Employment Clubs in Russian Regions: spatial-econometric approach

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This paper is devoted to the study of one of the most important indicators of the labor market – level of regional employment. The purpose is to divide the regions of Russia on the employment clubs and to test hypotheses about the differences 1) in the spatial effects and 2) in the impact of the various explanatory variables on employment in these clubs.

Our sample consist of 80 regions. The data used in the research was available for public access via the website of the Federal State Statistics Service (FSSS) of the Russian Federation. The information covered the period of nine years from 2005 to 2013.

As the dependent variable we have used level of the employment in the region.

Initially we split all regions into four groups (using the Moran scatter plots with the weighting matrix of common borders) for each year: High-High group (regions with high level of employment surrounded by regions with high level of employment), High-Low group (regions with high level of employment surrounded by regions with low level of employment), Low-High group (regions with low level of employment surrounded by regions with high level of employment), and Low-Low group (regions with Low level of employment surrounded by regions with Low level of employment).

Since the group High - Low and Low – High were presented by a small number of regions (5 and 11 respectively) and their instability, it was decided to join these groups to stable groups. Regions of the High - Low group were joined to the High – High group, and the regions of the Low – High group were joint to Low-Low group. In addition, a group of regions Low - Low was divided into two parts according to their geographic location: the southern regions and regions of southern Siberia. Thus, we have divided all Russian regions into three club: Low-Low1 club (southern regions, red color in figure), Low-Low2 club (regions of southern Siberia, pink color in figure), and High-High club (all other regions, green color in figure).

Figure. Employment clubs in Russia

As the explanatory variables we have used variables that characterize the attractiveness of the region (GDP per capita, population density, the share of urban population), demographic characteristics of the region (population share above/below the working age, the share of people with higher education in the employed population, migration net rate). To take into account the degree of diversity of employees by economic activities, the Herfindahl- Hirschman index was calculated.

To test our main hypotheses we have used spatial regression dynamic model, estimated with the help of the generalized method of moments.

Spatial effects for the three employment clubs were different. Only the spatial coefficient for Low-Low 1 club was significant and positive. It means that in southern regions of Russia an increase of the employment rate in one region leads to an increase of employment in neighbor regions.

Regarding the impact of the explanatory variables, the "club effect" has been revealed for the variables *share of urban population*, *population density, the share of people with higher education, immigration rate and the Herfindahl – Hirschman index.*

The influence of *GDP per capita* and the *share of the population above working age* on the level of employment were insignificant.

The estimate of the coefficient of the variable *share of the population below working age* is negative and does not demonstrate the "club effect". With an increase in the population aged less than 16 years, the level of employment is reduced.

The increase in the *share of urban population* reduced employment in the club Low-Low1. This can be explained by the fact that a large proportion of the various economic activities in the southern regions are engaged in agriculture.

The impact of *population density* on the employment rate was various for different clubs. For the High - High Club this factor has a significant negative effect, in regions with a high level of employment increasing in the *population density* decreases employment. This could be

explained by competition in labour market. For a Low - Low 2 club we observed the opposite situation. The employment is increasing in the regions of South Siberia with increasing the *population density*. This result is quite expected. In the regions of this club the population density is quite low, and every year there is an outflow of the labor force. As for the club Low - Low1, the effect of density was insignificant.

The coefficients of the variable *share of people with higher education* were significant and positive (but different for the three clubs). This suggests that the higher the proportion of people with higher education, the higher employment, but the degree of influence of each club is different.

Net migration rate has a significant negative effect on the regions of High – High Club. With an increase in migration increase the level of employment is reduced. This result is explained by the competition. For a club Low - Low1 we observed the opposite effect, an increase in migration flows increases level of employment.

Increase of Herfindahl - Hirschman Index index causes a decrease of employment. The higher the Herfindahl - Hirschman Index index the less number of economic activities in the given region. That is why people have less alternatives on the labour market. Moreover, specialists can lose your job during reducing the economic activities.

Our hypotheses received empirical confirmation. Our results can favor a better design of national and regional policies for improving labour market performance in Russia.