# COMPARATIVE STATISTICAL EVALUATION OF THE STUDENTS' STRUCTURE OF THE UNIVERSITIES OF RUSSIA AND GREAT BRITAIN: STRUCTURAL AND DYNAMIC ASPECT

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***Keywords:*** structural and dynamic changes, generalization structure indices, forms of education, gender, undergraduate and postgraduate training.

In the following article the analysis of structural and dynamic changes in the students' structure of the universities of Russia and Great Britain in the period from 1995/96 to 2006/07 study years is accomplished and comparison on the following indices is conducted: study form, gender, nationality, specialties. The structural and dynamic analysis is targeted at revealing general regularities in both countries.

At present time we can observe the process of internationalization that takes place in various spheres of life and in education as well. That is why in order to accomplish comparative statistical analysis there is a necessity in the objective evaluation, revealing the quantitative regularities on the base of the system of statistic indices. The subject of our research is Russia and Great Britain. Great Britain - because historically it is the basis of high school. This country is famous by its old universities, the system of which was taken as the basis of Bologna process. While in Russia such systems are still being formed, in Great Britain they have the character of stable statistical regulations. Studying the quantitative sides of the regulations mentioned above and revealing them, we can predict the development of the internal, external and postgraduate university training in Russia.

In the following article the analysis of structural and dynamic changes in the students' structure of the universities of Russia and Great Britain in the period from 1995/96 to 2006/07 study years is accomplished and comparison on the following indices is conducted: study form, gender, nationality, specialties. The structural and dynamic analysis is targeted at revealing general regularities in both countries.

The analysis of structural and dynamic changes in the students' structure in high school in Russia and Great Britain is conducted using the data represented on the official site of HESA, the body responsible for the statistical research in the educational sphere of Great Britain, and in Russian statistical yearbook "Education in Russian Federation: 2007".

Higher education in Great Britain is represented by the following study forms: full-time, part-time, combined, external studies. For the convenience of comparing Russian education system with a British one the group "full-time studies" includes both full-time and combined form, and the group "part-time studies" includes part-time and external studies[1]. As a result, we can represent in the diagram (Fig. 1) the following correlation of full-time and part-time education in the dynamics of 2006/07 to 1995/96 study year.

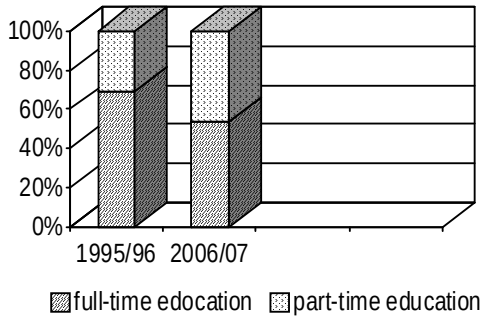


*Fig. 1.* **The correlation of full-time and part-time students in Russia in the dynamics of the 2006/07 to the 1995/96 study year**

In 1995/96 study year the number of full-time students was 69% from the total number, and part-time students - 31%. In 2006/07 study year the number of full-time students was 54% from the total number, and part-time students - 46%.

As for gender in Russia we observe the following correlation of male and female students in the dynamics of the 2006/07 to the 1995/96 study year (Fig. 2).

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*Fig. 2.* **The correlation of female and male students in Russia in the dynamics of the 2006/07 to the 1995/96 study year**

In the 1995/96 study year the number of female students was 54,4% from the total number and male students - 45,6%. In the 2006/07 study year the number of female students was 58,3% from the total number, and male students - 41,7%.

As for the nationality we compare the 2006/07 year with the 1999/00 because of the absence of data (Fig. 3). Total quantity of students is split into foreign and Russian students.

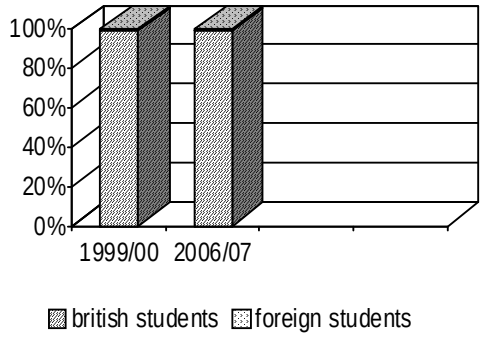


*Fig. 3.* **The correlation of foreign and Russian students in Russia in the dynamics of the 2006/07 to the 1999/00 study year**

In the 1999/00 study year the number of Russian students was 99% from the total number, and foreign students - 1%. In the 2006/07 study year the number of Russian students was 98,8% from the total number, and foreign students - 1,2%.

As for the specialties the whole amount of high education in Russia is divided into nine groups: healthcare, natural sciences and mathematics, humanitarian-social and economic sciences, education, computer sciences, engineering and technologies, architecture and construction, agriculture, others - we have cut the classification suggested by the statistical yearbook "Education in Russian Federation: 2007" in order to accomplish the comparative analysis with the educational system of Great Britain.

In 1995/96 study year it is possible to observe the following picture of students' distribution according to specialties (Fig. 4).

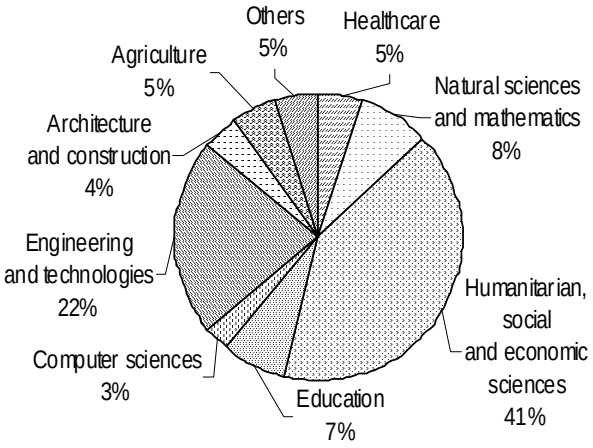


*Fig. 4.* **The correlation of students of different specialties in Russia in 1995/96 study year**

5% from the total number of students come to healthcare, for natural sciences and mathematics - 8%, for humanitarian-social and economic sciences - the majority of 41%, education - 7%, computer sciences - 3%, engineering and technologies - 22%, architecture and construction - 4%, agriculture - 5%, others - 5%.

In 2006/07 study year the situation was the following (Fig. 5).

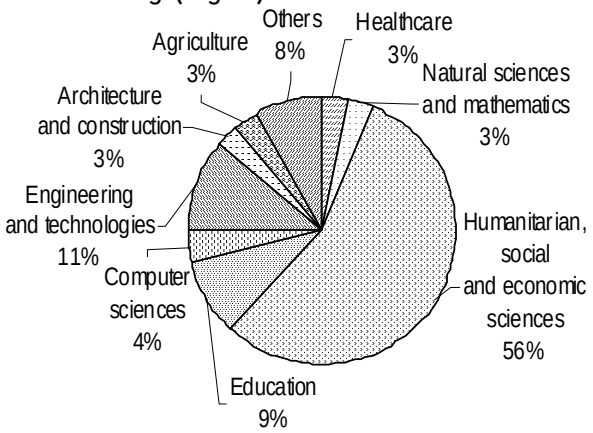


*Fig. 5.* **The correlation of students of various specialties in Russia in 2006/07 study year**

3% from the total number of students come to healthcare, natural sciences and mathematics - 3%, humanitarian-social and economic sciences -56% (the majority), education - 9%, computer sciences - 4%, engineering and technologies - 11%, architecture and construction - 3%, agriculture - 3%, others - 8%.

The indices of Gatev, Salai, Ryabtsev are used as the generalization structure indices[2]. Below we

*Table 1*

**Generalization structure indices of Russian education in the dynamics of 2006/07 to 1995/96 study year**

| Criteria of evaluating structure differences | Index of Gatev | Index of Salai | Index of Ryabtsev |
|---|---|---|---|
| Due to study forms | 0,196 | 0,083 | 0,14 |
| Due to gender | 0,054 | 0,031 | 0,038 |
| Due to nationality: 2006-07 to 1999-00 | 0,002 | 0,064 | 0,001 |
| Due to specialty | 0,259 | 0,252 | 0,186 |

represent the results of calculating these indices and comparing them in dynamics (Table 1).

As we see from the table there were no big changes in the period from 1995/96 to 2006/07 study year. Analyzing the distribution due to study forms we observe the low level of difference; if we consider the distribution due to gender, the level of structure difference is even less - rather low. As for the distribution due to nationality, we observe the identity of structures. It is possible to observe the considerable level of structure differences only in the distribution due to specialties.

Higher education in Great Britain is represented by full-time and part-time study forms (Fig. 6)[3].

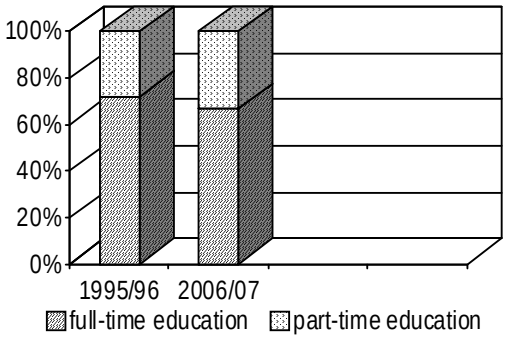


*Fig. 6.* **The correlation of full-time and part-time students in Great Britain in the dynamics of the 2006/07 to the 1995/96 study year**

The number of full-time students of Great Britain was 72% from the total number in 1995/96 study year, and part-time education - 28%. In 2006/07 study year the number of full-time students was 67% from the total number, and part-time education - 33%.

As for gender in Great Britain we observe the following correlation of male and female students in the dynamics of 2006/07 to 1995/96 study year (Fig. 7).

In 1995/96 study year the number of female students was 52,6% from the total number, and male students - 47.4%. In 2006/07 study year the number of female students was 58,5% from the total number, and male students - 41,5%.

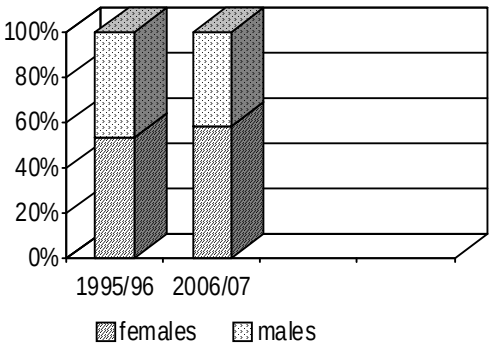


*Fig. 7.* **The correlation of female and male students in Great Britain in the dynamics of the 2006/07 to the 1995/96 study year**

As for nationalities in Great Britain we compare 2006/07 and 1995/96 (Fig. 8)

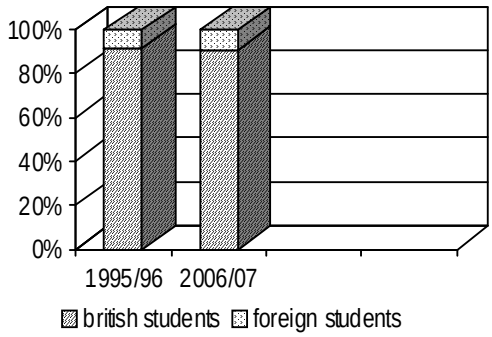


*Fig. 8.* **The correlation of foreign and British students in Great Britain in the dynamics of the 2006/07 to the 1995/96 study year**

In 1995/96 study year the number of British students was 91,5% from the total number, and foreign students - 8.5%. In 2006/07 study year the number of British students was 90,7% from the total number, and foreign-students - 9,3%.

As for specialties the total number of higher education in Great Britain is represented by the same nine groups.

In 1995/96 study year it is possible to observe the following distribution of students according to the specialties (Fig. 9).

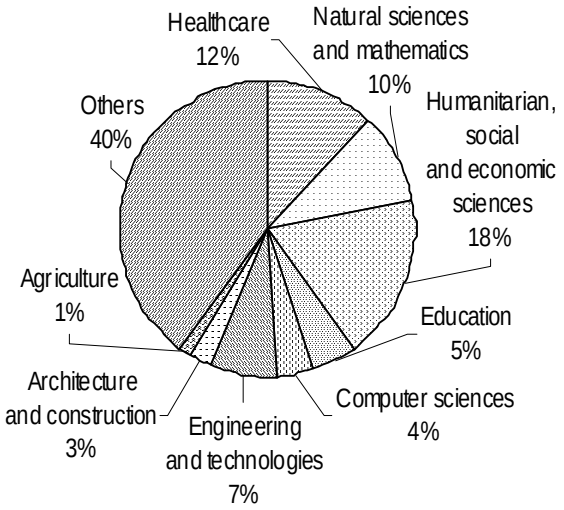


*Fig. 9.* **The correlation of students of various specialties in Great Britain in 1995/96 study year**

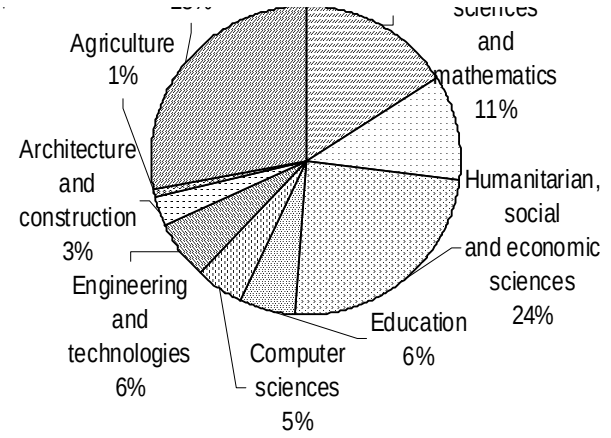


*Fig. 10.* **The correlation of students of various specialties in Great Britain in 2006/07 study year**

12% from the total number of students come to healthcare, for natural sciences and mathematics - 10%, humanitarian-social and economic sciences - the majority of 18%, education - 5%, computer sciences - 4%, engineering and technologies - 7%, architecture and construction - 3%, agriculture - 1%, others - 40%.

In 2006/07 study year there was the following situation (Fig. 10)

16% from the total number of students come to healthcare, for natural sciences and mathematics - 11%, humanitarian-social and economic sciences - the majority of 24%, education - 6%, computer sciences - 5%, engineering and technologies - 6%, architecture and construction - 3%, agriculture - 1%, others - 28%.

Below the results of calculating the indices of Gatev, Salai, Ryabtsev are represented (Table 2).

According to the scale evaluating the level of structure differences with the help of the Index of Ryabtsev while analyzing the distribution due to the study forms and gender, there is a rather low level of structure differences. As for the share of foreign students and distribution according to specialties the structures are identical. Thus, having analyzed structural shifts in dynamics, it is possible to make a conclusion that structural shifts in Russian educational system are more significant and, as a consequence, the system itself is more dynamic.

The comparative analysis of the mentioned gradations of structures between the countries for certain time periods was conducted.

Below it is possible to get acquainted with the results got after comparing the data of Russia and Great Britain (Figures 11-13, Tables 3-4).

In order to accomplish comparative analysis and summarize the information the following table is made (Table 5).

Having studied the structure of students of the universities of Russia and Great Britain in the comparative structural and dynamic aspect on the basis of the indices of structural shifts of Ryabtsev, Salai and Gatev, it is possible to make a conclusion that in the studied period the structure of both countries is identical or has a low level of differences if we analyze the distribution due to study forms and gender. Consequently, it is possible to conclude that the structures are similar and any comparative analysis is reasonable.

We can observe the differences while comparing the structures due to nationality. In Russia the share of foreign students is 1% with small fluctuations during the period, in Great Britain - is about 9%, though the price of education is higher. Consequently, we see the attractiveness

*Table 2*

**Generalization structure indices of British education in the dynamics of 2006/07 to 1995/96 study year**

| Criteria of evaluating structure differences | Index of Gatev | Index of Salai | Index of Ryabtsev |
|---|---|---|---|
| Due to study forms | 0,065 | 0,059 | 0,046 |
| Due to gender | 0,082 | 0,054 | 0,058 |
| Due to nationality | 0,008 | 0,031 | 0,006 |
| Due to specialty: 2006-07 to 1996-97 | 0,22 | 0,011 | 0,005 |

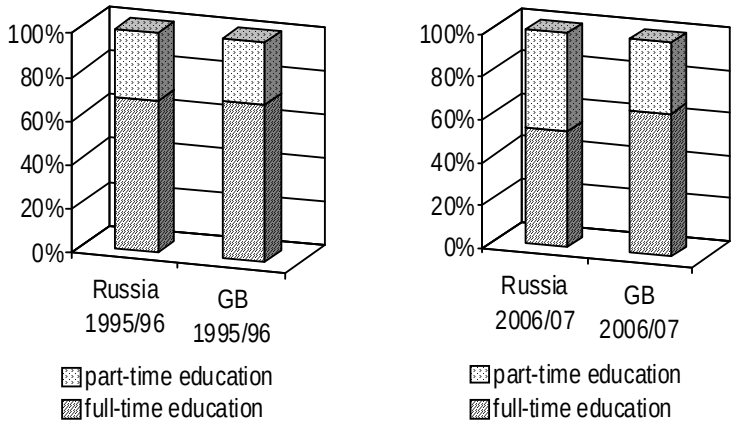


*Fig. 11.* **The correlation of full-time and part-time students in Russia and Great Britain in 2006/07 and 1995/96 study years**

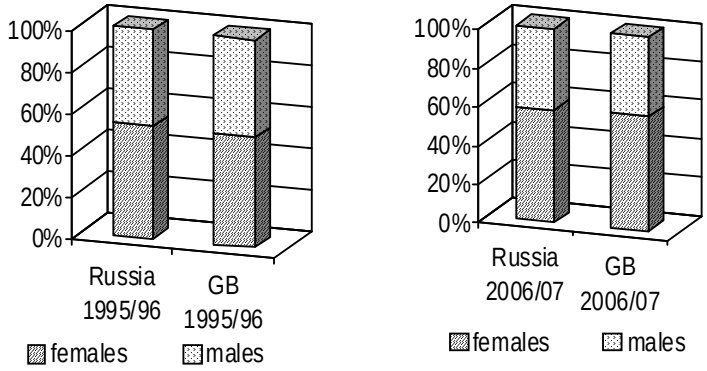


*Fig. 12.* **The correlation of female and male students in Russia and Great Britain in 2006/07 and 1995/96 study years**

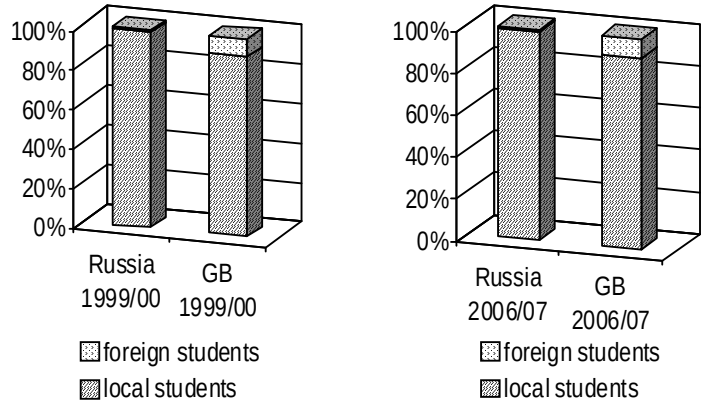


*Fig. 13.* **The correlation of foreign and local students in Russia and Great Britain in 2006/07 and 1990/00 study years**

of British education for foreign students that has a positive impact on the education system in the form of a great number of foreign investments. Having studied the dynamics of the development of the share of foreign students in Great Britain in the period from 1995/96 to 2006/07 study year, considerable changes were not found. This contradicts to the common opinion that nowadays the number of foreigners makes from 15 to 25% from the total number of GB students. According to our calculations this makes about 9% from the total number of higher education students. In the period from 1995/96 to 2006/07 study year the changes were not big - from 8,5 to 9,3%. All this doubt the forecast of the Ministry of Education of UK that was published on the Internet about the fact that the number of foreign students will triple by the year 2020.

As for comparing the structures due to specialties we observe the considerable level of dif-

*Таблица 3*

**Распределение студентов по специальностям в 1995/96 учебном году, %**

| Specialty | Russia | Great Britain |
|---|---|---|
| Healthcare | 5 | 12 |
| Natural sciences and mathematics | 8 | 10 |
| Humanitarian, social and economic sciences | 41 | 18 |
| Education | 7 | 5 |
| Computer sciences | 3 | 4 |
| Engineering and technologies | 22 | 7 |
| Architecture and construction | 4 | 3 |
| Agriculture | 5 | 1 |
| Others | 5 | 40 |

*Таблица 4*

**Распределение по специальностям в 2006/07 учебном году**

| Specialty | Russia | Great Britain |
|---|---|---|
| Healthcare | 3 | 16 |
| Natural sciences and mathematics | 3 | 11 |
| Humanitarian, social and economic sciences | 56 | 24 |
| Education | 9 | 6 |
| Computer sciences | 4 | 5 |
| Engineering and technologies | 11 | 6 |
| Architecture and construction | 3 | 3 |
| Agriculture | 3 | 1 |
| Others | 8 | 28 |

*Table 5*

**Generalization structure indices of Russian and British education in 1995/96 study year**

| Criteria of evaluating structure differences | Index of Gatev | Index of Salai | Index of Ryabtsev |
|---|---|---|---|
| Due to study forms | 0,039 | 0,001 | 0,0004 |
| Due to gender | 0,025 | 0,025 | 0,017 |
| Due to nationality | 0,083 | 0,566 | 0,059 |
| Due to specialty | 0,431 | 0,353 | 0,345 |
| Generalization structure indices of Russian and British education in 2006/07 study year | | | |
| Due to study forms | 0,178 | 0,137 | 0,127 |
| Due to gender | 0,02 | 0,001 | 0,001 |
| Due to nationality | 0,085 | 0,545 | 0,06 |
| Due to specialty | 0,565 | 0,428 | 0,436 |

ferences both in 1995/96 and 2006/07 study years. It is possible to observe the differences between the countries, but not in dynamics. In Russia humanitarian, social and economic sciences are the most popular, on the second place - engineering and technologies. The share of other specialties makes more than 10%. In Great Britain the first place is for the group "Others" that includes business-administration, mass media, paper work, art studies and design. The second place - humanitarian, social and economic - 18%. In 2006/07 study year the distribution between these two groups is more homogeneous: others - 28%, humanitarian, social and economic - 24%. Such disciplines as healthcare (the third place), natural sciences and mathematics (the second place) make more than 10%.

The conducted comparative analysis makes it possible to conclude that in Russia and Great Britain there are both general features and specific moments that differ one country from another. All this influences the structure of graduates, their qualitative characteristics and has the character of stable statistic regularities. Both general and specific statistic regularities of forming the contingent of high school students of different countries should be taken into consideration while developing high school programs and evaluating the perspectives of countries participating in the Bologna process.

[1] Calculations in Figures 1-5 are done on the basis of the data represented in Russian statistical yearbook "Education in Russian Federation: 2007".

[2] Regional statistics: Study book/ Edited by E.V Zarova, G.I. Chudilin. - M.: Finance and statistics, 2006.

[3] Calculations in Figures 6-10 are done on the basis of the data represented on the official site of the statistics of education of Great Britain http://www.hesa.ac.uk.