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## POPULATION CHANGE IN GLOBAL URBAN REGIONS

*This article focuses on the key aspects of population development in the historical cores of leading global urban regions at the stage of globalisation. The research sets out to identify and describe the common — model — and individual features of the demographic modernisation process.*

**Key words:** global city regions, leading global centres, migration and natural movement, types of population change dynamics.

Over the last decades, the development of urban formations in the context of rapid global processes has aroused a keen research interest. The conditions of globalisation and transnationalisation give greater weight to global urban regions<sup>1</sup>, which are developing as important centres of world economic and international ties. Being large urbanised areas with strong economies, they accommodate the headquarters of major multinational corporations and banks, as well as specialised business services companies. Such regions are innovation generation centres and key players in almost all world markets. A more intensive and complex character of interaction between global urban regions resulted in the development of a unique phenomenon — the integrated transnational system of the world, which is based on network structures [9; 10; 12]. One of its important characteristics is a strict hierarchy of centres. According to various ratings and classifications, the highest "command staff" is represented by London, New York, Paris, and Tokyo. The group of a lower rank is comprised by Los Angeles, Singapore, Xiang-gang (Hong Kong), Frankfurt (Main), and Chicago. Approximately 20 urban regions fall into the next category, among them are Brussels, Madrid, Milan, Moscow, São Paulo, Seoul and some others [15; 29—31, etc.].

The central position of global regions in the main, according to Wallerstein, arenas of "syndical actions", which form the world system, has been proven by many authoritative studies and gives rise to no doubts.

However, the issue of feedbacks and study into the character of transformations of inner structures of globalising cities, including that in demographic complex, remains off the scene of geopolitical and geoeconomic research. At the same time, a special role of anthropocentric research approach is closely linked to, at least, three aspects. First of all, all modern processes in global urban regions are based on and directly connected to the growing significance of human factor or, as it is more frequently said today, human capital. Secondly, it is the global urban formations where, in contrast to other

<sup>1</sup> The term was coined in specialised literature quite recently — in the late 1990s, in particular, in the works of the American geographer A. Scott [24; 25]. The phenomenon of a global urban region has been poorly studied so far and requires individual examination, including that in terms of its place in the hierarchy of contemporary territorial socioeconomic systems [11].

territories, the features of demographic development are determined under the influence of the greatest number of "forces" of different hierarchical rank — global, regional, national, and local ones. Thirdly, under the conditions of globalisation, the structural shifts in the population complex of leading urban regions take on pioneer and, at the same time, complex and often contradictory character. The explanation of general trends and patterns of development is the way to understand and predict the transformations throughout the world urban system.

Within an integrated study of population formation in global urban regions, a crucial meaning is assigned to the analysis of dynamics and sources of changes to population density. A specific topic is the study into population development in the historical cores of the world regional elite — the leading global centres (further LGC). These are — comparable in terms of key territorial and demoeconomic characteristics elucidated in national statistics — Greater London, Île-de-France, Greater New York, and Tokyo Metropolis. The timeline of research covers the period of the 1970—2000s, i. e. that of the beginning and gradual development of globalisation processes, and coincided with the demographic category of the so called generation length. It helps trace the most important changes in the LGC population during a generation cycle.

The key global urban regions and their centres are characterised by a rather modest parameters of population dynamics. Their average annual population growth rates range from 0.1 % to 0.5%<sup>2</sup>. So, in the 1970—2006, the population growth in the urban agglomeration of Greater New York amounted to 2.5 mln people, including only 319,600 people in New York City, i. e., on average, 10,000 people per year. The population of the metropolitan areas of Japan and France was also increasing at a low rate and mainly thanks to peripheral zones. By 2006, the population of Tokyo within the Metropolis had reached 12.7 mln people or 1.3 mln people more than in 1970, in Île-de-France the growth had been 11.7 mln people (a 2.2 mln people increase). The population of London did not change between 1971 and 2007 (7.5 mln people) [6; 17; 28; 32]. Today, the leading global urban regions are left behind in terms of the average annual growth rate of both urban and total population of their countries [34]. It means that, in terms of the population accumulation rate, they are outstripped by the urban system of a different rank. However, all LGCs completed the "globalisation period" with a positive net migration rate.

Of course, the average rates say nothing about the features of time series and level of conservatism or modernism of LGC demographic development models. An answer to this question can be given only through a study into

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<sup>2</sup> It is worth mentioning that the top-ten average annual population growth rates among global urban regions were registered in the "special" centres of the Asian-Pacific Rim — Singapore and Xianggang (Hong Kong). The total population of Singapore, according to the 1970 census, amounted to 2074.5 thousand people, in 2000 it reached 4027.9 thousand people, and, according to 2006 estimates, equalled 2283.9 thousand people. In Xianggang (Hong Kong), over the same period, it increased from 3458.0 to 6864.4 thousand people [35; 36].

the evolution of natural and migration movement. Mostly generalised, the combination of two main factors of population reproduction according to the impact on population size can be depicted as a matrix as presented in figure 1.

Total population size dynamics factors		Population development types					
		Progressive	Contrastive				Regressive
			Positive		Negative		
			based on natural increase	based on net migration rate	based on natural decrease	based on net migration rate	
Indices	1	2A	2B	2C	2D	3	
Natural movement	+	+	-	-	+	-	
Net migration rate	+	-	+	+	-	-	
Demographic balance	+	+	+	-	-	-	

Symbols: + — positive value; - — negative value. In the framework of contrastive type, subtypes are distinguished according to the correlation of factors: A and B are characterised by the predominance of natural change in the demographic balance, while C and D are characterised by the prevalence of net migration rate.

Fig. 1. Possible types of population development according to the features of formation of final demographic balance

As the examples of a number of countries show, the extremes of matrix (the progressive and regressive types) do not always imply the highest total population increase or decrease rates. In most cases, it is the contrastive dynamics factors that account for the greatest population change rates. It depends on how much one source of population change outstrips another; "overlapping" determines the total increase/decrease rates [8, p. 122].

*Migration related population change.* All the cities considered are large migration centres. The annual rate of permanent migration reaches substantial levels and is constantly rising. Only in London, in the 2000s, it exceeded 700,000 per year, which is almost twice as much as in the mid-1970s [17]. A similar rate is observed only in Tokyo, while it is a little lower in New York and Paris. At the same time, the analysis of general levels and balance of migration shows that LGCs are centres of high population mobility with, however, relatively low migration efficiency (tables 1—4). So, in 1970—2000, every LGC lost 0.9 mln or more residents to migration movement. It means, at least, two important things. Firstly, the formation of global cities as propulsion centres, i.e. centres that accept and distribute migration streams. Secondly, such migration scheme ensures the intensity of rotation — rapid renewal — of the structure of urban population without an increase in the population size.

Table 1

**Population change in New York City in 1970—2005, thousand people<sup>1</sup>**

Indicator	1970	1975	1980	1985	1990	1995	2000	2005
Natural movement	61.0	33.1	30.4	43.7	65.8	60.2	64.7	70.1
Net migration rate	-123.9	-116.1	-5.1	-18.7	-0.3	8.8	3.4	-69.5
Demographic balance	-62.9	-83.0	25.4	25.0	65.4	69.0	68.1	0.6

<sup>1</sup> The data is provided for a particular date.

Source: [28].

Table 2

**Population change in Île-de-France in 1962—2004, thousand people<sup>1</sup>**

Indicator	1962— 1968	1968— 1975	1975— 1982	1982— 1990	1990— 1999	1999— 2004
Natural movement	80.4	87.2	78.9	90.9	98.2	118.4
Net migration rate	75.3	17.8	-46.5	-7.0	-61.8	-40.4
Demographic balance	155.7	105.0	32.4	83.9	36.4	78.0

<sup>1</sup> Average data for each period.

Source: [6; 22].

Table 3

**Population change in London in 1971—2005, thousand people<sup>1</sup>**

Indicator	1971	1981	1986	1991	1996	1999	2005
Natural movement	21.6	14.8	23.8	36.9	40.0	43.8	60.4
Net migration rate	-118.0	-38.0	-22.0	-19.0	14.0	40.0	28.7
Demographic balance	-96.4	-23.2	1.8	17.9	54.0	83.8	89.1

<sup>1</sup> The data is provided for a particular date.

Source: [21; 23].

Table 4

**Population change in Tokyo in 1970—2005, thousand people<sup>1</sup>**

Indicator	1970	1975	1980	1985	1990	1995	2000	2005
Natural movement	173.5	131.4	81.7	63.7	33.6	18.2	16.4	2.9
Net migration rate	-105.8	-112.5	-98.8	3.3	-56.3	-36.2	74.3	95.8
Demographic balance	67.7	18.9	-17.1	67.0	-22.7	-18.0	90.7	98.7

<sup>1</sup> The data is provided for a particular date.

Source: [32].

Thus, the ratio of external and internal migration components is of utmost importance. Tokyo stands out among LGC in terms of insignificant external net migration rate (5—7% of all the migrants) as if being situated at the roadside of international migration streams. New York and other global cities of the US, which owe their development to immigration, are characterised by the stability of both positive external net migration rates and the scale of population loss due to internal migration. The unofficial capital of the USA, only in 1995—2004, "exchanged" 1,667,900 people leaving for other regions for 1,577,100 immigrants. In Paris, over the last decades, the external net migration rate outstripped that of external one, however, in both cases, it remained positive until the mid-80s. From that moment on, the balance of internal migration has been negative. An opposite situation has developed in London, where both internal and external migration until the 1980s was a factor of the population decrease. But, in the subsequent decades, due to a number of reasons, international migration changed the sign from negative to positive: in comparison to 1981, by the mid-2000s, its rates increased almost threefold — from 104 to 270,000—300,000 people per year and the balance from -6,000 to 50,000—100,000 people. As a result, the negative balance of internal migrations is occasionally made up for by its external component [9, p. 180].

Thus, an important common feature in the development of global cities is rejecting the classical function of migrant accumulators. At the same time, the capital of Japan shows a "closed" model of migration, while the "open" version is characteristic of other LGCs, where the negative results of migration movement pertain to the negative balance of internal migration and its external component performs the "substitution" function. The latter is increasingly affecting — directly — the total population size and population composition (age, sex, ethnicity) and — indirectly — the features of the population replacement through the introduction of new patterns of reproductive behaviour.

*Natural movement.* The analysis of a number of largest world agglomerations shows drastic differences in the rates and features of natural reproduction of population. There are a lot of cities characterised by natural population decline as well as those characterised by its active increase. The first category is represented, for example, by a number of centres of ageing Europe, including the Baltic Sea region; the second category comprises of numerous centres of developing countries. Of course, the same level of natural movement can be constituted by different correlation of birth and mortality rates. Today, an extreme option — the formation of population in the conditions of low birth and mortality rates is peculiar to Asian cities, including Xianggang, Beijing, and, to an extent, Shanghai, which are "built-in" in the reality of the PRC demographic policy, as well as Singapore and some other centres (table 5). The other extreme — high birth and mortality rates — is not characteristic of global centres per se, nor is the model with increased birth and low mortality rates. For a long time, the opposite correlation pertained to Moscow and the capitals of Central-Eastern Europe.

Table 5

**The classification of global cities of different ranks by birth and mortality rate, mid-2000s**

Category		Birth rate, %				
		Low, less than 10	Medium		High, more than 16	
			Low, 10—13	High, 13—16		
Mortality rate, ‰	Low, less than 6	Xianggang (Hong Kong), Beijing	Singapore	Los Angeles, Seoul	—	
	Medium	Low, 6—8	Tokyo, Shanghai	Madrid, San Francisco	London, New York, Paris	São Paulo
		High, 8—10	Berlin, Milan	Munich, Rome, Frankfurt (Main)	Amsterdam, Stockholm	Buenos Aires
	High, more than 10	Budapest, Warsaw, Moscow, Prague	Vienna, Copenhagen	Brussels	—	

Sources: [3—5; 7; 14; 16—19; 26—28; 32; 35; 36; etc].

Among other urban formations, LGCs stand out in terms of certain features of natural movement in the period of globalisation. As to the birth rate, by the early 1970s, the starting positions were quite close, but later the trends proved to differ significantly (fig. 2).

In New York, the capitals of the UK and France, the birth rate, despite insignificant fluctuations, was rather conservative and maintained at the level of 15%, while, in Tokyo, it decreased more than twofold by 2007 (from 20.1 to 7.7%). A different situation applies to the mortality rate. In New York, London, and Paris, it was rather high initially (up to 11%), but, throughout the globalisation period, it has been decreasing steadily. On the contrary, Tokyo, which was characterised by a unique for the 1960—1970s rate of 4.6—4.9%, shows an upward trend. As a result, today, for most LGCs, the mortality rate fluctuates around 6.5—7.5%.

Such significant divergence in the evolution of fundamental components of natural movement may be explained by the differences in global functions and socioeconomic conditions of the development of cities. The latter are mostly similar. In terms of classical demography, Tokyo has certain advantages in view of the "oriental" mentality, cultural traditions, a greater stability of marriages and the family institution, roles of men and women in society, and social security. The main reason for such dichotomy lies in the population composition, first of all, the age composition and the sources of population formation, among which priority is given to the migration factor. Internal migration cannot facilitate significantly the natural population reproduction in Tokyo, also due to the reproductive disposition to a family with fewer children in the Japanese society. On the contrary, in American and European cities, the development of substituting migration, the acceptance of significant contingents of people from developing countries, characterised by a progressive age composition and maintaining a traditional reproduction behaviour model, affect directly the increase in birth rate and the decrease in mortality rate.

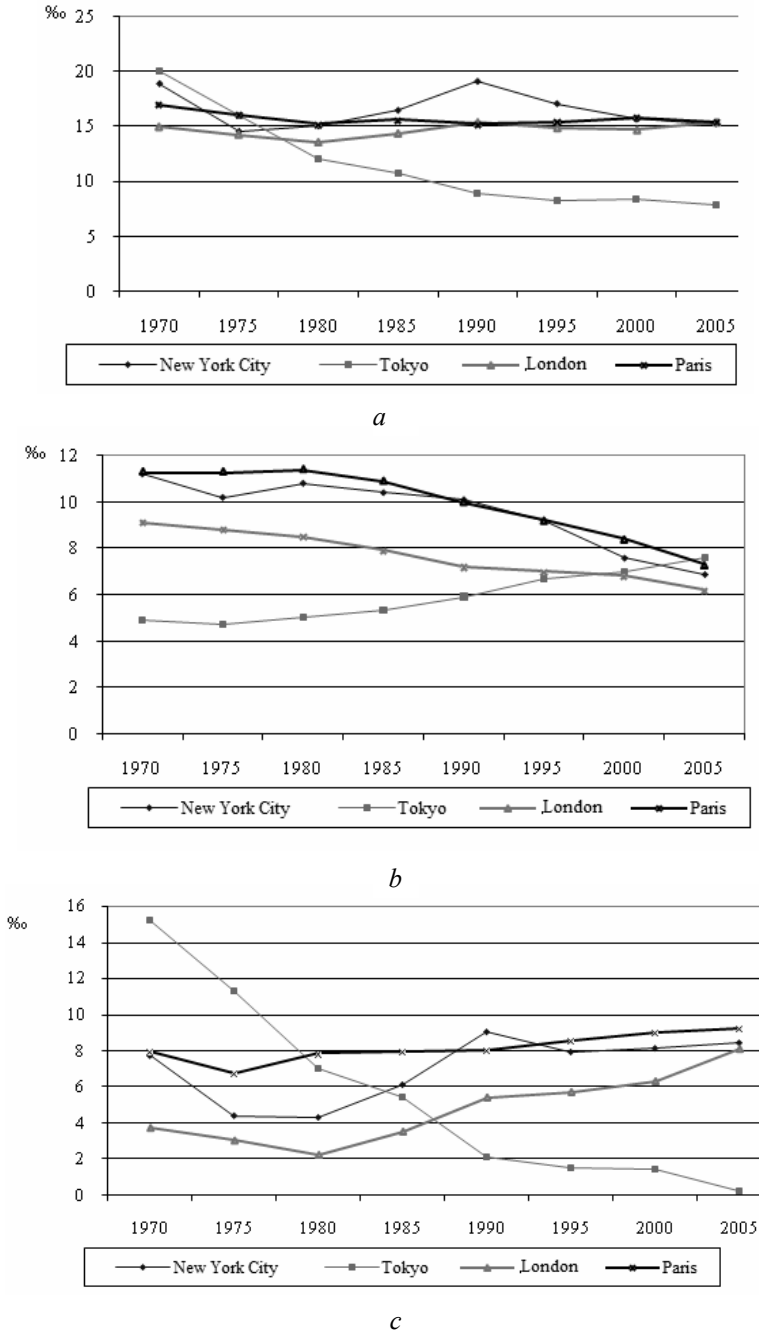


Fig. 2. The evolution of birth rate (a), mortality rate (b) and natural population increase (c) in the leading global cities, 1970—2005

The opposite trends as to birth and mortality rates explain the formation of different models of natural movement in LGCs. One extreme is represented by Tokyo, where the rate is still decreasing (0.2—0.6% in the late

2000s), the other extreme is the other centres with similar progressive changes (fig. 2). Today, in terms of the natural population increase, New York, London, and Paris can successfully compete with many centres of developing countries and, against the background of decreasing production potential of rural areas, they stand out as national "cradles" of demographic wellbeing. In Île-de-France, in 2005, it was more than two times as high as the national average (9.2 and 4.1%, respectively). The French metropolitan area, a home to less than 20% of the country's population, accounts for 2/5th of the total natural increase in France (around 1/4th in the 1970s). More astonishing is the situation in London, where the current rate of natural population increase is more than three times as high as the minimum of 1980 (8.1 in 2007 as opposed to 2.2%). In comparison to 1970, the share of the capital in the aggregate balance of natural movement has increased manifold in the UK and, in the last decades, it steadily accounts for 50 and more per cent (for example, 70.5% in 2003!) [6; 13; 17].

In other words, the 1970s became a bifurcation point for the demographic development of LGCs. Tokyo is forced partially to carry out the policy of "relying on its own forces" and lags behind the general national trends. New York, London, and Paris follow a common way of demographic modernisation. Keeping in mind that this interpretation is, of course, rather broad and employing the analysis of existing dynamics of basic functions of the population reproduction regime, we can consider these three global cities as enclaves of the first stage of demographic transition, in the course of which, according to the definition, the decrease in mortality rate outstrips the decrease in birth rate [2, p. 109]. Such phenomenon, in my opinion, can most accurately reflect the term "revitalisation" (stemming from the Latin *re* — a prefix indicating a repeating activity and *vita* — life), which can be literally interpreted as "coming back to life". Moreover, I would like to mention, that the process of revitalisation in these cities takes place despite numerous negative trends of demographic development — against the background of decreasing nuptiality, increasing divorce rate, the "collapse" of the family institution, advanced maternal age, etc. Apparently, in the "organisation" of a new population reproduction regime, the priority is being given to sociocultural and psychological factors, the factors of development of new behavioural stereotypes and value orientations, which are often called "post-material".

*The type of population size dynamics.* At first sight, it seems that the development of demographic situation in LGCs in the conditions of globalisation can hardly be given a summarised characteristic. They have different starting positions, basic parameters range significantly, the functions and processes have apparently different directions, the chronology and order of shifts in population change types are heterogeneous, etc. The only thing beyond doubt is that natural movement serves as a stabilising component and the migration factor as a destabilising one in the formation of demographic balance of LGCs. Nevertheless, a profound comparative and component analysis of LGC population dynamics does facilitate a certain classification



of ideas, the identification of general logic, and the building of a hypothetical scheme of accomplished and even expected transformations.

The starting point can be assumed as the earlier, pre-globalisation period of LGC development — the phase of extensive economy growth, developing industrial capacity and, hence, the attraction and accumulation of human resources of working age, also as a result of internal migration. A rapid increase in the size of urban population<sup>3</sup> both due to natural and migration movement correspond to the "progressive" type of the population size dynamics (fig. 3). Owing to a number of reasons, it persisted longest in the French capital. However, the accumulation of negative effects of territorial concentration, change in the economic development paradigm, progress in the sphere of transport and communication, opening of new opportunities, etc. are reflected in the activation of suburbanisation process and the historical change of migration process direction within cities. In 1970, the transition from "progressive" to "contrastive" type of population change (2D subtype) became evident in New York and London, and, later, though less pronounced, in Tokyo. At this development stage, the rate of natural population increase in cities was insufficient to compensate for migration losses.

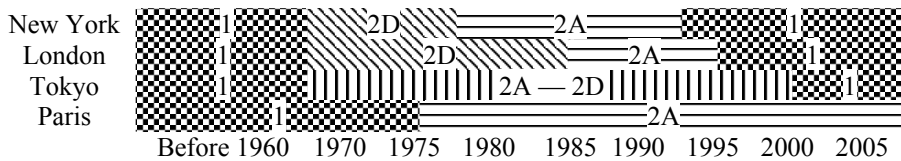


Fig. 3. The summary scheme of changes in population change types in the leading global cities over the last decades (patterns and indices stand for population change types and subtypes according to the scheme in fig. 1)

Another important landmark in the evolution of population complex of global centres is closely connected with a wide application of international migration mechanism in order to alleviate labour shortage, which emerged as a result of the economic growth. It shortly led not only to the minimisation of negative net migration rate, but also to a certain reanimation of natural movement. As a result, urban demographic balance became steadily positive (subtype 2A). But, as it turned out later, more serious effects were generated. A large-scale engagement of working age contingents from developing countries also contributed to the modernisation of demographic structures, weakening and partial replacement of old and the development of new attitudes in reproductive behaviour. As a result, from the second half of the 1990s until now, the natural population increase in New York, London and Paris has been much higher than "at the dawn" of globalisation period,

<sup>3</sup> The facts of rapid increase in population size at the first stage of development can be given for any LGC. For example, only over 10 years (1955—1964), the population of the so called Tokyo Metropolis increased from 13.3 to 18.9 mln people, or by 42% [20].

while, in the former two cities, it is also supported by a positive net migration rate, which means the return to the "progressive" population dynamics type. The implementation of such trend is apparently possible in the capital of France. Even in Tokyo, which, as emphasised above, was left at the roadside of mainstream international human resources interchange processes, the impact of migration factor and the formation of population development on the basis of progressive type became evident in the first part of the 2000s.

To sum up, one should mention that, despite the heterogeneity and ambiguity of development, global cities are developing their own typical way of demographic modernisation, which calls for the revision of many established truths. Opposite to the trends of global, regional, and national levels, as well as those of many large urban systems, their relevant demographic wellbeing rests on the factor of natural movement. Another demographic modernisation aspect of the same importance but less obviousness is the qualitative change in the role of migration. It lies in the transformation of not only its qualitative parameters, but also in creating conditions for the renewal of the composition of the population capable of supporting the favourable regime of population reproduction. Thus, the same realities of global centres disprove partially the thesis about the decreasing effect of large city environment on natural movement and the demographic crisis of large cities and stimulate further research.

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