), and least developed (less than 2.5).

Table 1. Population dynamics of urban agglomerations of Kazakhstan, 1989−2019*

Agglomeration	Population, thous. people		Population change, 2019 vs. 1989, %	Share of core in population of urban agglomeration, %		Development coefficient	
	1989	2019		1989	2019	1989	2019
Almaty	1769.2	3059.6	172.9	64.0	60.6	7.05	11.38
Shymkent	1199.3	1985.6	165.6	32.8	50.8	3.8	31.34
Astana	448	1238.0	276.3	63.1	87.1	0.83	2.46
Karaganda	1239.9	940.4	75.8	49.5	52.9	6.6	4.82
Aktobe	494.7	704.5	142.4	58.4	69.3	1.03	2.88
Kostanay	722.7	618.5	85.6	31.1	39.3	2.03	2.12
Ust-Kamenogorsk	727.3	612.1	84.2	44.7	56.2	3.18	3.20
Kokshetau	592.3	420.5	71.0	23.4	37.9	1.58	1.33

* Urban agglomerations are listed in descending order of their populations in 2019.

Data for 1989 and 2019 are given in present-day administrative boundaries.

Compiled from data of Bureau of National Statistics of Republic of Kazakhstan and authors' calculations.

RESULTS AND DISCUSSION

Population Size and Demographic Factors of UA Dynamics

As of 2019, the total population of the identified eight agglomerations is almost 9.6 million people, or 52% of the total population of the republic. Over the past 30 years, their demographic potential has increased by a third, and their share in the country's population, by 8.6%. At the same time, the dynamics of the indicators were different in different periods and different agglomerations (Table 1).

At present, as at the end of the Soviet period, the population of three agglomerations—Almaty, Shymkent and Astana—exceeds 1 mln people, and the first two, despite their different genesis, are classified as developed. In the case of Almaty, the agglomeration was formed (in the terminology of G.M. Lappo (1978)) "from the city," when during most of the Soviet period, the former capital was gradually overgrown with suburbs. The Karaganda agglomeration also developed by the same evolutionary path in the second half of the 20th century, but its formation proceeded "from the territory" on the basis of the coal basin, when the city gradually separated from the mining settlements that formed its suburban zone. During the post-Soviet period, as a result of the crisis of the leading specialization industries and massive population outflow to "national apartments" in the 1990s, despite the positive dynamics in the 2000s, the Karaganda agglomeration lost more than 300000 people, including a city of almost 180000, propelling to the forefront the rapidly growing Astana.

Similar development dynamics were typical of other agglomerations with industrial specialization (Kostanay, Ust-Kamenogorsk, and Kokshetau). The only difference was that after the recession, their centers, not the agglomerations themselves, were able to

exceed their populations at the end of the Soviet period; Kokshetau had already done this in the 2000s. Undoubtedly, the migration policy aimed at feeding the northern territories at the expense of kandas (ethnic Kazakh repatriates) played its role. The development trajectory of the Aktobe urban agglomerations agglomeration, which became one of the leading oil centers in the west of the republic, with its favorable transport and geographical position, was a partiucular case. During the post-Soviet period, its population increased by more than 200000 people, and the center came close to the threshold of 500000 (an increase by almost 70%).

Almaty had similar growth rates (64%), which allowed it to grow to a city with almost 2 mln inhabitants. The agglomeration itself developed even more dynamically; its population exceeded 3 million people. Despite the loss of capital status, during the post-Soviet period, Almaty has become a modern post-industrial center, which is surrounded by powerful ribbons of suburbs with almost continuous development.

Even more dynamic was the development of Shymkent and its surroundings. The city grew by 2.5 times, exceeding the mark of 1 mln people, and the agglomeration approached 2 mln people, having settled in second place. At the same time, Shymkent itself, which greatly expanded its territory, including numerous rural settlements, so far resembles, rather, an overgrown city of the eastern type with extensive suburbs and mainly trade and other functions to serve the surrounding population.

The undisputed leader in terms of population growth was the metropolitan agglomeration (by 2.8 times), which was due to the development of its core as the new capital of the country (by 3.8 times). Favorable prices for hydrocarbons and minerals in the 2000s allowed Kazakhstan to create a new capital. Astana, which historically arose in a sparse settlement

Table 2. Components of population dynamics of UA of Kazakhstan, 1991−2019

Urban agglomeration	Average annual rate of natural increase, ‰			Average annual net migration rate, ‰		
	1991−1999	1999−2009	2009−2019	1991−1999	1999−2009	2009−2019
Aktobe	...	7.9	16.3	...	0.8	1.1
Almaty	3.7	8.9	14.4	−1.3	9.7	11.1
Karaganda	1.0	−1.1	5.4	−13.4	−1.4	−2.0
Kostanay	1.7	−1.2	3.1	−12.5	−3.5	0.3
Kokshetau	...	4.6	8.0	...	−6.7	−11.7
Astana	3.0	13.6	20.6	11.3	32.1	27.9
Ust-Kamenogorsk	−3.4	−4.4	1.4	−5.8	−3.0	−0.4
Shymkent	17.6	18.6	22.9	−10.0	2.3	−0.7

..., no data.

Source. Information and statistical system TALDAU.

zone on the border of risky agricultural development of the steppe and arid steppe zones, has basically absorbed everything around it; there has not been enough time or resources to form a full-fledged suburban zone (Abilov et al., 2017).

After the end of the period of stressful migrations in the 1990s, the leading role in the population dynamics of the mentioned agglomerations passed to *natural increase* (Table 2), which distinguishes them from Russian agglomerations, in most of which, in the face of natural population decrease, migration is the main source of population growth or stabilization. In the last decade, the natural increase almost everywhere, except for the Kokshetau UA, overlaps the negative net migration or increases the positive one. The Shymkent UA is characterized by the highest rates; it is located in a zone with an incomplete demographic transition, and the capital with its surroundings, which has grown due to intensive migration influx, which also governs the increased level of natural reproduction. The Aktobe agglomeration, in which the proportion of the titular ethnic group has increased in the post-Soviet period, has significantly reduced its lag behind the leaders. Entities in the northern and eastern parts of the republic are characterized by minimum natural growth rates, with an older age structure of inhabitants and a still high proportion of Russian-speaking population.

A leading role in *migration* in the dynamics of the population, despite a slight decrease in the last decade, remained in the Astana UA, as well as in the agglomeration of the former capital, located in a more comfortable natural zone (both metropolitan agglomerations in the Russian Federation are also characterized by a high level of migration attractiveness). A small migration increase in the Aktobe UA was mainly due to intraregional migration (Fig. 1a). The centers of three other UA were attractive for migration, although the agglomerations as a whole demonstrated an outflow (Shymkent, Kostanay, and Ust-Kamenogorsk).

Karaganda and Kokshetau, located on the two flanks of the rapidly growing metropolitan agglomeration, have been characterized by a steady migration outflow in recent years.

For most UA, as in Russian agglomerations, intraregional migration is a key resource for increasing or maintaining population. The scale of migration support depends on both the socioeconomic gradient, that is, the difference in income and living conditions within and outside the cores of agglomerations, and the demographic potential of the surrounding territories. Demographic pressure is highest in southern densely populated areas.

Differences in the demographic potential of the environment are distinctly visible when two metropolitan agglomerations are compared, in which, although the main share of migration growth falls on interregional flows, their weight varies greatly. For the Almaty UA, the region of the same name yielded almost half the migration growth in 2015−2019, while Akmola oblast provided no more than 20% in the Astana agglomeration.

The balance of international migration in almost all UA is negative due to the residual emigration of the Russian-speaking population to Russia; therefore, the largest specific outflow is typical of the agglomerations of Northern and Eastern Kazakhstan. Only Shymkent, located near the state border, traditionally attracts residents of neighboring Uzbekistan.

Some parts of only two metropolitan agglomerations are geographically attractive for migration (Fig. 1b). Ignoring Astana itself, the maximum migration growth was noted in the suburban Tselinograd district of Akmola oblast, which is also distinguished by the volume of housing construction. The area adjacent to Almaty is also actively growing, which has expanded its borders several times over the past 10 years at the expense of neighboring municipalities.

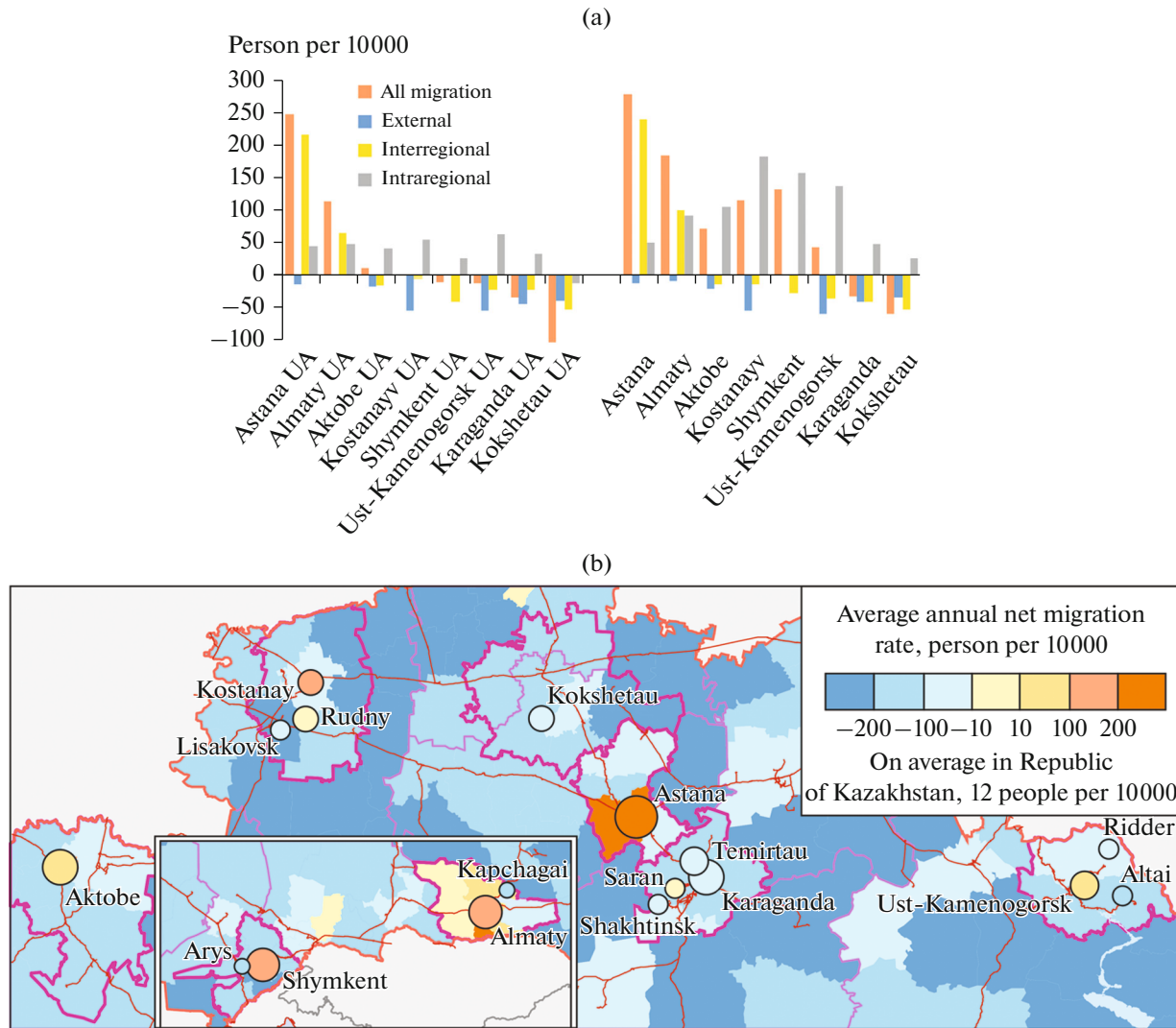In most other agglomerations, central cities remain more attractive to migrants; the comfort of living in

Fig. 1. Average annual net migration rate in UAs of Kazakhstan and their central cities in 2015−2019, person per 10000: (a) by type of migration, (b) total.

Note. In calculations, Shymkent was considered part of Turkestan (South Kazakhstan) oblast.

them has significantly increased in recent years. Only Karaganda and Kokshetau, experiencing strong pressure and competition for people from the new capital, have negative balances. Among the satellite settlements, population can be retained by single-industry towns with export-oriented industries (Rudny) or logistically conveniently located with respect the regional center (Abay, Saran).

Structure of the Economy

As in the entire post-Soviet space, the most intensive transformation of the economy of Kazakhstan took place in the 1990s due to the collapse of the Soviet planned system and economic ties that covered the entire country. Currently, the territorial structure and dynamics *industrial production* quite accurately characterize the situation in most UA, primarily those in which the secondary sector forms the basis of specialization. The most "industrial" agglomerations, which include the old centers of the mining and metallurgical industries (Karaganda, Kostanai, and Aktobe), showed modest growth rates in the 2000s, not exceeding the national average (Fig. 2a). Sales of products of their main city-forming enterprises, which have been significantly affected by various waves of economic crisis, are highly dependent on the global situation.

The sluggish dynamics of industrial production in the Karaganda UA was also negatively affected by both the state of the Karaganda Metallurgical Plant (JSC ArcelorMittal Temirtau) and the limited capacity of local coal mining vis-a-vis its high cost. The Ust-Kamenogorsk UA developed more dynamically; by
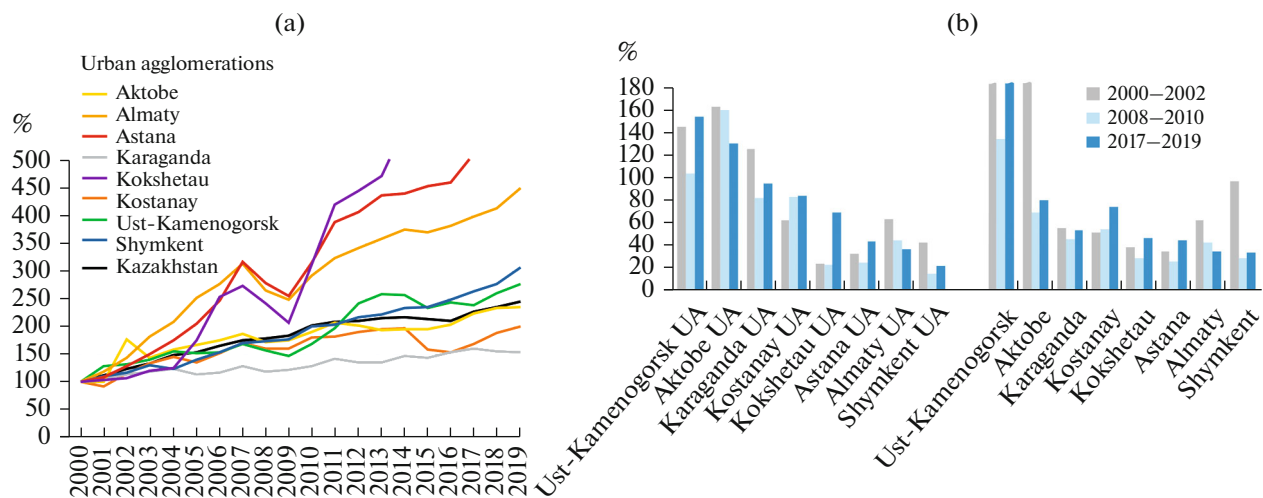
Fig. 2. Dynamics of industrial production in 2000–2019: (a) index of physical volume of production in UA, % vs. 2000; (b) average annual per capita volume of industrial production in UA and their central cities vs. average for Republic of Kazakhstan (RK = 100%).

2019 it became a leader in per capita industrial output, the city-forming enterprises of which underwent partial modernization (Fig. 2b).

The main reason for the rapid growth in production in the Kokshetau UA is the fact that JSC Altyntau, which is 30 km outside Kokshetau and is developing the Vasilkovskoe gold deposit, has reached its the design capacity. At the same time, the Astana UA, which has a low initial base, and the Almaty UA, which has the most developed, are characterized by the highest real growth rates in the 2000s. The compensatory rise in industrial production in the metropolitan agglomerations, which recovered more quickly from the consequences of the first wave of the 2009–2010 crisis, was facilitated by growth in population and housing construction volumes, which ensured their own demand for the products of local enterprises in the food and construction industries. Following this, with a noticeable lag behind the capitals, is Shymkent, the agglomeration of the third million-plus city.

Despite the outward similarity of the situation, the metropolitan agglomerations face somewhat different problems. Whereas it is important for the rapidly tertiarizing Almaty UA to preserve the most valuable part of the scientific and technical potential of the republic and qualified personnel, in Astana, an attempt is being made to redevelop old industrial sites by locating environmentally friendly assembly machine-building plants there. The Shymkent UA, which rid itself of a number of hazardous and cumbersome industries in the 1990s, is increasing the output of food, light and building materials industries.

The territorial structure of the placement of industrial production can have a contradictory effect on the socioeconomic situation in the agglomeration. The presence of single-profile industrial satellite towns, which are in most of the UA of Kazakhstan, threatens to exacerbate problems with unemployment in the event of a crisis or with optimization of the structure of those employed at a city-forming enterprise. Also, although such settlements may better stand out in terms of certain socioeconomic indicators, it is rarely possible to create a full-fledged urban environment there and retain population. The concentration of all industrial production in one, as a rule, main city, while providing greater flexibility to the labor market, does not contribute to development of the agglomeration itself or the formation of a high-quality urban environment in its center. It should be noted that a sharp change in the share of the Aktobe UA is associated with the peculiarities of linking data on oil producing enterprises.

In the 2010s, with several waves of the economic crisis, the differentiation of the UA of Kazakhstan in terms of per capita turnover *retail* decreased signficantly. Separation of the leader—Almaty—from other centers decreased to a minimum (a reduction in the separation of capitals from other centers is also observed in the Russian Federation). A positive, albeit unstable, dynamics is typical of the metropolitan agglomeration with higher personal incomes and a rapidly growing consumer market, and the Kokshetau UA. The slow growth of the Shymkent agglomeration is apparently associated with low per capita personal incomes and underestimation of the trade volume in the informal sector (Fig. 3a).

The territorial structure of retail trade, as well as other consumer-oriented services, is slowly changing. In most UA, the majority of its volume is concentrated in the central city, while satellite towns account for a disproportionately small share with respect to their populations, which is generally typical of Russian
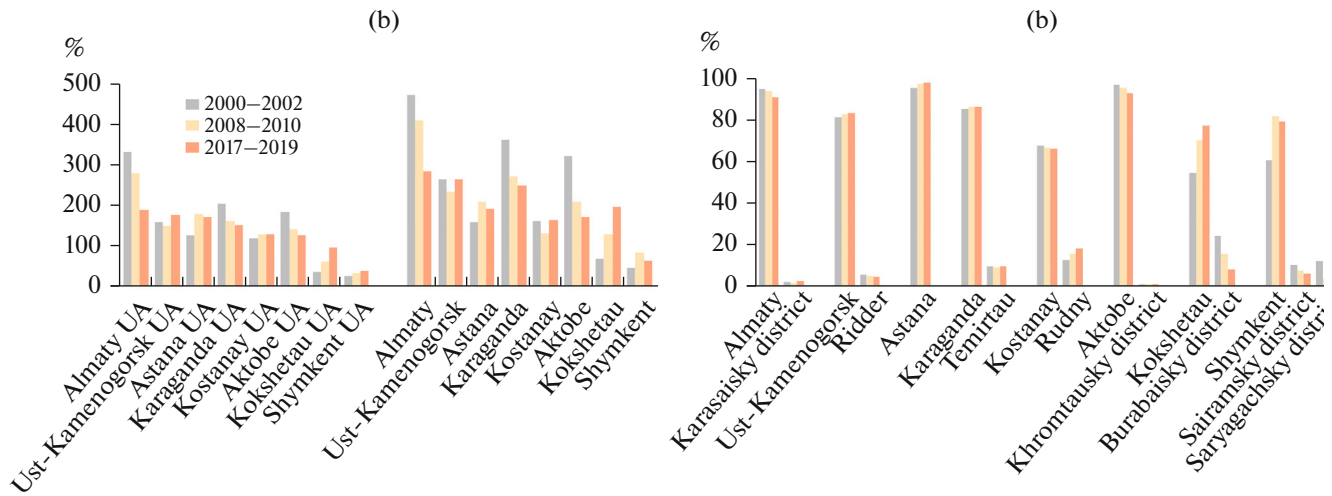
Fig. 3. Retail turnover in 2000−2019: (a) average annual per capita retail turnover in UA and their central cities (RK = 100%), %; (b) share of individual cities (towns) and municipal units in retail turnover of corresponding UA, %.

agglomerations. As well, it almost never increases, which allows us to speak about the absence of a positive dynamics in the development of the consumer services sector outside UA centers. As part of the Kokshetau UA, only the area of the resort village of Burabay stands out slightly, and in the Shymkent UA, the suburban Sairam district with a high level of development of small business and the border Saryagach district, where part of the border trade with Uzbekistan is concentrated (Fig. 3b).

In the 2000s, *housing construction* significantly intensified in all UA of Kazakhstan; however, only in three of them, two in the capital and Aktobe, was per capita housing commissioning consistently higher than the national average (Fig. 4a). According to this indicator, the compact Kokshetau with a fairly comfortable environment has been approaching the centers of the leading agglomerations in recent years. In the agglomerations of southern Kazakhstan, primarily in Shymkent, where a significant part of the population traditionally lives in individual houses, the volume of housing construction may be somewhat underestimated, since climatic conditions hinder the connection of finished housing to engineering networks for a long time; hence they are not taken into account. The most difficult situation is developing in the Karaganda UA, where the per capita volume of housing construction is no more than two-thirds of the average republican level and is hardly increasing at all.

The growth in construction volumes, as in Russian agglomerations, occurs primarily in regional centers with a better urban environment and better ecological situation compared to single-industry satellite towns (Fig. 4b). Suburban areas stand out weakly in housing construction, with the exception of the two metropolitan agglomerations (Fig. 4c). Around Astana, the ter-

ritories of Tselinogradsky district are gradually being involved in housing construction. In the Almaty UA, similar but more active suburbanization processes are difficult to capture statistically, since the former capital has expanded its borders several times at the expense of adjacent areas.

Employment and Wages

Despite the strong transformation of the structure of the economy, *employment* in industry and construction in most industrial agglomerations of Kazakhstan (Karaganda, Aktobe, and Ust-Kamenogorsk) remains very high, accounting for about 30% in 2019 (Fig. 5a). The optimization of personnel at city-forming enterprises did not lead to a radical reduction in the number of employees in the secondary sector, and in Aktobe in 2014−2019, it even grew by 11%. A 19% increase in people employed in industry also occurred in Astana, where a number of assembly machine-building enterprises have been opened in recent years (increased employment in industry is also typical of most Russian agglomerations, including their city centers).

The Shymkent UA was the most intensively deindustrialized; it lost a number of specialization branches, including nonferrous metallurgy and part of organic synthesis chemistry. New light industry enterprises are small and unable to replace the liquidated giants of Soviet industry in the labor market.

Two underdeveloped agglomerations of the virgin zone, Kostanai and Kokshetau, remain the most agrarian (Fig. 5a). In the agglomerations of southern Kazakhstan—Shymkent and Almaty—the share of people employed in agriculture is small (12.1 and 7.3%, respectively) and continues to decline.

We can speak about the real development of the service sector only with respect to the two metropoli-
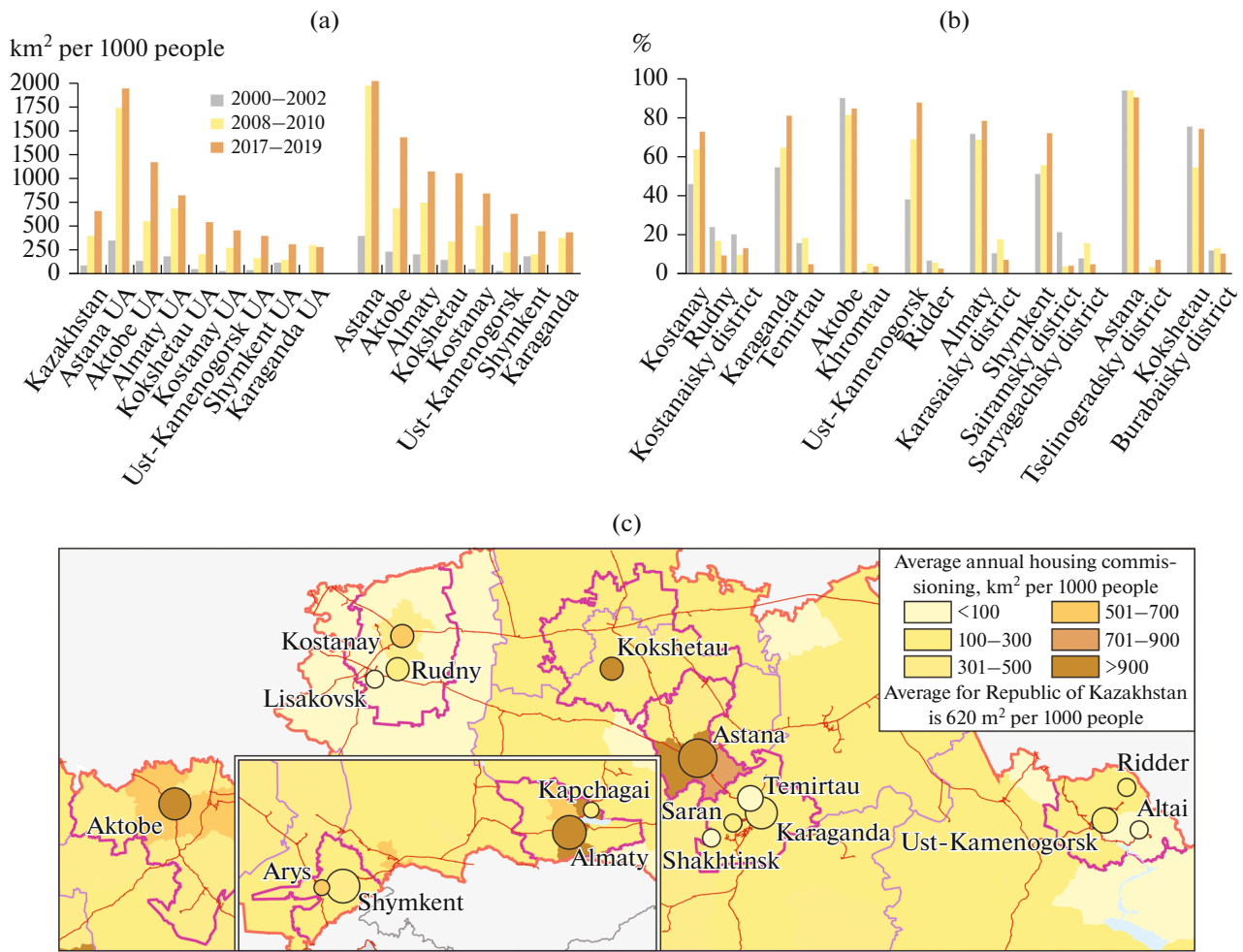
Fig. 4. Dynamics of housing construction: (a), (c) average annual housing commissioning in UA and their central cities in 2000–2019, m² per 1000 inhabitants; (b) share of individual cities and towns in commissioning of housing for corresponding UA in 2000–2019, %.
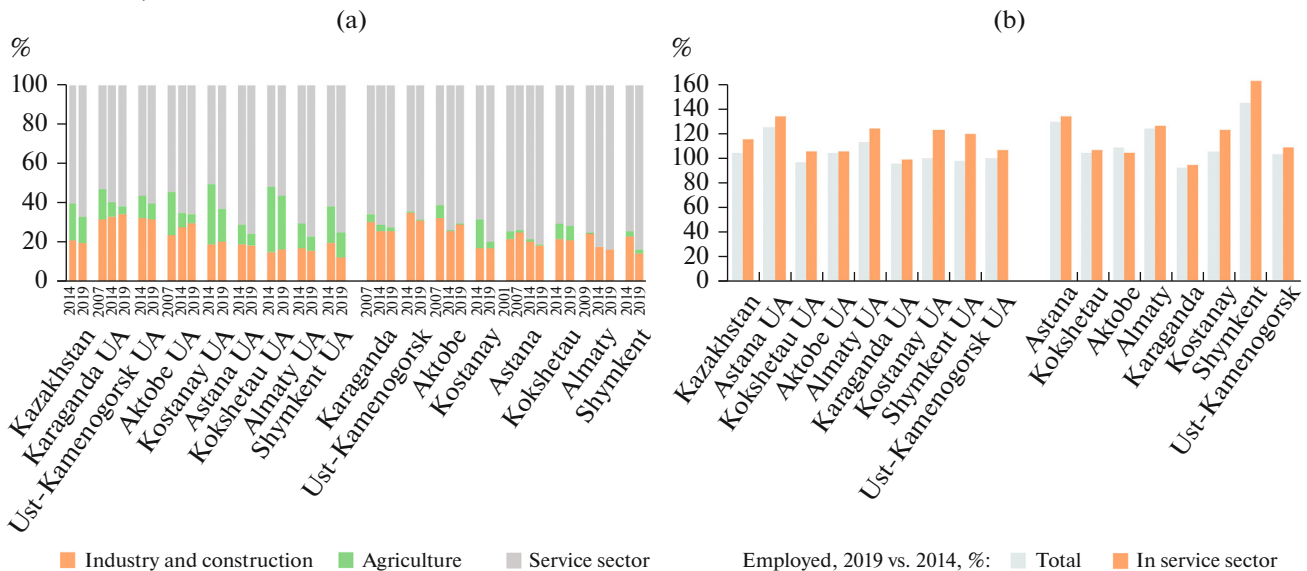

Fig. 5. Employment in urban agglomerations: (a) structure of employed (including self-employed) by main sectors of economy in 2014 and 2019, %; (b) dynamics of employment in economy as a whole and in service sector in UA and their central cities, 2014 vs. 2019, %.
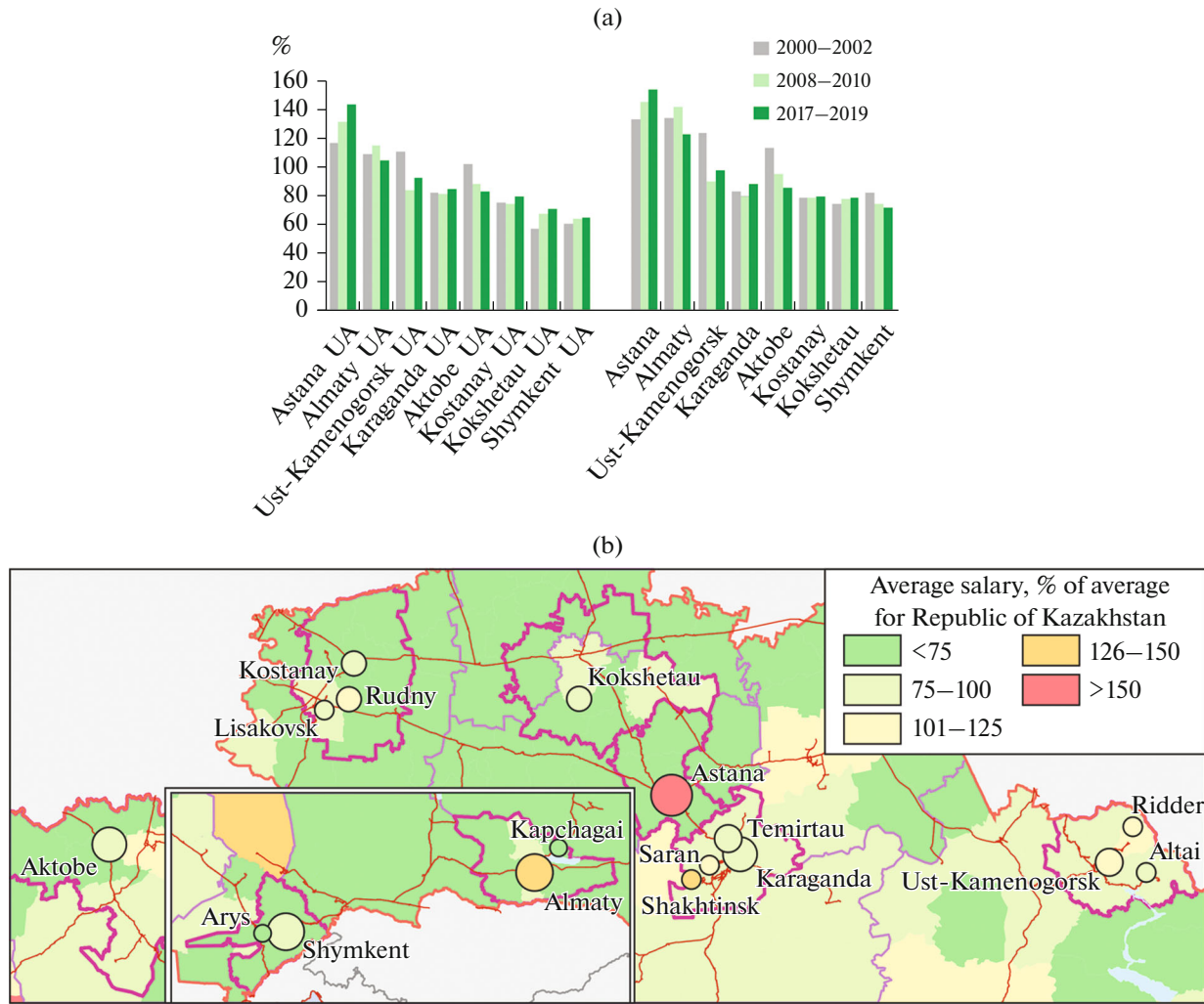
Fig. 6. Average annual salary in UA of Kazakhstan and their central cities, % of average for Republic of Kazakhstan: (a) 2000–2019, (b) 2015–2019.

tan agglomerations and Shymkent, where growth in the relative share of the tertiary sector is accompanied by a noticeable increase in the number of employees (Fig. 5b). In other UA, its positive dynamics is either insignificant, or, as in Karaganda, it is not recorded at all.

As a reflection of the global trend of increasing spatial unevenness in development, which has manifested itself throughout the post-Soviet space, differences in *wages* quite accurately characterize the relative advantages that affect the attractiveness of UA in general and their centers, which is especially pronounced in the main, as a rule, metropolitan, agglomerations of countries (Zubarevich, 2018). Throughout the 2000s, salaries in only two metropolitan agglomerations were consistently higher than the national average (Fig. 6a). Astana has steadily increased its lead over the rest of the centers, and the relative performance of the second-ranked Almaty UA somewhat worsened in the mid-2010s under the influence of the economic crisis.

At the same time, lagging agglomerations, the underdeveloped Kokshetau and southern Shymkent, which have problems with underestimated shadow incomes, barely reach two-thirds of the republican wage level (Fig. 6b). The situation in the UA with large export-oriented metallurgy enterprises was unstable that experienced both periods of decline and compensatory growth.

In addition to both capitals, only Ust-Kamenogorsk stands out against the background of its regions. For most other UAs, the gradient between their centers and the rest of the region is weak. At the same time, three agglomerations—Shymkent, Karaganda and Kokshetau—fall significantly short of the average regional level in terms of salaries. Some of the agglomeration centers do not have advantages or even lose to their industrial satellite cities, although they are more stable due to diversification of the economy.

CONCLUSIONS

The administrative path of creating urban agglomerations can only speed up the evolutionary path of their development. Inconsistency at the current stage of development of the UA of Kazakhstan is rooted in the past: the hypertrophied industrial profiles of the vast majority of large cities that grew up in the process of creating reserve raw material and industrial bases in the hinterlands of the country during the Soviet period. The leading criterion for optimal development in that era was efficient implementation of large projects, not the creation of comfortable living conditions for the population, which left an imprint on the economic specialization and planning structure of future agglomerations.

Of the UA identified as points of growth, only the Almaty agglomeration, which gradually formed around the former capital, can be classified as developed. Shymkent looks like a sprawling city with vast rural suburbs. The capital mainly draws on its surroundings, and its agglomeration in terms of development is significantly inferior to the neighboring Karaganda. In other UA, including Aktobe, with pronounced industrial functions, the low level of environmental comfort and the socioeconomic situation do not yet contribute much to their attractiveness.

In the post-Soviet period, the urban agglomerations of Kazakhstan were the main "beneficiary" of the growing contrasts in the development of the socioeconomic space, concentrating financial resources and population: since 1990, their share in the population of the republic as a whole has increased from 43 to 52%. However, the differences among agglomerations are also very large: two metropolitan UA were attractive for migration across the whole of Kazakhstan, while in the rest, the growth in the number of inhabitants occurred due to natural increase and intraregional migration.

In terms of the dynamics of socioeconomic development in recent decades, both metropolitan agglomerations stand out significantly, which is clearly seen from the increased level of wages, which in most other UA does not exceed the average regional values. Despite the transformation of the structure of the economy, only the three largest agglomerations are the most tertiary so far, while the rest retain fairly high employment in industry. It is also is rather difficult for the most industrial agglomerations with large enterprises of heavy industry to show high growth rates.

The incompleteness of the extensive period of urbanization in Kazakhstan is manifested in the dynamics of core cities, the share of which in the populations of its agglomerations has grown over the past 30 years by 8−24%. Signs of the transition to the suburbanization stage are timidly manifested only in the vicinity of Almaty, the only agglomeration where suburbs grew faster. In the rest of the UA, they are distinguished by a lack of job opportunities and weak social infrastructure, including trade, with a significant gap with centers in terms of wages.

A clear marker of attractiveness is housing construction, which, in addition to surrounding both capitals, is also done mainly in the cores of agglomerations. One of the reasons is the genetic feature of Kazakhstan urbanization, which has a forced, catch-up character. As a result, most small and medium-sized towns, even those in the zone of influence of the largest urban centers, have not yet acquired an attractive urban environment. The situation is also negatively affected by difficult natural and climatic conditions, which govern the central type of settlement and do not contribute, with the exception of certain areas in the south, to the development of full-fledged suburban areas.

In addition, the low level of development of the agglomerations of Kazakhstan is largely associated with their formation in regions of relatively new development around centers of heavy industry. They are also related to Russian agglomerations by the general stagnation of the majority of weak and undeveloped agglomerations with socioeconomic potential highly concentrated in the leading centers, in particular, their cores. In general, this situation, which is typical of the initial stages of agglomeration development, hinders the use of their natural advantages associated with the effect of economies of scale, a common labor market, and sharing of resources.

CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

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