

DEMOGRAPHY OF CAPITALS.

Some history.

Great Russian scientist D.I. Mendeleev, included demography as part of his scientific interests. He researched the results of the All-Russian head count (1897)¹, analyzing them in comparison to demographic data on many countries of the world.

The use of the indicator proposed by us, **level of demographic load of the employable» - LDLE**², allows to view, in the new aspect, the statistics, presented in the works, written by D.I. Mendeleev at the beginning of last century.

Studying the age structure of the population, Mendeleev conducted calculations of the structure of the population by two capitals, of the Russia modern to him – St. Petersburg and Moscow. It is noteworthy that LDLE, i.e. number of dependents per potentially work-able person (i.e. citizen aged 20 to 60), including himself, in both cities was virtually identical and amounted to 1,58 (Moscow) and 1.59 (St. Petersburg). Note the huge difference between the demographic structure of the capital cities and the rest of Russia. LDLE in Russia in 1897 amounted to 2,02, and this was one of the highest in the world in those years. In terms of specific demographic load of work-able person, Russian capitals and countries as a whole occupied, at the turn of the XIX-XX centuries, diametrically opposite positions.

Russia and its capitals.

The current state of our country differs from the state reflected in the works by Mendeleev and by the fact that instead of the two capitals that had virtually identical age structure of the population, we have one clear leader - Moscow. Value of LDLE on Moscow in 2008 amounted to 1.56 (see Figure 1), which significantly differs not only from Russian but also the St. Petersburg indicator.

Processes reflected in changes of LDLE relate to the category of latent and the very dynamic of demographic load of the work-able person is not in the focus of public attention. However, the existing gap in the levels of LDLE between the capital and the provinces, suggests a fundamentally, qualitatively different level of social comfort of living in the center and the provinces. Relatively lower levels of load by the dependants, along with other factors, forms in capital cities and major centers, different from the country as a whole, form of employment, and other infrastructure of rest, recreation and entertainment.

It is interesting to note that other little-known factor that forms the attraction of capitals and which comes from the field of demography, is the higher life expectancy of their population (see Table 1)

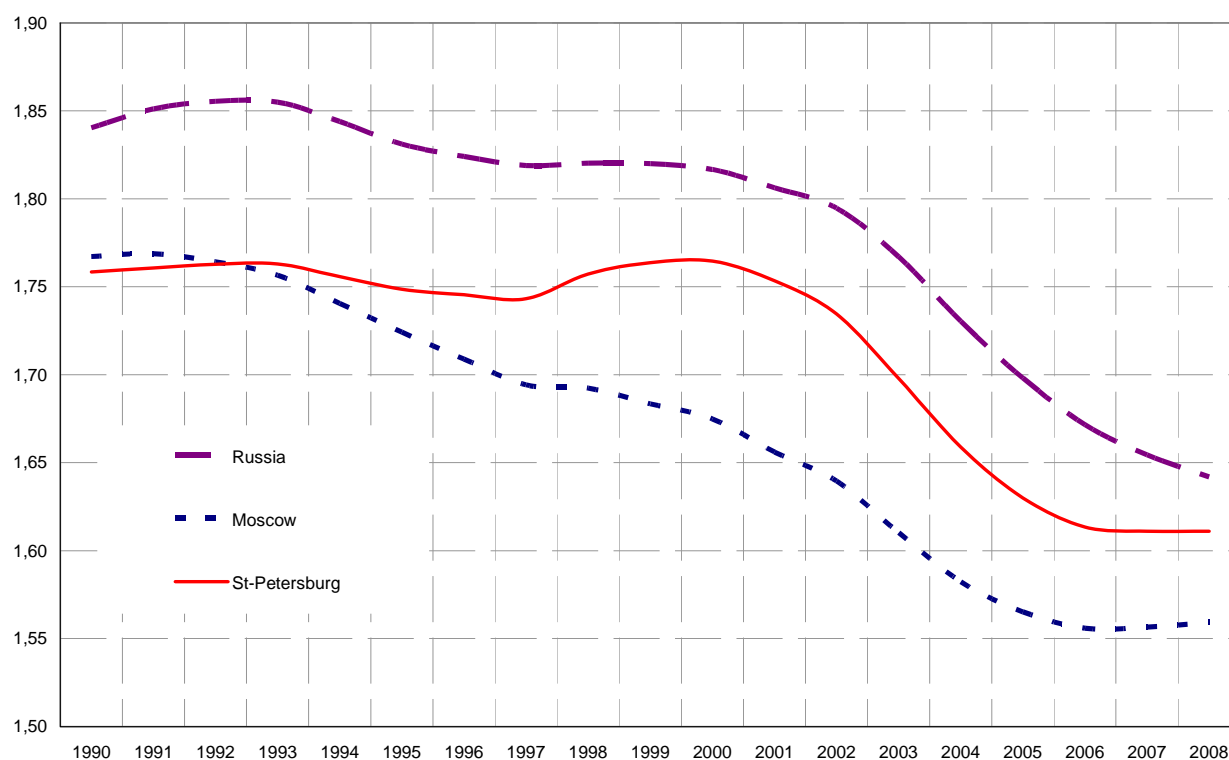
¹ D.I. Mendeleev, To the Knowledge of Russia. M.: Airis-Press. 2002.

² S.Timofeev, D.Pomazkin, "Problem 25" - <http://www.viperson.ru/wind.php?ID=577680&soch=1>

Table 1.

Life expectancy from birth in 2008³.

	Men	Women
Russia	61,8	74,2
Moscow	68,0	77,0
St. Petersburg	64,0	75,4

Figure 1. Dynamics of demographic load of the work-able person 1990-2008.

It is believed that the low demographic load complements the well-known advantages of the largest urban agglomerations in areas such as wage levels, provision of transport infrastructure, social and cultural-educational centers, etc. Formalized comprehensive assessment of these advantages is very difficult, if at all possible. However, natural and free flow of labor can serve as an excellent indicator of the attractiveness of a country, or urban agglomeration within it.

Migration flows are currently at the center of public attention due to a number of well-known reasons. However, our studies have shown that these processes have a significant impact on the changes in the demographic situation only in Moscow.

³ For Moscow and St. Petersburg – 2007.

Figure 2. Impact of migration onto the sex-age Structure of the population of Russia during 1990-2008.

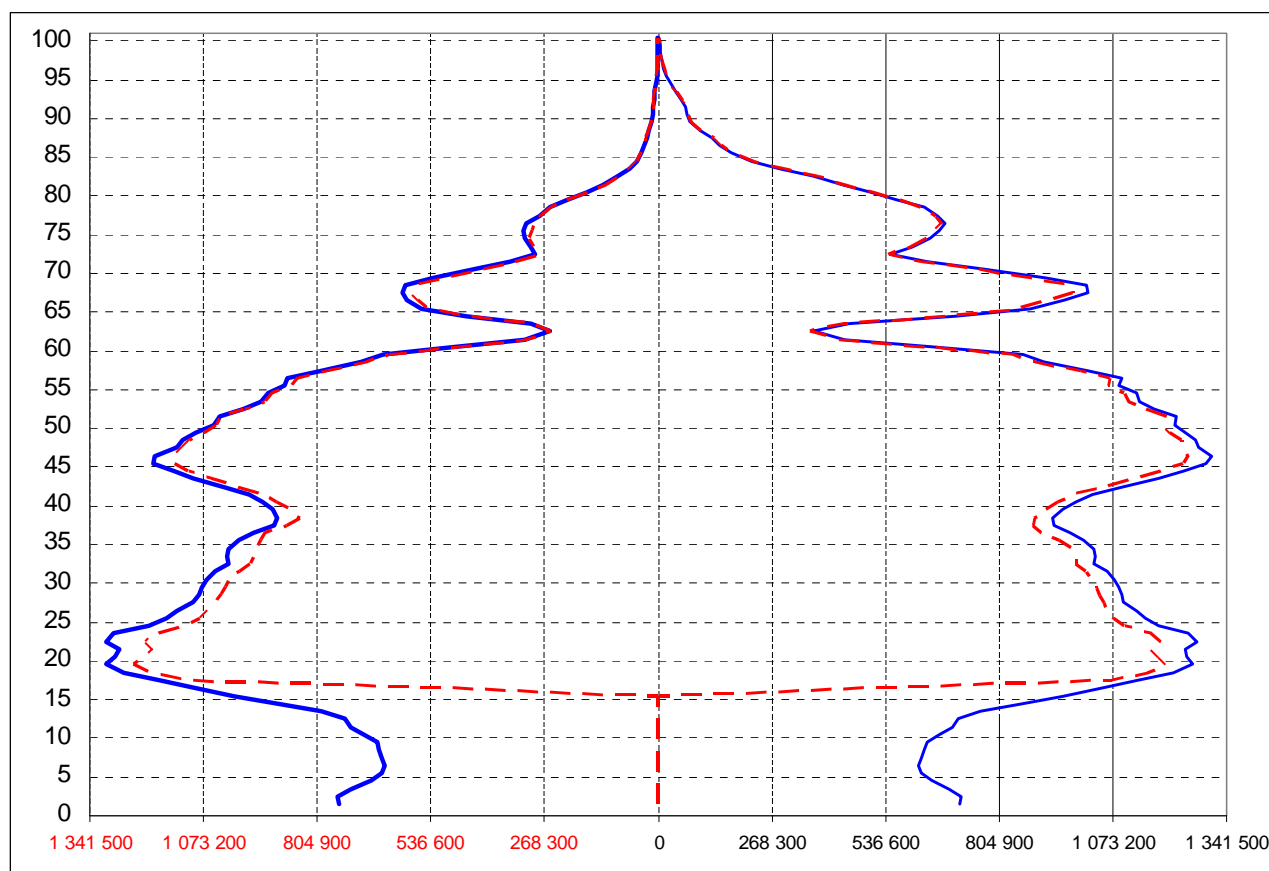


Figure 2 shows the impact of migration on the sex-age structure of population of the Russian Federation during the time interval 1990 - 2008. The real sex-age structure of the population of Russia in 2008 (solid line) is given in relation to the calculated population structure (dotted line) in the same year. The calculated structure is defined on the assumption that in all age-sex groups, the number of those who have actually lived in our country in 1990 did not change due to migration, but only decreased due to natural causes, in accordance with the recorded state statistics on the mortality level⁴.

The deviation between the two figures in Figure 2 gives an idea of the impact of external migration net flow (migration - emigration), during the analyzed period of time, onto the sex-age structure and quantity of the population of the Russian Federation. It is clear that domestic migration in this case does not affect the change in the structure, recorded through the methods we have proposed. It is not difficult to see that the influence of factor of external migration onto the demographic situation as a whole in the country, as is clearly seen in Figure 2 - is very little. Accumulated migration, over the analyzed period, amounted to - for Russia 5 million people, that is, grew at an average rate of about 250 thousand people per year, or at an average rate of growth of less than 0,2%.

⁴ Source: ANO IITS "Russian Statistics"

*Figure. 3. Division of immigrants by age
That arrived during the period of 1990-2008 (men)*

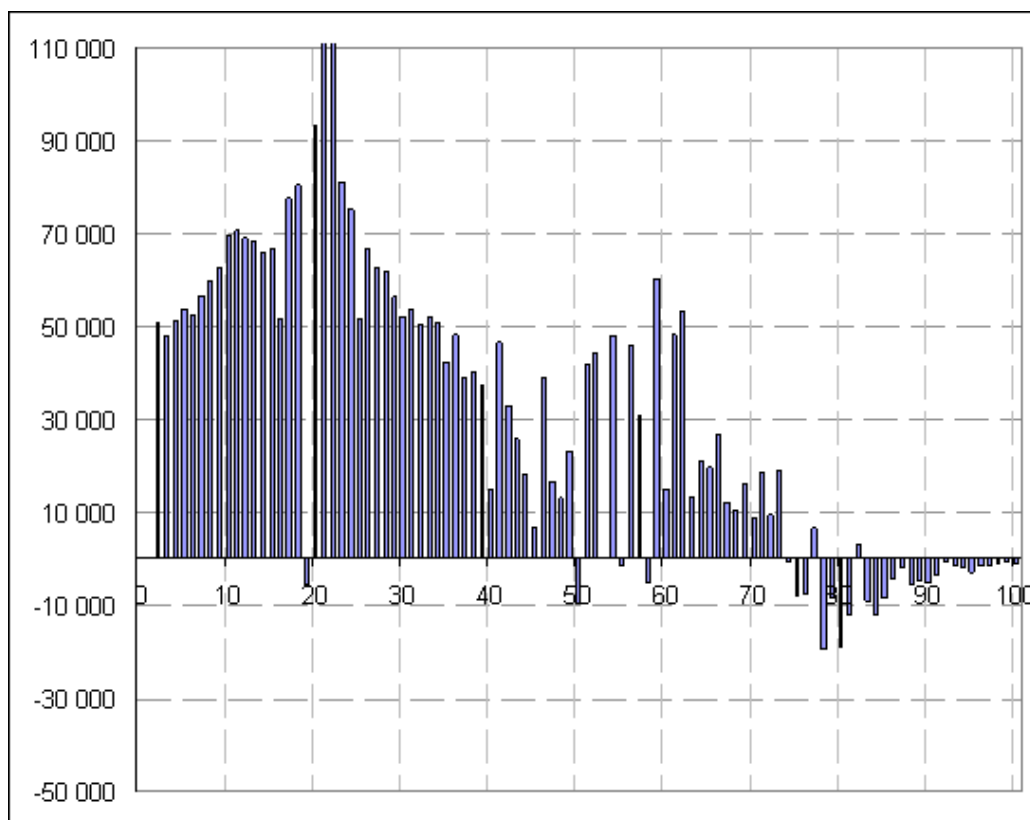


Figure 3 (men) and 4 (women), 5 (men + women) shows the age distribution of migrants by age of their registration in the territory of the Russian Federation. The presented graphs clearly show the waves and age peaks of migration flows into Russia during the last twenty years.

First: Children migration - up to 17 years. The peak of child migration - children imported into the territory of Russia by their parents - accounts for 10 years of age.

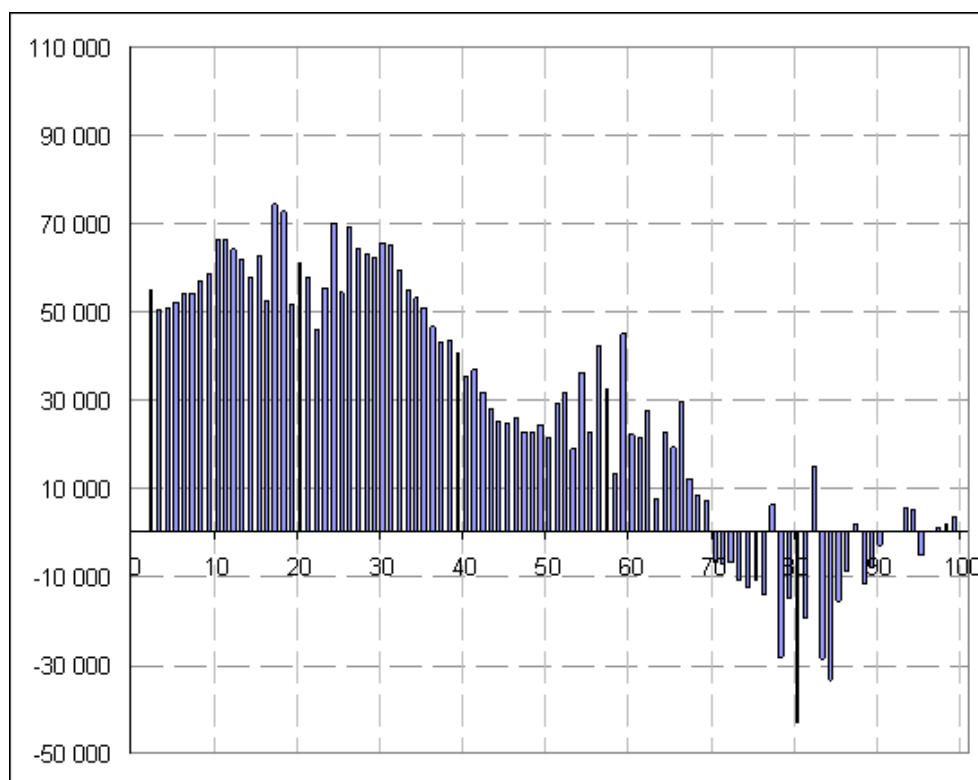
Second: migration of students. Peak values for both women and men - 17-18 years.

Third. Youth migration - it also includes a second wave of students, is characterized mainly by male migrants, and coincides with the end of military service in neighboring states. The peak of this part of the migratory flow accounts for the age of 21-25 years.

Fourth - the migration of middle age characterized mostly by women. The peak is observed in women in the age category 24-26 years.

Fifth - the migration of older age groups, reflecting the relocation of migrant parents and older family members.

*Figure. 4. Division of immigrants by age
That arrived during 1990-2008 (women)*



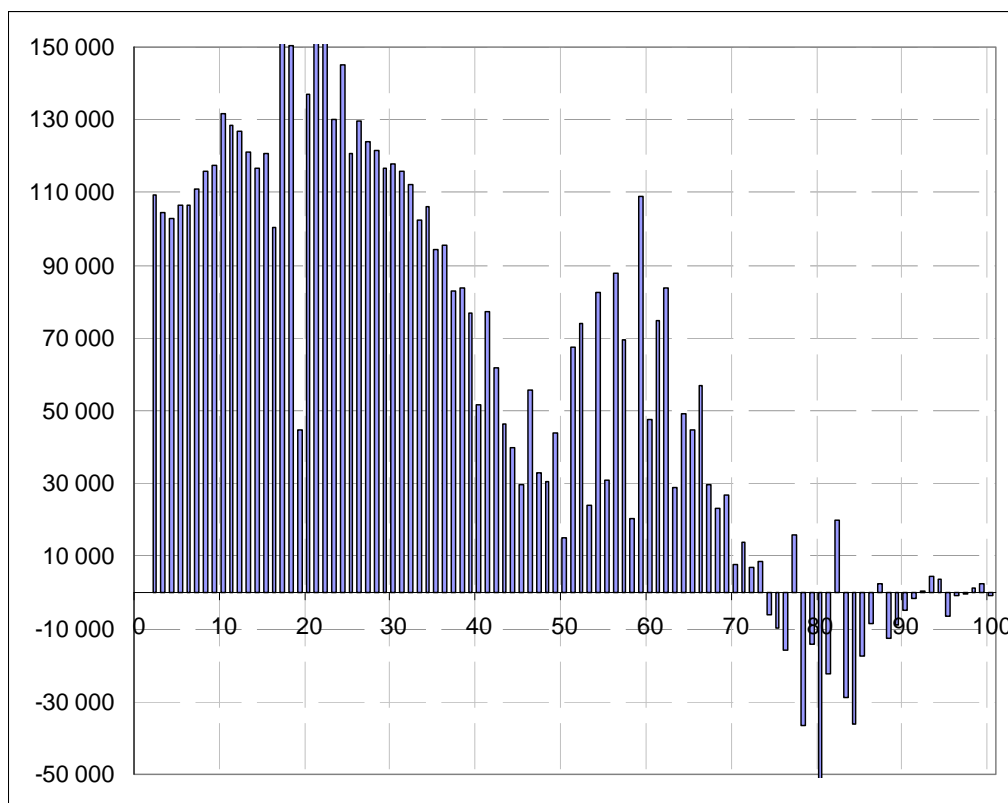
Sixth - the emigration in the most senior age categories.

Particular attention should be given to the presented on the diagram (Figure 3) fact of the emigration of the male population aged 19 years.

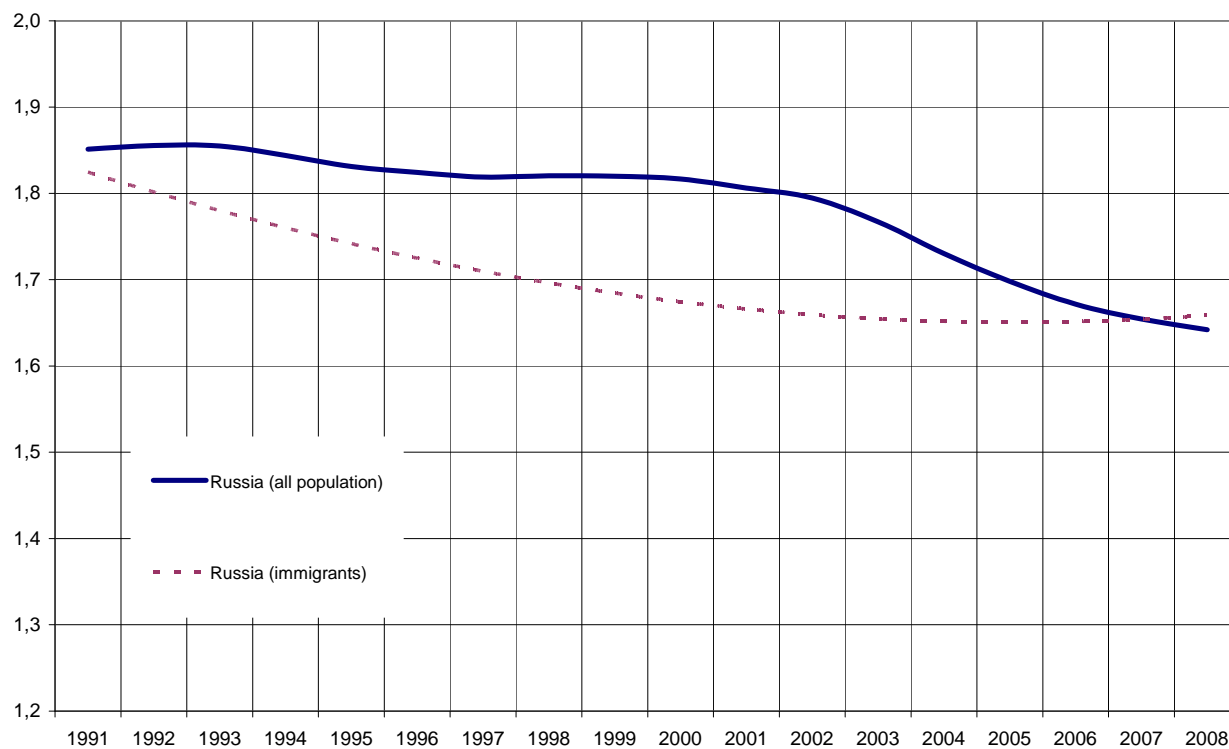
Since, under the proposed method of calculation of the age structure of migration at the country level we can assess ONLY external migration and emigration abroad, then this phenomenon has no other explanation, except that in this case, we recorded the scale of the target migration - relocation to other states of young men of conscript age.

The scale of this phenomenon can be estimated only roughly, as recorded fact reflects only the excess of emigration over migration in this age group. According to our estimates for the period 1990-2008 annual outflow of Russians of military age was about 4 thousand people.

**Figure 5. Division of immigrants by age
That arrived during 1990-2008 (men + women)**



**Figure 6. Comparison of the level of LDLE of immigrants
And the population of the Russian Federation (1990-2008)**



Migration had an impact on changes in the level of demographic load of a work-able person in Russia (see Figure 6). The data reflected in this diagram allow to

make new nuances to a fairly traditional problem of assessing and predicting the effectiveness of migration.

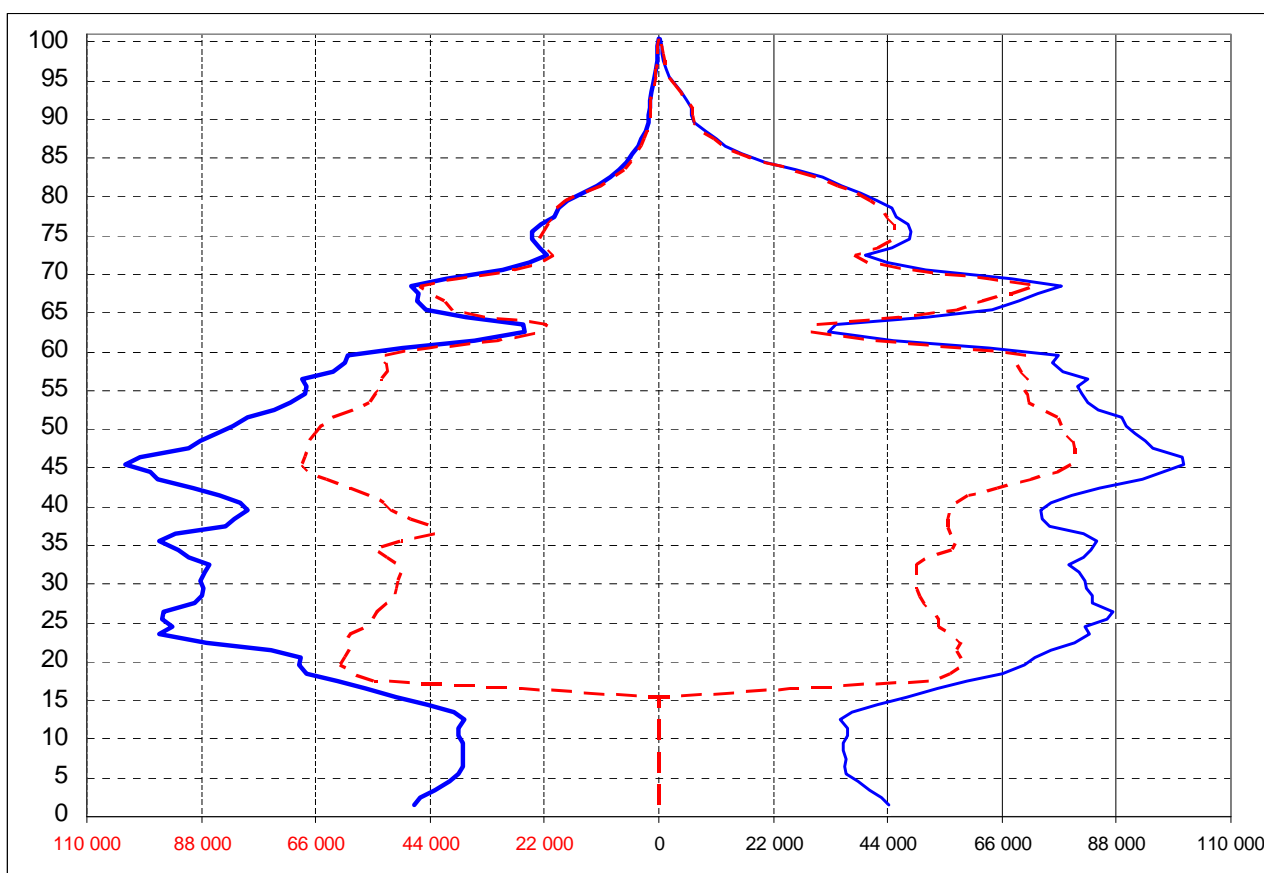
It is not difficult to understand that migration can both generate a major additional burden on the budget and ensure improved effectiveness of the functioning of the economic complex, depending on the level LDLE characteristic of the age structure of migration flows. As a result, migration flows to Russia from 1990 to 2008, objectively insignificantly contributed to the decline of the specific demographic load of the work-able person.

At present - the situation has changed. Level of LDLE of those arriving for permanent residence in Russia although is insignificant, but is higher than the prevailing in our country (Figure 6).

Moscow.

In contrast to the situation prevailing in Russia a whole, migration to the city of Moscow is one of the most important factors of its demographic development in the post-Soviet period (see Figure 7) .

Figure 7. Influence of migration on the sex-age Structure of the population of Moscow during 1990-2008.



The structures shown on Figure 7 reflect the results of calculations performed by us using the method similar to that used in formation of sex-age structures presented in Figure 2. As a base option we adopted the sex-age structure of

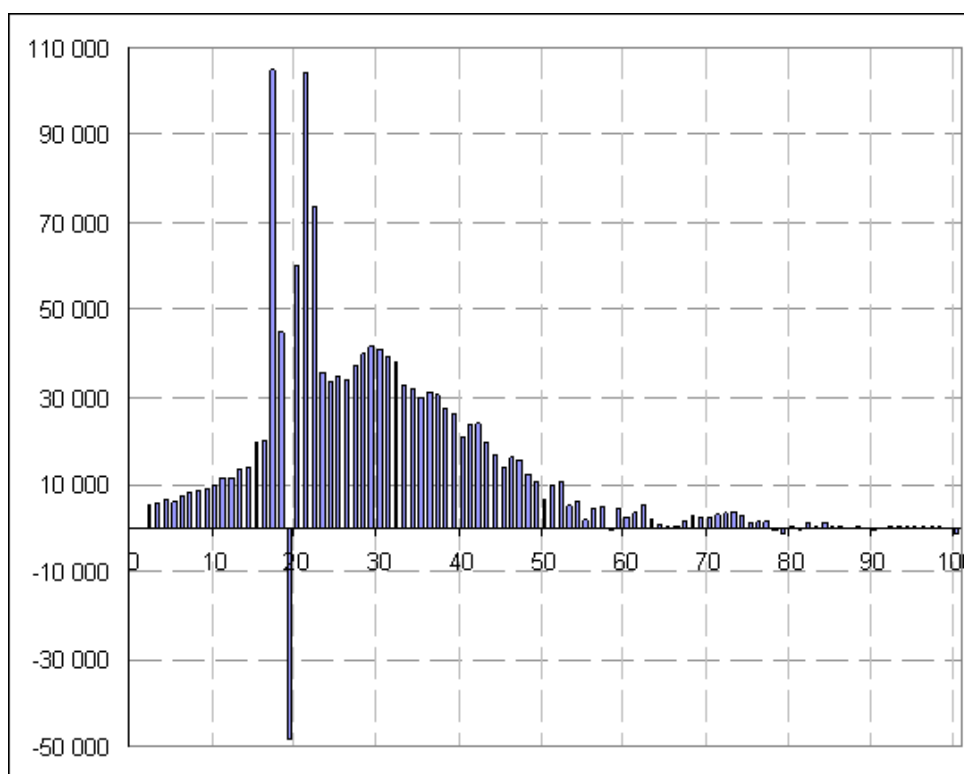
population of the city of Moscow in 1990. Then using the mortality tables we determined the number of people surviving, in each sex-age group, until 2008.

The solid line in Figure 7 marks the actual sex-age population structure of Moscow in 2008, dotted line - the structure of the population who lived until 2008 from the people who lived in Moscow in 1990. The area between these lines gives an idea of the size of the total (domestic and external) migration to the capital for the period of 1990-2008.

Without the arrival of non-residents and immigrants in the period under discussion the number of people in Moscow in 2008 was supposed to be 8.2 million people (10, 47 million - 2008).

The structure of migration to Moscow is very different from the all-Russian structure. In this structure (see Figure 8 - men, Figure 9 - women, Figure 10 - men + women) we see waves of migration, both by size and peak values that significantly differ from those that were identified in the analysis of age structure of migration to Russia.

Figure 8. Division of migrants to Moscow by age, that arrived during the period of 1990-2008 (men).

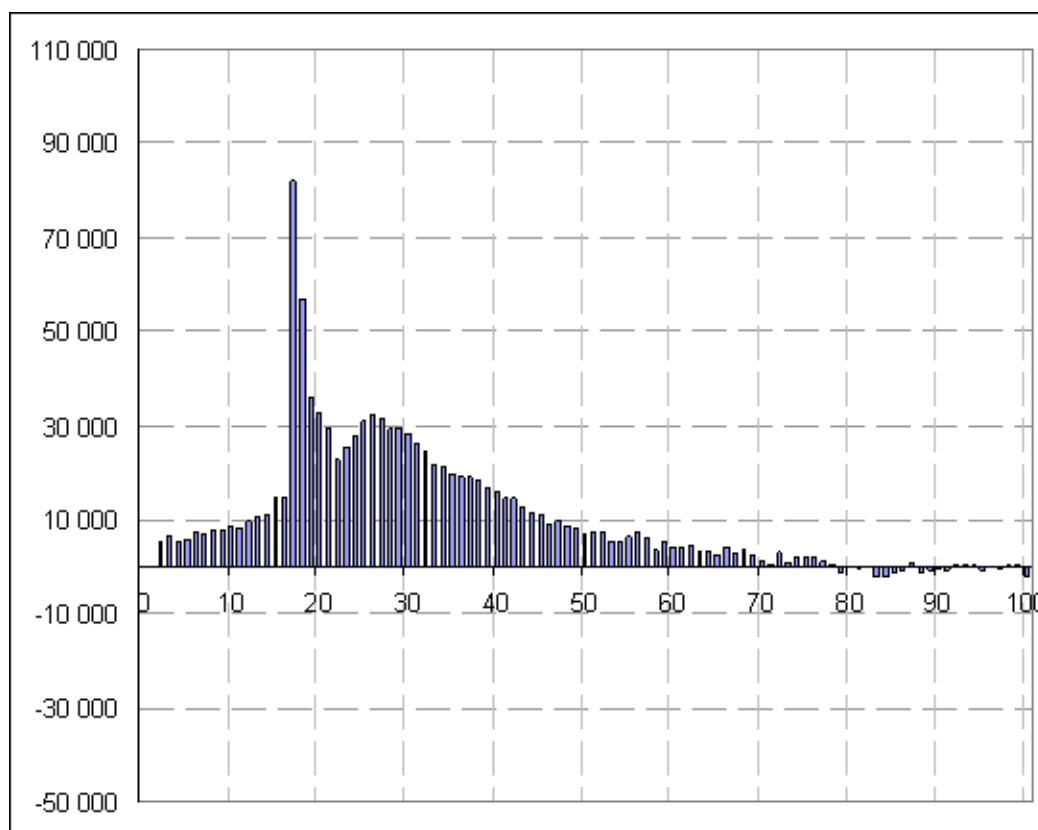


Migration of students (17-18 years - for men and 17-21 for females) and the migration of male youth aged 20-22 years, for obvious reasons is most evident in Moscow. Calculated distribution records conscription (19 years), the return of demobilized to Moscow, and a sharp increase in migration of men aged 20-22 years.

There is complete absence, typical for Russia as a whole, of the wave of child migration and the migration of mature age. There is practically no emigration in older age groups (see Figure 5).

There is a clearly visible peak of a wave of migration of men of middle age - 29 years old, not characteristic of migration in Russia. The peak of the wave of female migration accounts for 26 years of age. If the extent of female and male migration in 1990-2008 in Russia were approximately similar, male migration to Moscow is substantially higher than same figure for women (30%). The result was the formation in the capital of Russia, the phenomenon of "shortage of brides", because at present the number of Muscovites in the active age of marriage (20-30 years) exceeds the number of Moscow women.

Figure.9. Division of migrants to Moscow by age, that arrived during the period of 1990-2008 (women)



Scheme for the division of migration by age, allows to most accurately define that migration to Moscow is minimally burdened by children and persons of the older age categories, i.e. here there is dominance not of the family but of individual migration. Main constant influx was assured by people, that relocate to Moscow in the age range of 25-45 years, i.e. in the age category, characterized by the maximum potential capacity for work.

Figure 10. Division of migrants to Moscow by age, that arrived during the period of 1990-2008 (men + women)

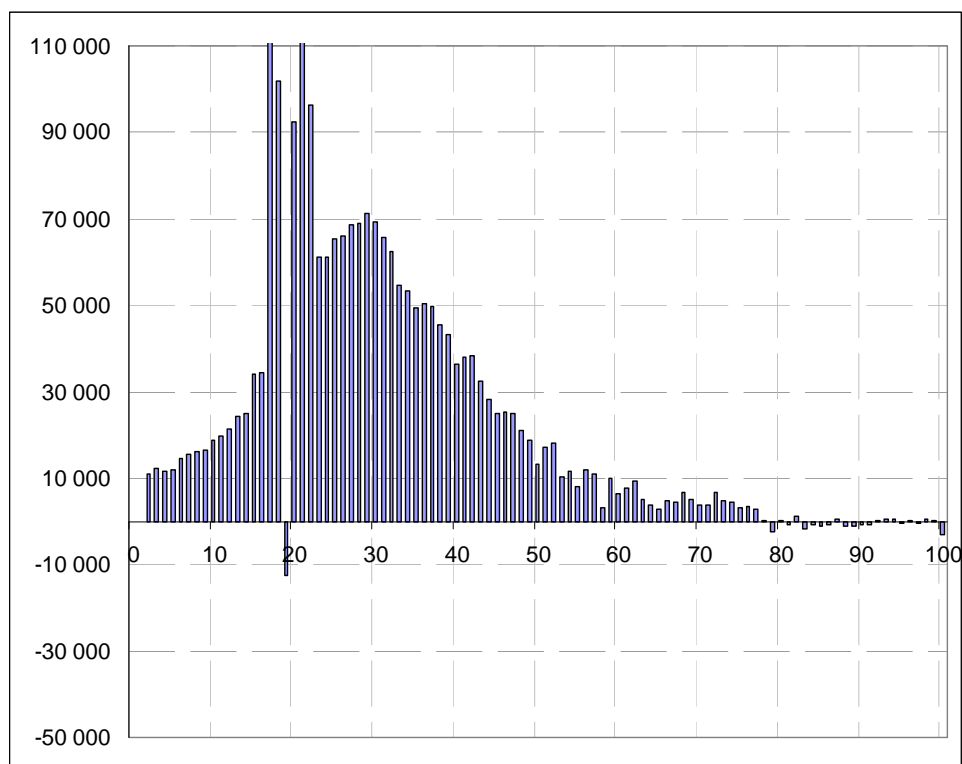
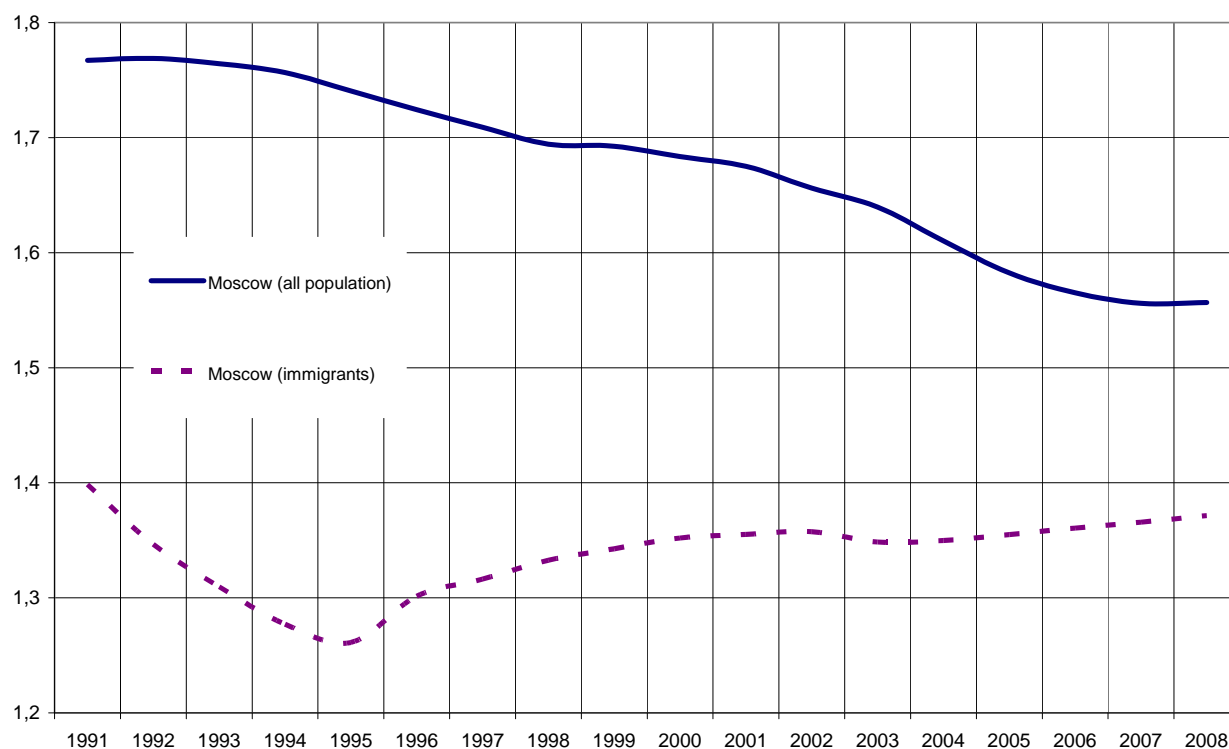


Diagram 11. Comparison of the LDLE level of migrants and population of Moscow (1990-2008)



The graphs presented here on the division of migrants by age of arrival to Moscow allows us to understand the reasons for the sharp reduction in the level of

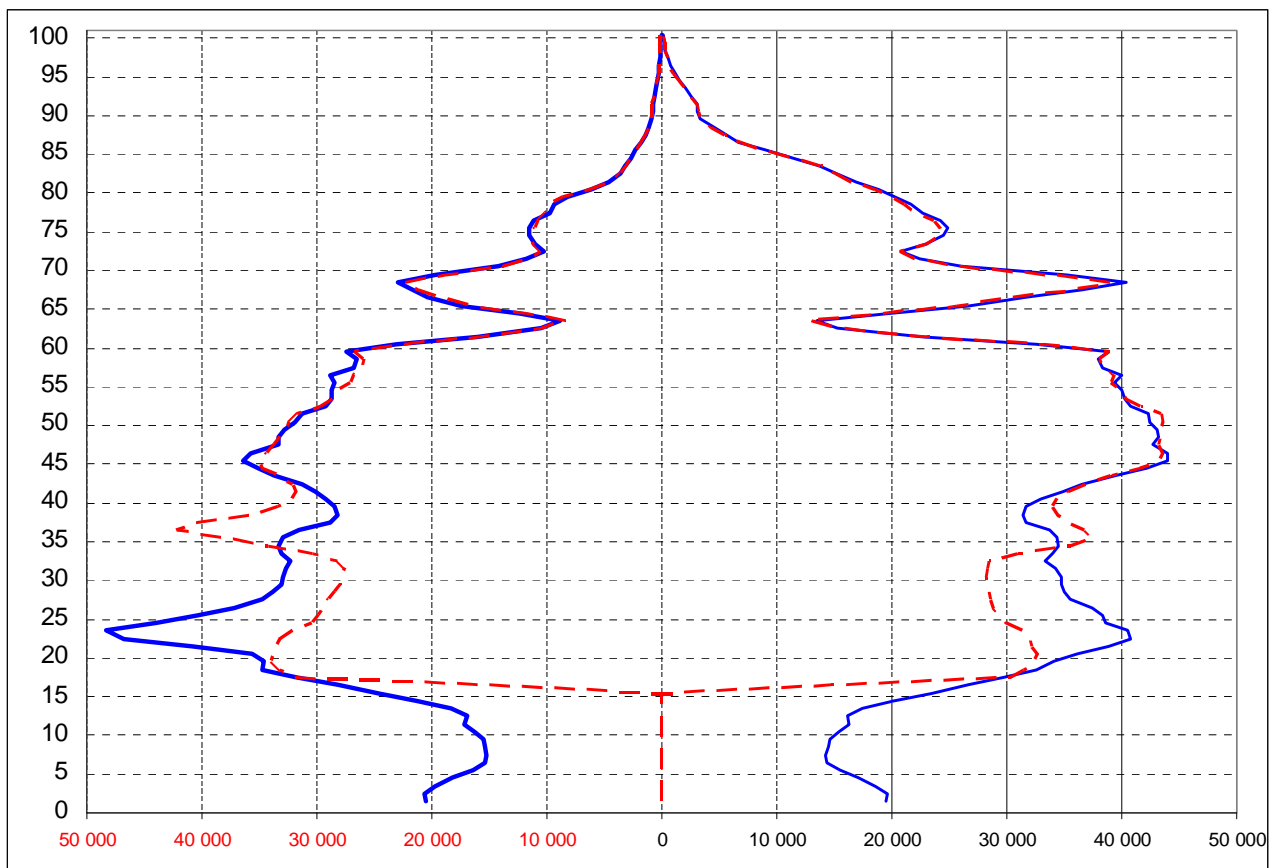
LDLE here during the analyzed period: migrants in the age group of work-able (20-60 years) predominated over the entire period from 1990 to 2008.

Currently, average three work-able people coming to Moscow account for one dependent. In general for Russia (excluding Moscow) one dependent accounts for almost one newly arrived work-able migrant.

St. Petersburg

The population of the Northern capital of Russia for the analyzed period decreased by 500 thousand people (4.57 million people - 2008.). This is mainly the result of excess of deaths over births. However it is interesting to note that the calculations similar to those done for Russia (Figure 2) and Moscow (Figure 7) indicates that a certain contribution to the declining population of St. Petersburg was made by the emigration from the city (see Figure 12).

Figure 12. Influence of migration on the age-sex structure of the population of St. Petersburg during the period of 1990-2008.



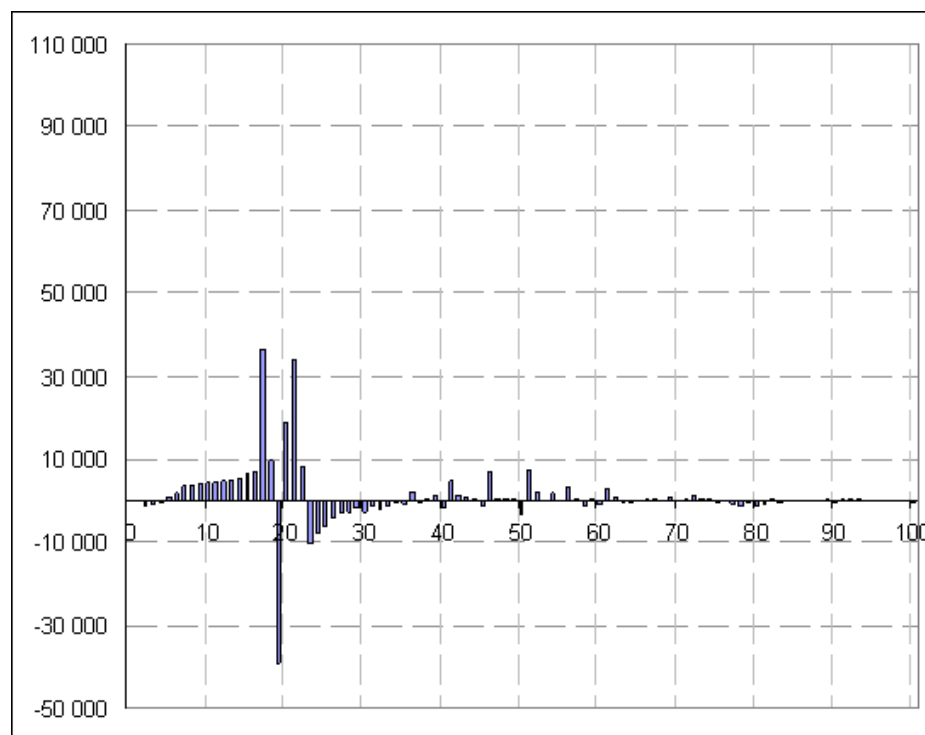
During the analyzed period, the relative level of migration for St. Petersburg in 1990-2008 (migration balance for the period to the population at its end) was 4.4%. This figure for Russia was approximately at the same level - 3,9%, relative migration rates for the same period in Moscow - 22,7%.

Almost complete coincidence of the two loops (see Figure 12) in the age range of 45 years and older, as well as the minimum positive balance of migration in the

range of 20-45 years old, tells us that the city demographically stagnates with the rats characteristic of the Russian Federation as a whole. This finding is consistent with the data of the division schemes of migrants in St. Petersburg by age of arrival (departure) in the period 1990-2008, presented in Figures 13, 14, 15.

The momentum of migration in St. Petersburg was assured by students, during the analyzed period, which coincides with the specifics of the division of higher educational institutions across the country. At the age of 23-25 years, which coincides with the time of obtaining higher education, there was a substantial outflow from the city (up to 20 thousand people per year).

Figure 13. Division of migrants by age of arrival (departure) during the period of 1990-2008. (St. Petersburg, men)



It is interesting that the outflow of the male population of military (conscript) age (19 years) in St. Petersburg is more clearly pronounced than in Moscow. Simultaneously, the inflow of men in the age category 20-22 years is considerably weaker than in Moscow.

The age structure of migration flow into St. Petersburg has a unique imbalance between the migration of children under the age of 17 years and the migration of adults.

Sufficiently substantial inflow of children (about 4,5 thousand people per year), as seen from the division schemes of migration flows by age, was not accompanied by the influx of population between the ages similar to the age of their parents.

Figure 14. Division of migrants by age of arrival (departure) during the period of 1990-2008 (St. Petersburg, women)

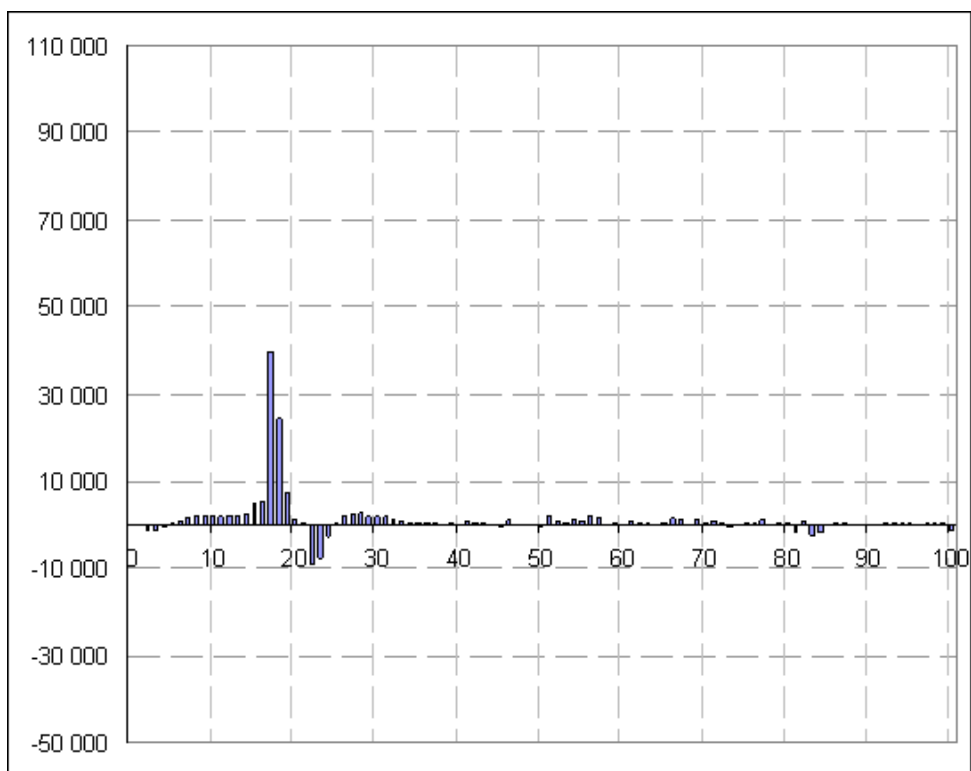
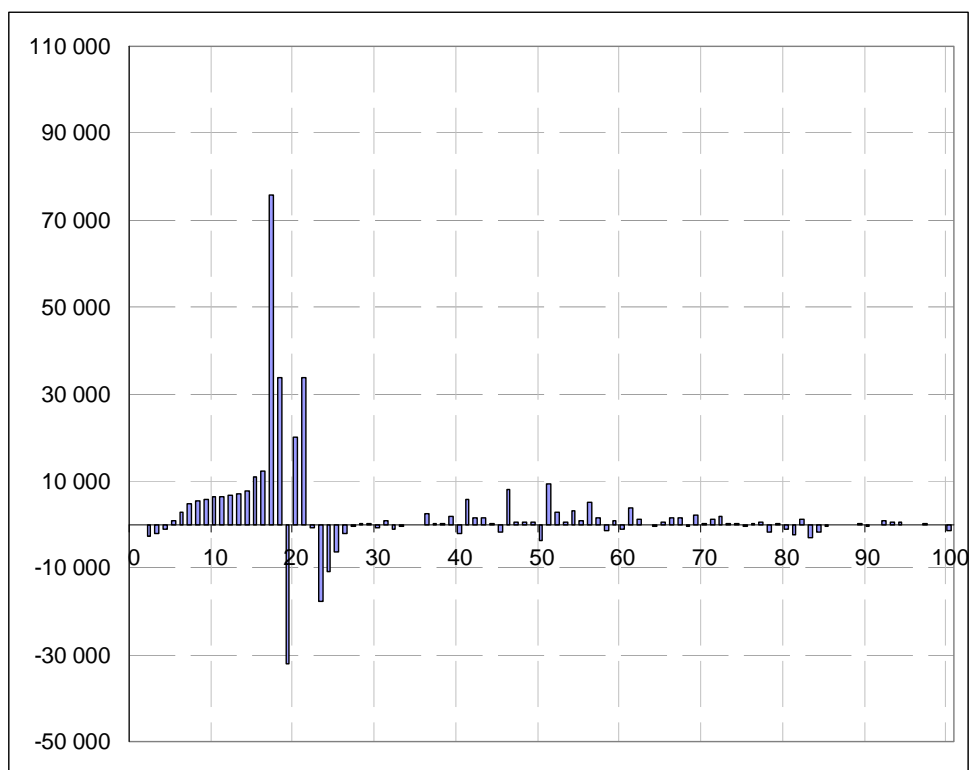


Рис.15. Division of migrants by age of arrival (departure) during the period of 1990-2008 (St. Petersburg, men + women)



Conclusion.

Comparison of the sex-age structures of migration in Russia, Moscow and St. Petersburg shows that the migration attractiveness of the Northern capital is approximately equal to all-Russian, and absolutely incomparable to Moscow. On the basis of objective data, characterizing the overall (all ages) migration, the attractiveness of the conditions of their stay in Moscow is valued by the migrants 5 times higher than in St. Petersburg. And if we consider the level of migration, to these cities, of citizens in the age of the maximum potential work-ability (age range 25-45 years), as a measure of the level of opportunities offered to newcomers, Moscow's predominance is absolutely clear.

Moscow is regarded by migrants as a place to work, to solve their financial problems, in this respect it opposes St. Petersburg, a city that is not in a position to offer not only similar, but more or less close opportunities. Our calculations can also be regarded as a reflection of public expression on the issues of business attractiveness of the two capitals. In this voting Moscow won with a huge advantage.

It is extremely difficult to find a valid explanation for this fact.

Based on the data reflected in Figure 1 and Table 1, as well as take into account the prevailing, exceeding the national average, level of real wages in St. Petersburg, then we must admit that the objective characteristics are fairly high (in terms of Russian standards). And all this together indicates that there are other significant factors that minimize the attractiveness of this city for migrants.

The analysis conducted in this work, suggests that the example of two capitals of Russia is a reflection of the existence of qualitatively different models of demographic development of large urban agglomerations.