International Business Management 10 (24): 5727-5733, 2016
ISSN: 1993-5250

The Youth Unemployment in Russia: Convergence and Spatial Analysis

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Abstract: The purpose of this research is to assess the impact of spatial effects and external factors on the level and dynamics of the Youth Unemployment Rate (YUR) in Russian regions. The analysis based on the panel data for 55 Russian regions in 2002-2013, using four variants of spatial weight matrices. Special attention was focused on the correlation YUR with the distance between a capital and the center of the region. We are used models of unconditional and conditional convergence with spatial effects the dynamics for analysis of youth unemployment.

Key words: Unemployment, spatial correlation, panel analysis, convergence, regions

INTRODUCTION

As a whole the unemployment problem among the youth in Russia repeats world tendencies in the field. In 2013 the specific weight of the unemployed aged up to 30 years old was equal to 41.2% in a total number of the unemployed, though the share of the youth in the number of the economically active population made only 10.1%. Thus, the Youth Unemployment Rate (YUR) exceeds Total Unemployment Rate (TUR) in 4.1 times, at that in the group of 15-19 years old in 4.8 times, in the group of 20-29 years old in 2.3 times. These differences are characteristic for the European countries too (Berlingieri *et al*., 2014). Considerable regional differences in the economic and social sphere and in particular, in the sphere of the youth unemployment, provoke two questions what are the prospects of convergence (or divergence) of the regions on this parameter and is there a dependence of the unemployment coefficient in the region on the unemployment rate in other regions (spatial correlation). From the point of view of influence on the level and dynamics of the unemployment (like, possibly, many other factors) the distance to Moscow actually the unique center of social and economic life of Russia can play a special role.

MATERIALS AND METHODS

Active research of the problem of the statistical estimation of the spatial effects began with the fundamental work (Anselin, 1988). With regard to the unemployment the spatial analysis was used for Great Britain (Molho, 1995), Spain (Lopez *et al*., 2012) Italy (Cracolici *et al*., 2009) and 11 countries of Western Europe (Niebuhr, 2003). In the research by Fuchs and Izem (2012) clear distinction of the unemployment rates in the western and eastern states of Germany (not in favor of the last ones) is statistically proved. It confirms the expediency of selection and consideration of separate spatial clusters in the unemployment studying.

The spatial analysis occupies a certain place in the works devoted to Russia, considering a big variety of social and economic conditions in the regions of this country, in particular, huge differences in the unemployment rate (Shilov and Moller, 2009). Influence of the financial crisis on the youth unemployment rate, proved statistically (Tanveer *et al*., 2012) is also important. From the point of view of the subject of the research the studies by Demidova and Signorelli (2011, 2012) and Demidova *et al*. (2013, 2015) are especially important. In particular, in the research by Demidova *et al*. (2013) existence of the spatial autocorrelation for YUR was statistically proved and the spatial panel analysis with selection of two clusters (Eastern and Western) was carried out. There also were obtained significant ($p<0.01$) values of Moran's I for 2000-2009 however, for the group of "Eastern" regions (21 of 75 regions) Moran's indices proved to be insignificant. It makes it possible to assume that influence of the spatial effects sharply weakens to the East from the Urals. As for exogenous explanatory variables, in the specified article four blocks of the indices independent of the spatial effects were considered:

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socio-demographic, migratory, economic and indices of export-import activity of the region. However, it was possible to establish significant relations with YUR only for few indices, namely for TUR and a share of persons at the age of 20-29 years old in the population, that is obvious and is of no interest from the point of view of fight for decrease in the youth unemployment. Nevertheless, it is necessary to recognize the obtained results very important. In particular, it was rejected the hypothesis about influence on YUR of a share of persons older than 60 years old among the employed, supposedly "obstructive" for the youth in the fight for workplaces.

In the research by Demidova *et al.* (2015), the comparative analysis of the youth unemployment in the "Southern" and "not-Southern" regions of Russia and Italy was carried out, at that for Russia the age group of 20-29 years and for Italy the age group of 15-24 years (according to the International Labor Organization standards) was used. This methodological difference, probably, makes the comparative analysis of the youth unemployment in Russia and the EU countries not absolutely correct. There are doubts also in possibility of comparison of the results for Russia (75 regions) and Italy (20 regions), as asymptotic estimates of the fixed and random effects for Italy will differ much more considerably (Matyas and Sevestre, 1995). Check on existence of influence on YUR of the population density and GDP per capita for Russia gave negative results (Demidova *et al.*, 2015). It should be noted that now GDP per capita, often understood as the "universal" factor of welfare is exposed to serious criticism (Kubiszewski *et al.*, 2013). Besides, one of the peculiarities of the Russian labor market, in comparison with other post-socialist economies is the weakest dynamic interrelation between the employment and GDP.

Questions of the unconditional and conditional beta convergence of the Russian regions with involvement of the methods of spatial econometric were considered by (Kolomak, 2011). In all these works the average per capita income of the population, according to the theory which bases were put in the scientific research (Barro and Sala-i-Maritn, 1992) was an object of research. The problem of the convergence of the total unemployment rate in Russia was indirectly mentioned in the research by Vakulenko (2016) when studying influence of migration, however, the question of the convergence of the youth unemployment was not considered in it. In the research of (Anselin, 1988, 2002; Martin and Ottaviano, 1999) various versions of the weight matrices for accounting of the spatial lag, the necessary condition for which are zeroes on the main diagonal that excludes influence of the region on itself, are considered. The most widespread types of matrices is a neighbour matrix and a matrix of distances.

A neighbour matrix:

$$W_{ij} = \begin{cases} 0, \text{if } i = j \\ 1, \text{if i and j are spatial neighbours} \\ 0, \text{if i and j are note spatial neighbours} \end{cases} \quad (1)$$

A matrix of distances:

$$W_{ij} = \begin{cases} 0, \text{if } i = j \\ \dfrac{1}{d_{ij}}, \text{if } d_{ij} \le D(q) \\ 0, \text{if } d_{ij} > D(q) \end{cases} \quad (2)$$

Where:

d_{ij} = Distance between the centers of the regions
$D(q)$ = Quartiles of the distances
q = 1- 4

In the research by Demidova *et al.* (2013), the matrix of distances with q = 4 was used that is all distances between the objects were considered. However, there are bases to believe that for Russia such a matrix won't be too suitable. First, in favor of it a considerably smaller mobility of the population of Russia in comparison with the EU countries speaks. In 2013 number of passengers of the railway transport made respectively 7.6 and 17.6 per capita of the population and number of air passengers 0.6 and 1.7. Moreover, the total passenger traffic in Russia is steadily reduced from 44.85 billion passengers in 2000 to 19.59 billion in 2013 that is in 2.3 times or more than by 6% a year. Apparently, it speaks both of high cost of transport services and rather low level of comfort during movement not least connected with a bad condition of the transport infrastructure (Shcherbanin, 2013).

The 2nd factor is the super centralization of public life and economy of Russia, noted by Sievert *et al.* (2011). This circumstance reveals itself, in particular, at comparison of average income of the inhabitants of the capital with the average level of income through the country (Table 1).

No wonder that Moscow with its huge possibilities in the sphere of employment and high income is a powerful center of attraction of manpower resources, especially the ambitious youth. It is natural to assume that geographical proximity of such a city as Moscow should influence the rate of the total and youth unemployment. The Russian (strongly pronounced monocentric) spatial model sharply contrasts with the polycentric and decentralized system of the European Union. As it was already noted, in the east of the country the factor of

Table 1: Relation of the average level of income in the capital to average income through the country as a whole

Years	Berlin	Paris (Ile-de-France)	Moscow
2000	0.94	-	3.51
2005	0.89	1.32	2.97
2006	0.89	1.27	2.92
2007	0.89	1.24	2.82
2008	0.88	1.22	2.29
2009	0.89	1.24	2.49
2010	0.88	1.23	2.32
2011	0.86	1.21	2.28
2012	0.86	1.26	2.11
2013	-	-	2.12

Statistisches Bundesamt, Institut national de la statistique et des etudes economiques and Rosstat data

Table 2: Correlation coefficients between The Unemployment Rate (TUR, YUR) and the distance from the region center to Moscow (55 regions of European Russia)

Years	TUR	YUR
2003	0.511	0.390
2004	0.547	0.477
2005	0.509	0.442
2006	0.512	0.548
2007	0.522	0.463
2008	0.485	0.532
2009	0.423	0.510
2010	0.551	0.581
2011	0.540	0.566
2012	0.635	0.684
2013	0.637	0.555

Rosstat data

influence of the capital sharply weakens because of long distances and low transport connectivity, therefore in the analysis we considered it possible to be limited to 55 regions of European Russia, at that Kaliningrad region which does not have common borders with other Russian regions did not get into our list. For Moscow area the average distance from the area cities to Moscow was used (Table 2).

All coefficients are significant at the level of 0.001 that statistically confirms the assumption of existence of Moscow "agglomeration shadow" which covers the whole European part of Russia. Values of the coefficient with an independent variable fluctuated in the limits from 0.0018-0.0048 (on the average 0.0030) for TUR and from 0.0032-0.0060 (on the average 0.0042) for YUR. Thus, with the distance growth from Moscow on each 100 km the youth unemployment rate increases on the average by 0.42%. Therefore, the distance to the capital is an important explanatory factor for YUR. Unfortunately, this factor does not change in time that does not allow using it in the fixed effect model (Matyas and Sevestre, 1995).

Therefore, it was included indirectly through the spatial matrix of weights. The matrix modified in such a way includes all the distances from Moscow to the centers of the regions irrespective of the fact, whether they correspond to the restrictions. The similar matrix was already met, however in the specified work the contiguity markers, as in the matrix were used and not distances.

Table 3: Dynamics of Moran's I for the youth unemployment in 55 Russian regions

	Matrix of distances		Neighbour matrix	
Years	Ordinary	Modified	Ordinary	Modified
2002	0.298***	0.270***	0.122**	0.103**
2003	0.293***	0.259***	0.117**	0.078*
2004	0.347***	0.318***	0.136**	0.094**
2005	0.280***	0.245***	0.122**	0.088**
2006	0.315***	0.261***	0.118**	0.054**
2007	0.392***	0.377***	0.155**	0.120**
2008	0.408***	0.412***	0.147**	0.104**
2009	0.344***	0.324***	0.129**	0.067**
2010	0.256***	0.249***	0.092**	0.028*
2011	0.312***	0.299***	0.112**	0.067**
2012	0.376***	0.337***	0.161**	0.073**
2013	0.211***	0.222***	0.083**	0.034*

Rosstat data, coefficients are significant at: *p<0.05, **p<0.01, ***p<0.001

In the analysis 2 matrices neighbour and distances (q = 1) were used at that in the first of them instead of the contiguity markers the return distances between the objects were used: Estimates on the basis of the ordinary and modified matrices were compared. Thus, we used four weight inverted matrices: of distances and of neighbourhoods in the ordinary and modified versions. As d_{ij} the shortest distance on highways between the centers of the regions was taken. All matrices are standardized (the sum on every line is equal to one). For checking of the spatial autocorrelation existence we use Moran's test (Table 3).

Thus, it is possible to believe that existence of the spatial dependence is statistically confirmed for all versions of the matrices offered by us. It allows using them in the spatial panel analysis.

Spatial panel analysis: models and variables: Basic data is the panel of 55 Russian regions for 12 years (2002-2013), data of Rosstat (Russian State Statistics Service). The empirical models for analysis: SAR (Spatial Autoregression Model):

$$lny_{it} = \beta_0 + \beta_1 \sum_{j=1}^{N} w_{ij} lny_{it} + \beta_2 lnSmallBus_{it} + \beta_3 lnlnc_{it} + \beta_4 lnStud_{it-1} + \varepsilon \quad (4)$$

SEM (Spatial Error Model):

$$lny_{it} = \beta_0 + \beta_1 lnSmallEnt_{it} + \beta_2 lnlnc_{it} + \beta_3 lnStud_{it-1} + \varepsilon$$
$$\varepsilon = \lambda \sum_{j=1}^{N} w_{ij} e_{ij} + u,\ u = N[0, \sigma^2] \quad (5)$$

Where:

i = Number of the region
t = Time period
W_{ij} = Corresponding value of the matrix of distances

Table 4: Fixed effect models (non-spatial and SAR), depended variable ln(YUR)

		SAR model			
		Matrix of distances		Neighbour matrix	
Variables	Non-spatial model	Ordinary	Modified	Ordinary	Modified
Constant	7.3197 (0.3706)***	6.3265 (0.3441)***	6.4654 (0.3800)***	6.2150 (0.3769)***	6.7416(0.3635)***
Wln(YUR)		0.5486 (0.0387)***	0.3935 (0.0542)***	0.4694 (0.0561)***	0.3605(0.0566)***
ln(SmallEnterprises)	-0.4602 (0.0358)***	-0.3556 (0.0332)***	-0.4100 (0.0378)***	-0.3723 (0.0344)***	-0.4065(0.0366)***
ln(Income per capita)	-0.3227 (0.0519)***	-0.3485 (0.0441)**	-0.3034 (0.0469)***	-0.3040 (0.0444)***	-0.3247(0.0468)***
Ln(Stud(t-1))	-0.0684 (0.0427)	-0.1424 (0.0378)***	-0.1313 (0.0384)***	-0.1475 (0.0400)**	-0.1348(0.0396)***
F test (FE = 0)	7.34***	2.58***	2.80***	2.48**	2.75***
Breusch-Pagan test	290.00***	0.07	0.49	0.21	0.44
Hausman test	32.79***	135.86***	146.90***	121.28***	140.05***
Log-likelihood	-108.85	-55.54	-82.39	-73.94	-88.48
AIC	333.70	229.09	282.79	265.88	294.96

Robust standard errors in brackets under the coefficients: *p<0.05, **p<0.01, ***p<0.001

Table 5: Fixed effect models (SEM), depended variable-ln(YUR)

	Matrix of distances		Neighbour matrix	
Variables	Ordinary	Modified	Ordinary	Modified
Constant	7.3130 (0.3707)***	7.3197 (0.3710)***	7.3193 (0.3726)***	7.3202 (0.3700)***
Lambda	-0.2298 (0.1090)*	-0.2850 (0.1250)*	-0.0901 (0.0706)	-0.1330 (0.0822)
ln(SmallEnterprises)	-0.4605 (0.0357)**	-0.4598 (0.0357)***	-0.4601 (0.0357)***	-0.4602 (0.0358)***
ln(Income per capita)	-0.3222 (0.0519)***	-0.3234 (0.0516)***	-0.3229 (0.0516)***	-0.3228 (0.0519)***
ln(Stud(t-1))	-0.0679 (0.0422)	-0.0677 (0.0422)	-0.0682 (0.0424)	-0.0684 (0.0426)
F-test (FE = 0)	7.32***	7.32***	7.32***	7.33***
Breusch-Pagan test	291.217***	290.01***	289.28***	288.58***
Hausman test	31.94***	32.46***	32.33***	32.63***
Log-likelihood	-108.40	-108.84	-108.83	-108.57
AIC	334.79	335.87	335.67	335.68

Robust standard errors in brackets under the coefficients: *p<0.05, **p<0.01, ***p<0.001

SmallEnt = Number of small enterprises on 10000 people of the population

Inc. = Average income per capita in constant prices of 2002

Stud. = Number of students on 10000 people of the population (this factor is taken with a time lag in 1 year)

In SEM spatial dependence is modeled through an error vector ε that gives consistent though ineffective estimates unlike the biased and inconsistent estimates of the SAR Model (Getis *et al*., 2004). Multicollinearity among the explanatory variables is absent. For estimation of models' quality the method of maximum likelihood (the Arellano-Bond estimator was applied) and as an auxiliary parameter an Akaike Information Criterion (AIC) was used (Table 4). For comparison the parameters of the usual fixed effect model (without a spatial lag) are given which coefficient of determination made 0.605. All three explanatory variables are significant and the coefficients at them have a negative sign. However, it should be noted that the parameter Stud is significant only in the SAR Model (Table 5).

Comparison of models' quality is in favor of SAR. The SEM Models in all versions are approximately equivalent to the model without a spatial lag. Comparing versions of the weight matrices we come to the conclusion about advantage of a distances matrix over a neighbour matrix, on the one hand and about advantage of an ordinary matrix over the modified one on the other. In the SEM Models with use of the neighbour matrix significance of the parameter is not provided in the presence of an error (lambda) that also speaks in favor of the matrix of distances.

Analysis of convergence of the unemployment in the russian regions: The theory of sigma and beta convergence is based on the assumption of gradual approach in time of the regional levels of the factor. It is thus proved that existence of the sigma convergence is a sufficient but not necessary condition of the beta convergence and the beta convergence is a necessary but not sufficient condition of the sigma convergence (Young *et al*., 2008) (Table 6). Variation coefficient and Theil index are the most widespread factors reflecting dynamics of the sigma convergence. Rates of the youth unemployment in the Russian regions differed since 2002, however, since 2004 a degree of inequality began to decrease and reached a minimum in 2010 then the divergence process started again.

Table 6: Coefficient of variation and Theil index (YUR, 55 Russian regions)

Years	Coefficient of variation	Theil index
2002	0.3253	0.0918
2004	0.3944	0.1439
2006	0.3921	0.1328
2008	0.3346	0.1030
2010	0.2098	0.0428
2012	0.2598	0.0642
2013	0.2536	0.0644

Rosstat data

The beta convergence concept is based on the assumption that dynamics of the phenomenon inversely depends on its initial (basic) level. Thus, the phenomenon levels in the spatial section gradually approach (Sala-i-Martin, 1996a, b). For assessment of the unconditional (where growth is caused only by the initial level) beta convergences it is used the regression model of the form

$$g_y = C+b\ln y_0+\varepsilon \quad (6)$$

Where:

g_y = An average annual rate of growth
y_0 = A basic level of the factor
T = Number of years in the time period

If the coefficient b is negative the beta convergence takes place: the higher was the basic rate of YUR, the quicker it decreased (Sala-i-Martin, 1996a). The convergence rate will be equal to:

$$CR = -\frac{\ln[1+bT]}{T} \quad (7)$$

One of the main arguments of criticism of this model is that it considers only two points at the beginning and the end of a time series, disregarding changes in it that, certainly, makes the received estimates biased (Friedman, 1992; Quah, 1993) (Table 7). As fluctuations of the inequality degree of the regions were observed in the studied period, we will consider models of the unconditional beta convergence for some subperiods. The process of beta convergence began since 2004. The change which has been obviously connected with the crisis of the Russian economy in 2009 is clearly visible: during the period from 2004-2010 the significant convergence of the unemployment rates was observed, at that the process of convergence went more intensively in 2008-2010: the convergence rate made 31.29% a year that allowed to reduce twice the interregional gap just during 2.22 years. This circumstance allows assuming some lag effect of the regions' response to the crisis of 2008-2009. During the period from 2010-2012 the convergence was replaced by the divergence though the coefficient appeared to be insignificant. Therefore, it is a question not of the divergence but of stopping of the process of convergence.

Table 7: Unconditional convergence models (YUR, 55 Russian regions)

Time period	Y_0	Log-likelihood	Convergence rate (%)	Half-life convergence (years)
2002-2004	0.0327	39.69	-	-
2004-2006	-0.0785**	33.52	8.54	8.12
2004-2010	-0.0911***	109.23	13.18	5.26
2008-2010	-0.2326***	58.90	31.29	2.22
2010-2012	0.0588	50.06	-	-
2012-2013	-0.2603***	18.93	30.15	2.30

Coefficients are significant at: *p<0.05, **p<0.01, ***p<0.001

The problem regions with the high unemployment in which the unemployment ceased to decrease, apparently, served as a reason of it. At last, in 2013 the process of convergence proceeded, at that, practically with the same speed, as before the crisis. The analysis gives the chance to single out three temporal periods:

- 2004-2010: the steady convergence of the regions on the youth unemployment rate
- 2010-2012: the post-crisis shock, stopping of the process of approach of the regions
- 2012-2013: supposedly, continuation of the process of convergence

We consider the model of the conditional convergence (Barro and Sala-i-Maritn, 1992) assuming influence of the exogenous factors on YUR dynamics:

$$g_y = C+b_1\ln y_0+b_2X+\varepsilon \quad (8)$$

where, X is a matrix of natural logarithms of the exogenous variables. We use the variables which were already applied in the spatial panel analysis having added to them the distance to Moscow on highways (distM). It should be noticed that the variables Inc and Stud in these models appeared to be insignificant (Table 8). It is necessary to notice the restrictive influence of the degree of small business development on the growth rate of the youth unemployment rate, at that this interrelation remained significant even in 2010-2012. The distance to Moscow, on the contrary, influenced the growth rate only till 2010.

At last, the parameters of the model with the conditional convergence and the spatial lag was estimated of the form:

$$g_y = C+b_1\ln Wg_y+b_2\ln Wy_0+b_3\ln y_0+b_3X+\varepsilon \quad (9)$$

This model assumes that the basic rate of the neighboring regions and the growth rates in them also influence the growth rate of YUR besides the initial rate and the exogenous factors. In assessment we will use only two ordinary matrices as in the presence of the parameter distM in the model application of the modified matrices makes no sense (Table 9).

Table 8: Conditional convergence models (YUR, 55 Russian regions)

Time period	Y_0	SmallEnterprises	DistM	Log-likelihood	Convergence rate (%)	Half-life convergence (years)
2004-2010	-0.1390***	-0.0508***	0.0125***	118.14	29.93	2.32
2010-2012	-0.1404	-0.1630***	0.0220	58.49	16.48	4.21
2012-2013	-0.4654***	-0.2525***	0.0023	23.50	62.62	1.11

Coefficients are significant at: *p<0.05, **p<0.01, ***p<0.001

Table 9: Spatial conditional convergence models (YUR, 55 Russian regions)

	Matrix of distances (time period)			Neighbour matrix (time period)		
Varaibles	2004-2010	2010-2012	2012-2013	2004-2010	2010-2012	2012-2013
Wg_y	0.3979	0.1817	-0.5047	-0.0925	0.1519	-0.3157
WY_0	0.0348	0.1638	0.1273	-0.0163	0.1683	0.1191
Y_0	-0.1360***	-0.1452	-0.4950***	-0.1380***	-0.1505	-0.5300***
SmallEnterprises	-0.0514**	-0.1523**	-0.2364**	-0.0525**	-0.1410**	-0.2681**
DistM	0.0104**	0.0124	-0.0101	0.0138	0.0095	0.0081
Log-likelihood	119.1700	60.1100	26.7500	118.3000	60.9500	25.6200
Convergence rate (%)	28.2100	17.1500	68.3200	29.3400	17.9100	75.5000
Half-life convergence (years)	2.4600	4.0400	1.0100	2.3600	3.8700	0.9200

Coefficients are significant at: *p<0.05, **p<0.01, ***p<0.001

RESULTS AND DISCUSSION

The main results can be summarized as follows: use of the modified weight matrices including the distance from all the regions to Moscow appeared to be unjustified: application of the ordinary matrices gives the best results. Restriction of the coverage radius, apparently is also counterproductive as the matrices of distances were more efficient in comparison with the neighbour matrices. A very important factor which explains well both the rate and dynamics of YUR over the whole considered time series is the specific number of small enterprises reflecting the level of business development in the region. Influence of the distance to Moscow on the growth rate of YUR was also considerable but only till 2010. The level of population welfare also significantly influences the rate (but not dynamics) of the youth unemployment.

The hypothesis about beta convergence existence in 2004-2010 proves to be true. At that the process of convergence proceeded for some time after the crisis. The process renewal after 2012 is probable however, it is impossible to check this assumption for a while because of insufficient length of the series. The hypothesis about existence of the spatial effects in the model of the conditional convergence is rejected. Both the level and the growth rate of the youth unemployment in the neighboring regions do not influence significantly unemployment dynamics in the region.

CONCLUSION

The subject of this study is the youth unemployment in Russia and the spatial effects influencing its rate. Being guided by the data of the previous researches the circle of test subjects was narrowed: only the regions of European Russia in 2002-2013 were studied. The main result of the article were statistically confirmed estimates of influence of the spatial effects on the youth unemployment. One of the major factors is the geographical distance to Moscow significantly influencing not only the rate but also dynamics of the youth unemployment (2004-2010). The dominating role of the capital characteristic for Russia is shown especially clearly in this case. However, it should be noticed that the attempt of indirect inclusion of this factor appeared to be unfounded: quality of the models with the modified matrices is lower than with the ordinary ones.

Even more significant factor conditioning the rate and dynamics of the youth unemployment is the degree of small business development (number of small enterprises on 10000 people of the population). The given result definitely has a practical value: it is known that in Russia development of small business is restrained first of all by the administrative and legislative barriers urging the corruption. Therefore, the problem of decrease of the youth unemployment is in many respects, conditioned by the attitude of the officials to small business. Less important factors are income level per capita and number of students. One more result of the article is revealing of the convergence of the youth unemployment in the Russian regions in 2004-2010. This process stopped after the crisis and, possibly, renewed again after 2012. At that the hypothesis about influence of the spatial effects on dynamics of the youth unemployment did not prove to be true. Nevertheless, when studying the youth unemployment in statics consideration of the spatial factor is certainly necessary.

ACKNOWLEDGEMENTS

This research was conducted at the Institute of Agrarian Problems of RAS and financially supported by the Russian Science Foundation (Grant No. 14-18-02801).

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