1European Research Studies Journal
Volume XX, Issue 2B, 2017

pp. 261-282

Labor Potential of the Rural Territories: State and Development

Olga Viktorovna Zabelina[1], Farida Islamudinovna Mirzabalaeva[1], Larisa Viktorovna Sankova[2], Gulnara Vahitovna Yakshibaeva[3]

Abstract:

In view of the existing disproportions between the sizes of rural territories and the large number of inhabitants of these territories, the assessment of quantitative and qualitative characteristics of labor potential (LP) becomes more up-to-date than ever. The problem of LP evaluation is related to ensuring the food security of the country and determining the professional and qualification features of the population to produce the basic agricultural products.

The purpose of this study is to develop a method for calculating the cumulative index of labor potential development (CILPD) of the rural dwellers. The following methods are used in the article: abstract logic, document analysis, economics and statistics. The main outcome of the research is the clustering of Russian regions on the basis of the auctorial computation methodology of the rural population CILPD. The authors performed ranking of the territorial entities of the Russian Federation (RF) in the three types of clusters: those with high value of CILPD, those with mid-value of CILPD, and those with low value of CILPD.

Computation of the rural population CILPD were made in respect to all Federal Districts and territorial entities of the RF. The results of the ILPD computations make it possible to identify the problematic regions with the low LP development level and to examine the negative trends on the basis of a number of indicators, which can represent the grounds for targeted steps for moderation and elimination of negative trends in the sphere of LP development of the rural population.

Keywords*: labor potential, integral estimation, population of rural territories, employment, cumulative index of labor potential development, labor productivity.*

JEL Classification: *O10, J24*

[1]*Plekhanov Russian University of Economics, 117997, Russian Federation, Moscow, Stremyanny Lane, 36*
[2]*Yuri Gagarin State Technical University of Saratov, 410054, Russian Federation, Saratov, Politechnicheskaya Street, 77*
[3]*Ufa State Aviation Technical University, 450008, Russian Federation, Ufa, K. Marx Street, 12*

Introduction

Issues of development of LP of the employees in the agrarian sector acquire a special urgency due to the need to develop a new concept of reproductive labor resource that would meet the socio-economic and geopolitical interests of Russia. The article presents the analysis of the LP evaluation methodologies and development of the auctorial computation methodology of the LP evaluation of the rural population. The term "rural" designates the territorial belonging; however, rural-type settlements do not always coincide with the administrative boundaries or the location of a certain economic sector, which limits some approaches to the clustering of regions. In this respect, the term "rural territories" is used more often. In the Conception of Sustainable Development of the RF for the period until 2020 this term is defined as follows: the territories out of cities' borders that include territories of rural-type settlements and inter-settlement territories (The Conception of Sustainable Development of Rural Territories of the Russian Federation for the period up to 2020, 2010).

Rural territories experts, in particular, recognize a special (specific) type of territories that includes merely rural (agricultural) as well as individual urban settlements (small towns of rural type, towns, etc.) being immediately interconnected with them, where, firstly, employment in the agri-food complex system is prevalent in the production industries, and, secondly, stable, active pendulum labor movements (labor exchange) in the city-village system are observed (prevail) (Novikov, Zhubarkin and Chalyi, 2013: 140; Breckova, 2016; Thalassinos *et al.,* 2012; Havlíček *et al.,* 2013; Liapis *et al.,* 2013; Frank *et al.,* 2016).

In the modern context the problem of searching for, development and realization of internal reserves of the country, production and LP of people (population) becomes urgent. In view of this, it is necessary, first of all, to update the components and the methods of LP evaluation taking into account, firstly, the development of economic researches methodology as a whole, and, then, the modern global and national trends in the development of the socio-economic system at large. The raised problem suggests addressing to one of the fundamental categories of the labor economics – "labor potential" category as applied to the level of the region.

The LP of the region is most commonly understood as a complex of properties, capabilities, and the regional labor force for exercising labor activity under the conditions of attained level of economics development. The LP of a region shows the development level of the region labor force capacity to a certain work (Alieva and Mirzabalaeva, 2012: 18; Bashmakov *et al.,* 2015). The LP of a region includes characteristics of the able-bodied part of its population that is capable for the productive labor in a logical connection with the educative and professional structure as well as its capability of the maximum production of goods and services, which will be in demand under the given conditions of the market environment. Therefore, the LP is a culminating form of the human resources capabilities

implementation in the region (Zinovyev and Shchetinin, 2014; Hani El-Chaarani, 2014). Analysis of the researchers' viewpoints with respect to the essence and content-related characteristics of the LP allows to note a certain synergetic nature of this phenomenon that suggests not only a sum of the qualitative and quantitative parameters of human resources of a territory considered in the potential aspect, but also evolution of principally new features of the whole socio-economic system.

The differentiation of the socio-economic development of regions for a variety of criteria dictates the need to clarify the categories "employment potential of the rural population", "quality of LP of the population of rural areas" that have made it possible to reflect the regional specifics. At the same time, more detailed study and elaboration of the development strategies of LP of modern rural territories requires determination of the method of their existent state evaluation. The interest to this problem is also increased due to the necessity to use the rural population LP efficiently, and is intensified due to progressive reduction of it. One of the leading researchers in the sphere of agricultural labor market development, Novikov V.G. notes that even according to the medium variants of Rosstat, the number of able-bodied rural population will decline from 24 million people in 2009 to 19.1 million people by 2020, and to 17.8 million people by 2026 (Novikov, 2013: 62).

Methodology

Methodological approaches to the LP quality evaluation can be conventionally divided into two groups: the estimation is made based on the data obtained from the official statistics or on the basis of social studies. As a rule, the authors communicate in terms of a set of economic and socio-economic indicators that characterize both the LP and the standard of living. The extended analysis of the methods employed by different authors is set forth in the "Discussion" section.

In estimating the LP we suggest to use the cumulative index that is an arithmetic mean value of individual indices. In their turn, the individual indices represent normalized index numbers being calculated as follows:

$$I_n = \frac{K_{act\,(n)} - K_{min(n)}}{K_{max(n)} - K_{min(n)}} \quad (1),$$

where I_n – value of the LP individual index;

$K_{act\,(n)}, K_{min(n)}, K_{max(n)}$ - corresponding actual, minimum and maximum value of *n* component in the LP.

The normalized index numbers method is quite efficiently employed in calculating the human development index. The values of all the LP development index components, in common with the cumulative index, are measured from 0 to 1. Computation of the cumulative index of the RF rural population labor potential development as a mean value is made by summing up all (7) individual indices: index of rural population proportion to the working-age population (Xi), index of rural population life expectancy at birth (Pi), index of employees in agriculture (Li), index of rural population having professional education (Ui), index of the capital-labor ratio per employee in agriculture (Zi), wage index per employee in agriculture (Bi), output index of agricultural products per 1 worker (index of labor productivity) (Ri), and dividing this sum by 7.

Having calculated the index of each component of the rural population labor potential using formula (2), we would determine a cumulative index of the labor potential development as a whole as arithmetic mean value.

$$\mathrm{CILPD} = \frac{X_i+P_i+L_i+U_i+Z_i+B_i+R_i}{7} \qquad (2)$$

In accordance with the method suggested by us, all individual indices of the CILPD are computed on the basis of statistics data present on the Federal State Statistics Service's website. Values of the obtained indices are ranged between 0 and 1. The minimum value and the maximum value have been determined for each component (obtained as a result of selection of a region with the maximum value and the minimum value, accordingly, among all constituent territories of the RF).

The basic principle of data processing is the comparative analysis of the RF federal districts by a rather wide list of indicators characterizing different aspects of LP development of the country rural population. Computation of the aggregative index makes it possible to define a position of the RF federal districts among other districts by this indicator, compare them with Russian average indicators, and rank the RF regions on the basis of the index value received (regions with high values of CILPD, mid-values of CILPD and low values of CILPD). In addition, the computation of this index in real-time mode will allow establishing the rate of changes of the LP quality of the rural population.

However, the calculated partial indices of LP are of great importance for independent analysis and component-wise assessment of the state of the LP of the rural population in the regional context.

The analysis of the available methodological approaches to the estimation of LP allows us to apply these approaches to the estimation of LP of rural population. In particular, Popova L.A., Terentyeva M.A. suggested to employ the following indicators as a basis to estimate the LP development: working lifetime in a region, the level of employment, level of professional education of the working population,

capital-labor ratio of the labor, and gross regional product (GRP) per capita. According to their estimates, the cumulative index of LP in Russia increased by 18.4% (from 0.423 to 0.501) over the period of 2002-2010 (Popova and Terentyeva, 2014: 13-14).

Based on the approach to studying LP offered in the works of Migranova L.A. and Toksanbayeva M.S., it is suggested to use three basic quality components: the intellectual (the level of education of the economically active population; staff qualifications); the psychophysiological (mortality of working age, the proportion of workers with wages below the subsistence level of the working population, the unemployment rate); social and personal (the number of motivated people to work at the age of 15-72 years; the number of economically active population; the number of persons of working age and the economically inactive population who have expressed a desire to work).

However, in our opinion, the usage of a number of indicators to the psychophysiological group is open to question. In particular, the proportion of production workers with wages below the subsistence level of able-bodied population, the unemployment rate. These figures are more likely to reflect the socio-economic context of the LP development. In 2011 it was equal to 0.51117 in Russia on average. In accordance with the approach under development, the authors performed grouping of the RF regions. In this process 18 regions (Moscow, Saint-Petersburg, Yamalo-Nenets AO, Khanty-Mansi AO, Moscow Region, Tyumen Region, Murmansk Region, Republic of Tatarstan, etc.) were designated as the group with a relatively high quality of LP. 23 constituent territories were designated as the group of regions with the quality of LP above the median level (Omsk Region, Republic of Komi, Chelyabinsk Region, Udmurt Republic, Novosibirsk Region, Tomsk Region, Astrakhan Region, Krasnoyarsk Territory, Perm Territory, Ulyanovsk Region, Republic of Bashkortostan, Republic of Sakha (Yakutia), etc.). 29 RF constituent territories were designated as the group of regions with the quality of LP below the median level (Chuvash Republic, Krasnodar Territory, Vologda Region, Stavropol Territory, Irkutsk Region, Republic of Karelia, Kirov Region, Ivanovo Region, Lipetsk Region, Kursk Region, Orenburg Region, Republic of North Ossetia-Alania, etc).

As can be seen from the above, the obtained constitution of regions needs further explanation due to the strong differentiation of incorporated constituent territories by the LP development figures. 12 constituent territories were designated as the regions with a low quality of LP (Republic of Kalmykia, Pskov Region, Karbardino-Balkarian Republic, Kurgan Region, Republic of Adygeya, Bryansk Region, Republic of Altai, Republic of Ingushetia, Jewish AO, Zabaikalye Territory, Chechen Republic, Tuva Republic) (Migranova and Toksanbayeva, 2014: 106, 115-120).

In the ISESP RAS this approach was elaborated and suggested to be used for estimating the human and labor potential by Rimashevskaya N.M., Migranova L.A., Toksanbayeva M.S. who proposed a unified estimation methodology with the use of the following indicators:

- demographic component (the crude birth rate, crude death rate, rate of natural increase (decrease) of population migration growth factor (decrease) of the population);
- health (life expectancy, total number of disabled, population of patients with socially significant diseases);
- education (distribution of population above 15 years by education level);
- wellbeing or material security of population (money per capita income of population, financial income funds ratio, poverty rate);
- intellectual component (education and qualification level) - education level of economically active population, qualification of labor force (number of employees participating in scientific researches and developments, number of workers receiving additional training, number of filed patent certificates for inventions or useful models);
- psychophysiological conditions (rate of mortality of working-age population, the proportion of production workers earning wages below the subsistence level of able-bodied population, unemployment rate);
- social and personality component of the LP (motivated to work population aged 15-72 years) – size of economically active population, size of economically active working-age population that have expressed desire to work (Rimashevskaya, Migranova, Toksanbayeva, 2014: 106-119; Stroeva *et al.*, 2015).

This approach, in our opinion, covers a considerable number of indicators, which makes computations more complicated. We agree with the authors' conclusions that the quality labor force is formed where it is in appropriate demand, and the decline in this demand became one of the reasons of LP degradation, including the stage of educational attainment. For estimation purposes it is useful to take into account the economic component as well, which would reflect the potential of balanced demand and proposal of the labor force.

In estimating the possibilities of LP sale in the labor market, the specialists of the Institute of Socio-Economic Development of Territories of the RAS suggest to employ such indicators as: the aggregate unemployment rate (as per the ILO methodology); the long-term unemployment level (proportion of unemployed who have been searching for employment for 12 months and longer to the total number of the unemployed). The cumulative index formula of LP development (ILPD) is as follows:

$$\mathrm{ILP} = \sqrt[4]{\mathrm{HLI} \times \mathrm{EI} \times \mathrm{II} \times \mathrm{LMI}}, \quad (3)$$

were ILP (Index of Labor Potential) – LP development index;
HLI (Health and Longevity Index) – Index of health state (longevity of LP);
EI (Education Index) – Professional education index;
II (Income Index) – LP income index;
LMI (Labor Market Index) – Index of labor market state.

The cumulative index of LP state in the year of 2010 was generated as a summary of the computations. The average index was 0.618, the maximum differences turned to be between Moscow and Kalmykia (in 3.3 times). 8 regions were designated as a group with a high level of LP development: Moscow, Yamalo-Nenets AO, Saint-Petersburg, Khanty-Mansi AO-Yugra, Nenets AO, Tyumen Region, Moscow Region, Belgorod Region. 38 constituent territories belong to the medium LP development group (Republic of Tatarstan, Sverdlovsk Region, Samara Region, Murmansk Region, Republic of Bashkortostan, Chelyabinsk Region, Republic of Dagestan, Krasnodar Territory, Republic of Komi, Sakhalin Region, Republic of North Ossetia-Alania, Astrakhan Region, etc.). 32 constituent territories were designated as the regions with a low level of LP (Penza Region, Udmurt Republic, Leningrad Region, Irkutsk Region, Kostroma Region, Kirov Region, Bryansk Region, Ryazan Region, Tambov Region, Republic of Adygeya, Novgorod Region, Kurgan Region, Republic of Karelia, etc).

The following 5 constituent territories are among the regions with an extremely low level of LP development: Chechen Republic, Tuva Republic, Karachaevo-Cherkessian Republic, Republic of Ingushetia, Republic of Kalmykia. As the authors note, the interregional structure of LP of the RF is extremely non-uniform. In some areas vast opportunities were created for the implementation of the LP, in others the economic situation causes complex LP degradation. The highest differentiation is observed in income levels and opportunities for the implementation of the labor market (Leonodiva and Panov, 2016: 63-69).

For estimating the LP of the RF constituent territories, Popov A.V. suggested the quantitative and qualitative method. As components of the indicators summarizing the LP quantitative aspect, the following components were used: the demographic component (the proportion of motivated to work population aged 15-72 (as % of total population aged 15-72), the proportion of working population above the working age to the total number of employees (%)). and the economic one (unemployed motivated to work population per one stated vacant job (one person per a vacant job).

To estimate the LP qualitative aspect, the following components were considered: physophysiological component (mortality ratio of able-bodied population (per 100,000 working-age persons), population of patients with mental disabilities and behavioral disorders (per 100,000 people), education and qualification (education level of economically active population (in points), percentage of highly skilled

workers (as % of total number of qualified workers), social (population with money income being less than a subsistence level (%), percentage of households considering their material conditions as un-wealthy) (Popov, 2016: 83-90).

As a result of the studies conducted by Popov A.V., a scientist of the Institute of Socio-Economic Development of Territories of the RAS (Vologda), a rating matrix for evaluation of the LP quantitative and qualitative aspects was suggested. In ranging the regions, only one territory with the high quantitative and qualitative characteristics was detected, namely, the Republic of North Ossetia-Alania. The author pointed out at the regions with high quantitative availability of labor force along with low level qualitative component (national republics of Siberia, Kalmykia and Ingushetia, Tver and Magadan Region).

Among the territories with a high level of LP qualitative aspects, but with deficient quantitative resources, there were constituent territories of Central and Northwestern Federal Districts. There is still no clear approach to the definition of LP and evaluation methods in the literature. However, this approach, despite its originality, raises some questions about the indicators characterizing the qualitative and quantitative aspects of the LP. No need to mention that the integral index of the LP evaluation, in which the various component parts are determined by different methods, requires more study.

While studying the rural territories, LP Sovetov P.M., Chekmaryova Ye.A. Panov M.M. it is worth to point the following functions of the rural areas: production, socio-demographic, labor supply, cultural, ethnic, recreational, housing, spatial and communicational, and social control functions. All studied characteristics of the territory LP are divided into two groups:

- the quantitative (working-age population, number of unemployed and unemployment rate, employment rate and employment level)
- the qualitative (health status of working-age population, education level, community commitment) (Sovetov, Chekmaryova, Panov, 2015: 80, 91).

While carrying out studies of the demographic situation in the rural regions, Kalugina Z.I., Fadeyeva O.P., Bratyushchenko S.V. individualized 5 clusters of territories by the LP development level. For the estimation the following indicators were used: the proportion of population under the working age (%); proportion of working-age population (%); proportion of population above the working age (%); mortality ratio (per mil); life expectancy, years; net migration rate (departure intensity), (per 1,000 people); number of persons with a higher professional education (per 1,000 people), aged 15 and older; number of persons with a secondary professional education (per 1,000 people), aged 15 and older; number of persons with an initial professional education (per 1,000 people), aged 15 and older.

Fifteen regions fell into the first cluster (with a large share of a stable working-age population with higher and secondary vocational education, low migration losses), including Astrakhan, Kaliningrad, Leningrad, Moscow, Murmansk, Tyumen Regions, Republics of Karbardino-Balkaria, Karachayevo-Cherkess, Adygea, Kalmykia, North Ossetia-Alania, Kamchatka, Khabarovsk, Stavropol Territories.

Twenty six territories were allocated to the second cluster (long mastered rural areas, with an aging population, have mainly secondary vocational education, with a lower proportion of specialists with higher education, low migration losses), including the following: Belgorod, Bryansk, Vladimir, Vologda, Voronezh, Ivanovo, Kaluga, Kostroma, Kursk, Lipetsk, Nizhny Novgorod, Novgorod etc. The third cluster (the age structure of the population with a prevalence of young cohorts, the lowest rates of life expectancy, large-scale migration losses) covers 5 regions: the Republic of Altai, Buryatia, Sakha (Yakutia), Tuva, the Chukotka Autonomous District.

The fourth cluster (balanced age structure of the population with prevalence of initial vocational training and the low percentage of higher professional level of specialists, significant migration losses) consists of 29 regions. The following areas belong to this cluster: Altai, Transbailkal, Krasnoyarsk, Perm Territories, Amur, Arkhangelsk, Volgograd, Jewish Autonomous, Irkutsk, Kemerovo, Kirov, Kurgan, Magadan, Novosibirsk Regions and other regions.

The fifth cluster (favorable age structure of the population, low death rates, low levels of primary and secondary vocational education, a high proportion of graduates, moderate migration of population loss) includes only 3 regions – the Republic of Dagestan, Ingushetia and the Chechen Republic.

The authors note that clustering has shown high enough and not fully exploited potential of clusters 3 and 5, much exhausted potential of cluster 2, high-risk agricultural potential of cluster 1 (due to the significant migration outflow), which is more balanced with the average level of development of agricultural production and high employment in the private farms (Kalugina, Fadeyeva, Bratyushchenko, 2015: 130-135). This approach is essential in the context of prospects evaluation of the rural territories economic development and investment in one or another region.

For calculating the cumulative index of LP(CILP), Zinovyev A.G., Shchetinin E.N. used the figures of population income per capita (in months) in rubles; proportion of the economically active population to total population; the proportion of employees to the economically active population; and gross regional product per capita in rubles. The higher the index is, or closer to one, the more effective the use of LP is (Zinovyev and Shchetinin, 2014: 210-213). This approach was used by the authors for the comprehensive evaluation of LP in the Altai Territory over a series of years.

The authors concluded that the LP of the region was used in 68-70% of the possible at this stage. 4 groups of factors influencing formation and employment of the LP

were individualized: geographic (natural and climatic conditions, territorial and geographic location, environment ecologic state, resource endowment); demographic (sex-age pattern of the population, number, percentage of able-bodied population, rates of birth, mortality, migration); social factors (the level of development of social infrastructure, enrollment in higher and professional education, access to health care, the state of crime); and economic factors (regional structure of the economy, unemployment and employment opportunities, living standards of the population, the purchasing power of incomes of the population, etc.).

When evaluating LP of rural areas, the representatives of the Institute of Socio-Economic Development of Territories of the RAS Chekmaryova Ye.A., Panov M.M. selected the following basic LP characteristics: health (estimated mortality rate of working age, the number of deaths per 1,000 people), education (people with higher education per 1,000 people over 15 years), activity (the number of entrepreneurs per 1,000 people of population and migration influx, persons per 1,000 people). When estimating, the most common formula was used (and "inverse formula" to assess the negative nature of phenomena) (formulas 1 and 2). Based on the research results, 4 groups of territories were individualized: territories with a high level of LP, territories with a medium level of LP, regions with a low level of LP, and regions with a very low level of LP (Chekmaryova, Panov, 2015: 224-234).

The approach to the integral estimation of LP is interesting, but the choice of indicators is seen by us as a debatable one. For example, the authors use the index influx of migrants and clarify that this figure is acceptable to assess the specific situation in the Vologda region.

The influence of migrants' LP on the LP integral value should be determined. And this can be done, in our opinion, through the use of a set of indicators: the number of foreign nationals who held a valid permit to work in the rural territories; the number of foreign nationals who held a valid patent for exercising of occupation of physical entities in rural territories; the money remittance of the employees in rural area etc. For health assessment an inverse indicator (the mortality rate) is used, which is, of course, very important. The similar approach is used in the human development concept.

However, life expectancy, though seems to the authors too wide, is in our opinion good, because it covers a wide range of phenomena. Otherwise, we should take into account birth rates, health care costs, and other factors affecting mortality in particular. Our proposed methodical approach to the computation of CILPD is versatile and allows making comparative

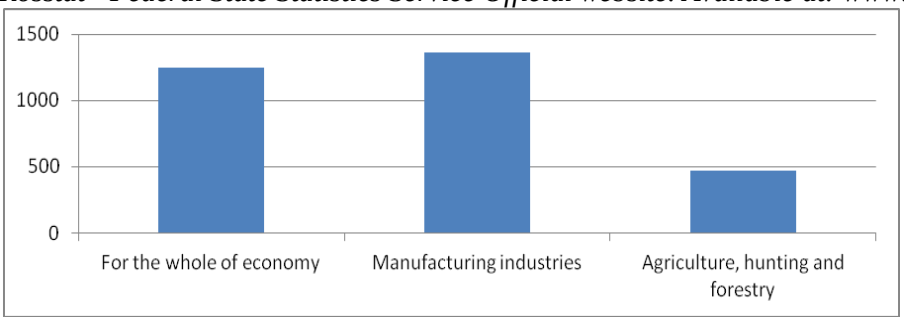
analysis in the aspect of cross-country, and in the regional context, within the Russian Federation.

Research Results

Let us consider the components used by us for the computations in a more detailed aspect:

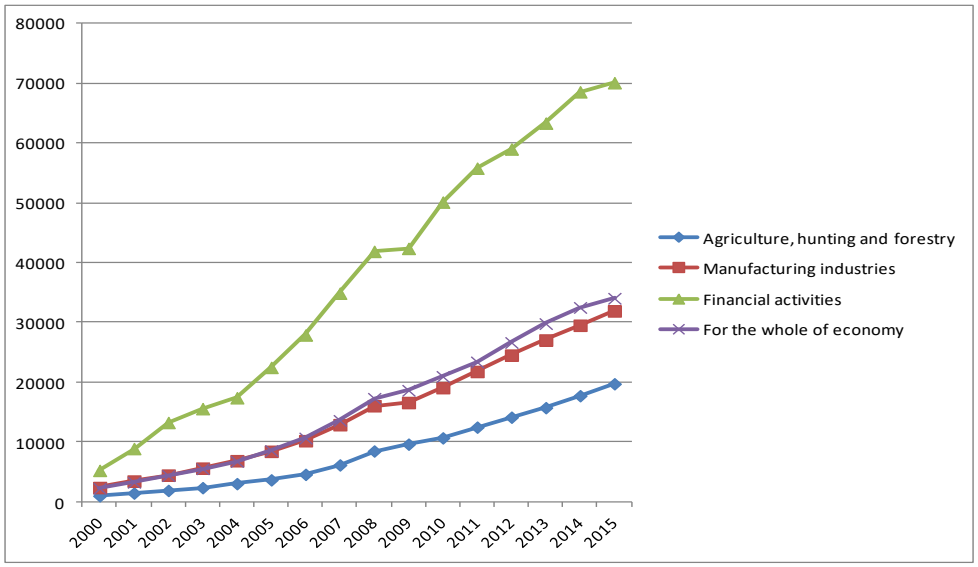
1. The proportion of rural population to working age population - Xi. The able-bodied population is the working-age population, men 16-59, women 16-54, working-age population being capable of taking part in the labor process considering their occupational, psychophysical and intellectual capacity.
2. The life expectancy of the rural population at birth - Pi. Life expectancy is the number of years that on average this generation born in the study year will live, provided that during the rest of their lives in each age group the mortality rate will be the same as it was in the population of this age during the drafting of mortality table. This measure characterizes the population life quality, the quality of medical care, the ecology, level of social support.
3. The number of employees in agriculture - Li. Employment is the most important indicator of the opportunities as well as the actual level of employment development. We consider this figure both as specific indicator of the state of the country's agriculture, the level of national prosperity, social stability factor, and the form of realization of human LP.
4. The rural population with vocational education – Ui. The education is a body of special knowledge and skills received in the process of training. Depending on the degree of completion, the education can be complete and non-complete (e.g., initial secondary, undergraduate etc.). In our article we have used statistics data on the rural population across constituent territories of the RF with vocational education, including: postgraduate study, higher, undergraduate, secondary professional and initial professional education. As per computation, 52% of employees in agriculture and forestry have higher and secondary professional education, while this indicator was 77% in 2015 in manufacturing sector, and 77.9% - in the whole economy.
5. The capital/labor ratio in agriculture – Zi. This measure characterizes the fixed assets value per employee in agriculture. The capital/labor ratio is an indicator reflecting the effectiveness of the use of production assets of the enterprise. In other words, it is a coefficient that shows a degree to which agriculture personnel is equipped with the durable equipment. The capital/labor ratio is directly related to the capital-area ratio of agriculture. It allows you to more fully describe the equipment of agricultural with the means of production, which directly affects the end result of produced agricultural products. The capital-labor ratio per employee in agriculture substantially lags behind the similar indicator for the whole of economy and for the manufacturing sector (Figure 1).

Figure 1. *Capital-labor ratio per employee for the whole of the RF economy, in manufacturing and in agriculture. The diagram was plotted based on the data of Rosstat - Federal State Statistics Service Official website. Available at: www.gks.ru.*



6. Wage per employee in agriculture – Bi. The wage received by an employee for work is considered in the article as a reproduction source of the labor force and the LP development, and is of importance when calculating the CILPD of the Russia rural population. This indicator characterizes conditions and society standard of living, material basis of the labor force daily living activities, and the whole LP of the society. The wage of an employee in agriculture is a compensation for labor coming from the volume and quality of produced agricultural competitive products, which production is attended by considerable nature and climatic risks.

Figure 2. *The dynamics of wages in a number of economic activities in Russia (2000-2015 yrs). Plotted on the basis of data available at http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/wages/*



7. The labor productivity (output of agricultural products per employee) – Ri. Agricultural production based on the average employee in agriculture is included in the generalizing indicators of labor productivity. Labor productivity in our study is considered as the most important "marker" effective, efficient use of LP of the population of rural areas, and the extent of human labor involvement in "human-production" in this area.

According to the computations of CILPD for the rural population in the context of the subjects of the RF, the following general conclusions can be drawn:

1. Constituent territories of Russia are characterized by highly uneven development of the labor potential of rural population. This can be attributed, for the most part, to the different levels of development of the regional reproduction complexes. There are various areas of natural endowment of mineral resources; condition of industrial base, transportation and social infrastructure also differ significantly. A large part is played by the social and cultural and demographic factors of formation and development of LP of the rural territories i.e. population, mentality, culture, traditions, etc. In addition, today the fiscal capacity and the innovation activity of Russian regions are one of the key factors of LP development.

A great impact on LP development of the rural population is exerted by the federal and the regional policy, economic environment, investment prospects of the territories as a whole, peculiarities of functioning and balancing of the labor market, etc. The calculated individual indices (Xi, Pi, Li, Ui, Zi, Bi, Ri) allow to reveal the problems and make the adequate conclusions for each constituent territory of the RF.

a) As per our computations, in terms of the proportion of rural population to the total number of working-age population, the Krasnodar Territory is in the lead, the Republic of Dagestan is on the second rank (0.691), and the Rostov Region is on the third rank (0.545). The Stavropol Territory is scored the fourth (0.476). These regions differ from others by high proportion of the rural population of working age and about equal proportions of young and older demographic groups. At the same time indicators of mortality (in contrast to other entities) in these regions are much lower, and birth rates are higher.

Based on this index, the worst positions are held by such regions as the Magadan Region (0), the Nenets Autonomous District (0.002), the Chukotka Autonomous District (0.004), the Murmansk Region (0.024), the Kamchatka Territory (0.027), and the Sakhalin Region (0.033). Low values of this index are, in the first instance, associated with nature and climatic conditions and disadvantaged geographic location of the mentioned territories.

b) In terms of the second individual index (rural population life expectancy at birth) the leaders are the Republic of Ingushetia (0.533), the Republic of Dagestan (0.444),

and the Chechen Republic (0.422). It is beyond argument that these values are affected by the favorable nature and geographic location of these territories, and the socio-cultural factors of the regions, the mentality of the residential population, culture, traditions and customs are of great importance.

The lowest figures are shown by the Republic of Tuva (0.044), the Magadan Region (0.111), the Jewish Autonomous Region (0.177), and the Kamchatka Territory (0.200).

c) The third index reflects the number of employees in agriculture. By this indicator the following territories are among the leaders: the Krasnodar Territory (1), the Republic of Dagestan (0.741), the Republic of Bashkortostan (0.706), the Rostov Region (0.657), the Stavropol Territory (0.563), and the Orenburg Region (0.519). The lowest figured are attributed to the Nenets Autonomous District (0.001), the Jewish Autonomous Region (0.023), the Sakhalin Region (0.03), and the Murmansk Region (0.033).

d) In terms of the individual index of rural population with a professional education the leaders are: the Krasnodar Territory (1), the Moscow Region (0.742), the Republic of Bashkortostan (0.741), the Rostov Region (0.657), the Stavropol Territory (0.447), the Altai Territory (0.442), and the Republic of Dagestan (0.406). The lowest values are presented by: the Nenets Autonomous District (0.002), the Chukotka Autonomous District (0.003), the Murmansk Region (0.031), the Kamchatka Territory (0.031), the Sakhalin Region (0.042), the Tuva Republic (0.05), the Republic of Karelia (0.055), and the Republic of Altai (0.06).

e) In terms of the capital-labor ratio per employee in agriculture the leaders are the Kemerovo Region (1), the Belgorod Region (0.620), the Moscow Region (0.505), the Kaluga Region (0.488), the Leningrad Region (0.473), the Republic of Tatarstan (0.468), the Bryansk Region (0.463), etc. At large, such situation shows a higher level of industrialization of agriculture in the named regions. The minimum values are held by: the Chechen Republic (0.027), the Republic of North Ossetia-Alania (0.036), the Orenburg Region (0.066), the Astrakhan Region (0.060), and some other regions located in the north and in the east part of the country.

f) In terms of wage level of the employees in agriculture, the high values of the index are presented by the following constituent territories of the RF: the Magadan Region (0.968), the Kamchatka Territory (0.902), the Sakhalin Region (0.855), the Yamalo-Nenets Autonomous District (0.797), the Moscow Region (0.744), the Khabarovsk Territory (0.698), the Leningrad Region (0.648), the Belgorod Region (0.567), and the Irkutsk Region (0.564). At present, the following regions belong to the regions with a wage level above 40 thousand rubles: Saint-Petersburg (41.3), the Tyumen Region (45.6), the Kamchatka Territory (46), the Sakhalin Region (46.6), Yakutia (48.6), the Magadan Region (50.8), the Khanty-Mansi Autonomous District (56.3), Moscow (60.8), and the Yamal-Nenets Autonomous

District (64.2). The low level of wages in agriculture is observed in the Republic of Dagestan (0), the Chechen Republic (0.017), the Republic of North Ossetia-Alania (0.023), and the Republic of Tuva (0.037).

g) Analysis of agricultural production index per employee enables us to state the following: the maximum values belong to: the Belgorod Region (1), the Lipetsk Region (0.824), the Kemerovo Region (0.756), the Leningrad Region (0.720), the Republic of Tatarstan (0.700), the Voronezh Region (0.668), the Kaluga Region (0.627), the Ryazan Region (0.613), the Moscow Region (0.592). The low values: the Murmansk Region (0), the Chechen Republic (0), the Republic of Buryatia (0.074), the Arkhangelsk Region (0.075), the Zabaikalye Territory (0.088), the Republic of Karelia (0.081), the Republic of Dagestan (0.098), the Republic of Komi (0.099). The results reflect the relationship of this indicator to the level of industrialization of the economy of these regions.

2. The socio-economic contrasts between the RF constituent territories lay the foundation for the LP interregional differentiation. Based on the results of our study, we have formed three clusters of regions by the development level of LP of rural population: regions with a high level of LP development of the rural population (CILPD is above 0.4), with a medium level of the rural population LP development (CILPD is within the limits of 0.200 – 0.400), and a low level of LP development of the rural population (CILPD does not exceed 0.200), see Table 1.

Table 1. *Groups of regions in terms of the cumulative index of LP development of rural population (the year of 2014)*
(Calculated as per: Russia by the Numbers, 2014; Regions of Russia, 2015; Statistical Yearbook of Russia, 2014; Federal State Statistics Service, n.d.).

High value of CILPD (above 0.400)	Medium value of CILPD (0.200 – 0.400)	Low value of CILPD (not exceeding 0.200)
Krasnodar Territory (0.642)	Kemerovo Region (0.387)	Kurgan Region (0.199)
Moscow Region (0.539)	Stavropol Territory (0.382)	Tver Region (0.197)
Belgorod Region (0.472)	Voronezh Region (0.378)	Kamchatka Territory (0.191)
Rostov Region (0.448)	Lipetsk Region (0.357)	Kostroma Region (0.183)
Leningrad Region (0.428)	Republic of Dagestan (0.350)	Ulyanovsk Region (0.183)
Republic of Bashkortostan (0.424)	Altai Territory (0.344)	Republic of Karelia (0.180)
Republic of	Tyumen Region (0.340)	Astrakhan Region (0.179)
	Kursk Region (0.326)	Chukotka Autonomous
	Chelyabinsk Region (0.325)	District (0.179)
	Khanty-Mansi Autonomous District –	Pskov Region (0.178)
	Yugra (0.322)	Republic of Altai (0.175)
	Sverdlovsk Region (0.320)	Smolensk Region (0.172)
	Nizhny Novgorod Region (0.316)	Chechen Republic (0.170)
	Tambov Region (0.313)	

Tatarstan (0.421)	Mari El Republic (0.307) Bryansk Region (0.305) Kaluga Region (0.303) Samara Region (0.301) Saratov Region (0.291) Tula Region (0.290) Volgograd Region (0.289) Krasnoyarsk Territory (0.282) Orenburg Region (0.280) Ryazan Region (0.279) Novosibirsk Region (0.275) Irkutsk Region (0.268) Penza Region (0263) Omsk Region (0.260) Vladimir Region (0.249) Oryol Region (0.249) Primorsky Territory (0.246) Udmurt Republic (0.249) Kaliningrad Region (0.244) Khabarovsk Territory (0.244) Tomsk Region (0.241) Yamal -Nenets Autonomous District (0.238) Amur Region (0.236) Republic of Mordovia (0.235) Republic of Ingushetia (0.234) Magadan Region (0.233) Sakhalin Region (0.230) Yaroslavl Region (0.225) Karachaevo - Cherkessian Republic (0.224) Novgorod Region (0.222) Perm Territory (0.219) Vologda Region (0.216) Ivanovo Region (0.215) Arkhangelsk Region (0.212) Chuvash Republic (0.211) Kirov Region (0.209) Rebublic of Sakha (0.209) Kabardino - Balkarian Republic (0.206) Republic of Adygeya (0.203)	Republic of Khakassia (0.167) Republic of Komi (0.165) Republic of Kalmykia (0.165) Republic of Buryatia (0.164) Murmansk Region (0.159) Republic of North Ossetia - Alania (0.156) Jewish Autonomous District (0.143) Nenets Autonomous District (0.119) Tuva Republic (0.100)

As can be seen from the above, only 7 regions are placed in the group with high qualitative and quantitative parameters of the rural population, whereas 21 regions are put in the group with the low parameters.

3. Socio-economic development of the LP of the rural population varies by Federal Regions of the RF (see Table 2). When considering the rural population CILPD as applied to the Federal Districts for all of the RF, it should be pointed out that the Southern Federal District – 0.321(1st place), the Central Federal District – 0.297(2nd place), and the Urals Federal District – 0.290 (3rd place) are among the leaders.

Table 2. *CILPD of the rural population as applied to Federal Districts of the RF for the year of 2014*

Name of the RF constituent territories	CFD	NWFD	SFD	NCFD	VFD	UFD	SibFD	FEFD	**RF average**
$\mathbf{X_i}$ index of proportion of rural population to working age population	0.159	0.086	0.346	0.288	0.237	0.165	0.168	0.086	**0.192**
$\mathbf{P_i}$ index of life expectancy of rural population at birth	0.309	0.258	0.347	0.406	0.298	0.279	0.239	0.192	**0.291**
$\mathbf{L_i}$ index of number of employees in agriculture	0.183	0.092	0.418	0.273	0.296	0.158	0.196	0.08	**0.212**
$\mathbf{U_i}$ index of rural population with a professional education	0.178	0.099	0.348	0.216	0.264	0.178	0.169	0.072	**0.190**
$\mathbf{Z_i}$ index of capital-labor ratio per employee in agriculture	0.354	0.240	0.159	0.150	0.216	0.352	0.246	0.174	**0.236**
$\mathbf{B_i}$ index of wage per employee in agriculture	0.380	0.479	0.275	0.121	0.265	0.497	0.262	0.620	**0.362**

$\mathbf{R_i}$ index of output of agricultural products per employee	0.515	0.234	0.353	0.268	0.378	0.406	0.347	0.282	**0.349**
CILPD	**0.297**	**0.212**	**0.321**	**0.246**	**0.279**	**0.290**	**0.232**	**0.215**	**0.261**

Discussion

Our computations indicate that the rural population CILPD is generally much lower than the values of the LP development received by other authors through their auctorial procedures (in particular, Popova L.A., Terentyeva M.A. – 0.501 in 2010, Migranova L.A. and Toksanbayeva M.S.- 0.511 in 2011, etc.). This result, in principle, turns out to be expected.

However, according to our computations, the composition of the groups includes areas with both favorable and unfavorable climatic conditions, with different levels of human potential development, with different levels of economic industrialization development (see Table 1), which generally reflects the influence of different factors on the development and effective use of available employment potential of rural residents in regions with different levels of socio-economic development.

Figure 2 presents data on the average monthly nominal accrued wages of employees in the RF as a whole, as well as for manufacturing, agriculture and financial activities (2000-2015).

Differences in the LP development among the Federal Districts are explained by a number of factors, firstly, favorable climatic conditions and advantageous geographic location (being the most typical for the South Federal District), secondly, high values of proportion of the rural population to the total population, rural population life expectancy at birth, number of employees in agriculture, and, thirdly, high rates of the rural population education. For example, high values of the capital-labor ratio per one employee in agriculture, output of agricultural products and rural population life expectancy at birth are representative of the Central Federal District. The Urals Federal District is distinguished by the favorable values of the capital-labor ratio per one employee in agriculture, wage, and labor productivity. These federal districts are different from others in that they have a solid fundamental economic base that allows them to hold leading positions in many economic indicators and, in particular, in terms of employment development.

An unexpected result is the lowest IRTP in the Northwestern Federal District - 0.212. This District shows the low figures of output of agricultural products per employee, a small proportion of rural population to working age population, and a

small number of employees in agriculture. This is explained, particularly, by lack of development of this sphere due to the disadvantageous geographic location, natural and climatic conditions of the regions of the said District. The low values of labor productivity in this District are also influenced by the insufficient levels of material and technical supply of some regions (the Murmansk Region, the Republic of Komi, the Kaliningrad Region, the Nenets Autonomous District) that do not allow to minimize the human labor costs.

In these computations the migration component was taken into account indirectly (in the indicators of employees, number of population etc.). However, its impact on LP development of the rural territories requires further study in the Russian regions. Thus, the problem of migratory flows and their impact on rural employment, recreation development considered by researchers with the US as an example have shown the following. Migrants from Latin America exercised a significant influence on the agrarian labor markets. Demographic and economic factors have substantially changed the rural area. In accordance with the research results of P. Nelson, L. Nelson and L. Trautman (2014), the role of migrants is significant in ensuring of agriculture economic growth, the migrants give greater flexibility to the labor market.

Another important aspect to be taken into account in studying the development directions and implementation of LP of the rural territories is a question of self-employment. Self-development issues are highly relevant in the world. Increasing focus is directed in Russia at self-employment, and the development of this form of employment is treated as a positive feature. The development of self-employment potential suggests a number of issues. In China, for example, there is no definite approach to this problem.

The rural population assesses its risks and decides whether to stay in a village or to move to a city. Young people are more mobile and more susceptible to relocation. According to experts, from 1980 to 2000 the number of people who moved from rural areas increased from 9.3 million to 56 million in China. This process is not estimated unambiguously by all experts. In particular, according to researches a large sector of self-employment is not a positive sign of the sound economic growth. They argue that the growth of self-employment in rural areas creates a deadlock (Wang, Huang, Zhang, Rozelle, 2011).

Thus, the vector of further research regarding the development of LP of the rural population on the basis of our proposed method must be pointed at identifying the regional dynamics and movement speed by clusters, in accordance with the obtained integral indicators, at a more profound analysis of groups of regions and comparison of the rate of change of LP of the rural regions with indicators of socio-economic development and the CILPD.

Conclusion

The studied problem is very urgent, because food security is one of the most acute problems of the country's development, which calls for the formation of the corresponding LP. Today, rural areas occupy two-thirds of the territory of Russian Federation and are inhabited by 27% of the population; rural population prevails in more than half of the administrative regions. Therefore, in order to achieve sustainable rural development, its qualitative and quantitative improvements, it is necessary to include it in a number of priorities of the long-term social and economic development of Russia.

The level of LP development of rural territories of the RF constituent territories is characterized by strongly pronounced differentiation as suggested by the results of our CILPD computations. The choice of innovative vector of development of rural areas involves, among others, the consideration of the actual LP of the population, which is able to turn into a new model of development. It should also take into account the modern trends of the agrarian market development, which makes the demand for labor of the population of rural areas in the relevant quantitative and qualitative aspects. In particular, one of the main trends is the ongoing process of import substitution in the food market (primarily in the production of meat, vegetables and fruit).

Financial support from the government projects plays an important role in the development of this segment in general and, in particular, in stimulating the demand for labor in this sector. In recent years the positive trends could have been observed in branches of the agricultural sector with a quick return of capital (Expert, 2012). However, the problems still remain in the sectors with the high cost of investment projects, long payback periods, and others (in particular dairy farming, the production of greenhouse vegetables and fruit).

The issue of changing the characteristics of the LP of rural areas in varying degrees affects all countries with different levels of development and the pace of economic recovery after the recession. In this context it is important to note the general condition of the rural market and agricultural sectors of the complex as a whole. For example, in the USA the negative impact on employment in urban and rural areas was about the same, but the rural labor market recovered more slowly. In EU countries, the rural market has suffered more. The crisis hardly affected the UK agrarian market. It is noted that the remote areas in Ireland suffered more. However, the recovery of the food industry contributed to the rapid growth of the rural economy (Patton, Xia, Feng, Hewitt, 2016).

The Russian model of the agricultural labor market with a low price of labor is different from the models of developed agrarian economy and needs more government support. Human resources have become a scarce resource in the village,

so we need a new model of development of LP of the rural population that meets social, economic and geopolitical interests of Russia.

References

Alieva, P.R. and Mirzabalaeva, I.F. 2012. Sotsialno-ekonomicheskiye faktory razvitiya trudovogo potentsiala regiona [Socio-economic Factors of the Region Labor Potential Development]. Krasnoyarsk: Nauchno-innovatsionyi tsentr, pp: 146.

Bashmakov, A.I., Popov, V.V., Zhedyaevskii, N.D., Chikichev, N.D and Voyakin, A.E. 2015. Generic Heurorithm of Innovation Management from Generating Ideas to Commercialization. European Research Studies Journal, 18(4), 47 -56.

Breckova, P. 2016. Family Business in the Czech Republic. European Research Studies Journal, 19(4), 3-16.

Chekmaryova, Ye.A. and Panov, M.M. 2015. Problema otsenki trudovogo potentsiala selskikh territoriy [Problem of Evaluation of Rural Territories Labor Potential]. Economic and Social Changes: Facts, Trends, Forecast, 2 (38), 221-239.

Frank, V.E., Mashevskaya, V. O., Ermolina, V.L. 2016. Innovational Mechanism of Implementation of Cluster Initiatives in Business. European Research Studies Journal, 19(1), 179-188.

Hani El-C. 2014. The Impact of Financial Structure on the Performance of European Listed Firms. European Research Studies Journal, 17(3), 103 -124.

Havlíček, K., Thalassinos I.E. and Berezkinova, L. 2013. Innovation Management and Controlling in SMEs. European Research Studies Journal, 16(4), 57-70, Special Issue on SMEs.

Kalugina, Z.I., Fadeyeva, P.O. and Bratyushchenko, V.S. 2015. Sotsialno-demograficheskiy potentsial razvitiya selskikh territoriy Rossiyi. [Social and Demographic Potential of Russia Rural Territories Development.]. EKO, 3, 127-135.

Leonodiva, G.V. and Panov, M.A. 2013. Trudovoy potentsial: territorialnye aspekty kachestvennogo sostoyaniya [Labor potential: Territorial Aspects of Quality]. Problems of Territory's Development, 3 (65), 60-70.

Liapis, K., Rovolis, A., Galanos, C. and Thalassinos, I.E. 2013. The Clusters of Economic Similarities between EU Countries: A View Under Recent Financial and Debt Crisis. European Research Studies Journal, 16(1), 41-66.

Migranova, L.A. and Toksanbayeva, S.M. 2014. Kachestvo trudovogo potentsiala rossiyskikh regionov. [Quality of Labor Potential of Russian Regions]. Population, 2, 102-120.

Myles P., Xia, W., Feng, S. and Hewitt, V. 2016. Economic Structure and Vulnerability to Recession in Rural Areas. EuroChoices, 15 (3), 47-53.

Nelson, P.B., Nelson, L. and Trautman, L. 2014. Linked Migration and Labor Market Flexibility in the Rural Amenity Destinations in the United States. Journal of Rural Studies, 36, 121–136.

Novikov, V.G. 2013. Vosproizvodstvo trudovogo potenstiala selskikh territoriy Rossiyi: kontseptualnye problemy v kontekste innovatsionnoy ekonomiki [Reproduction of the Labor Potential of Russia Rural Territories: Conceptual Problems in the Innovation-based Economics Context]. Social Politics and Social Partnership, 4, 60-68.

Popova, L.A. and Terentyeva, A.M. 2014. Dinamika trudovogo potentsiala regiona (na primere Respubliki Komi) [Trends of the Region Labor Potential (With the Komi

Republic as an example)]. Regional Economics: Theory and Practice, 34 (361), 11- 21.

Novikov, V., Zhubarkin, S. and Chalyi, V. 2013. Osobennosti vosproizvodstva i issledovaniya trudovogo potentsiala selskikh territoriy Rossiyi: otraslevye, demograficheskie i sotsialnye aspekty. [Peculiarities of Reproduction and Research of Labor Potential of the Russian Federation Rural Territories: Industrial, Demographic and Territorial Considerations]. Agricultural Economy, 7-8, 138-149.

Popov, A.V. 2016. Kompleksnaya otsenka trudovogo potentsiala territoriy (na primere subyektov RF) [Comprehensive Assessment of Labor Potential of the Territories (Evidence from Constituent Territories of the RF)]. Belarusian Economic Journal, 1, 83-94.

Regions of Russia. Social and Economic Indicators. 2015. 2015:Stat. Digest/Rosstat. Moscow, pp. 1266.

Rimashevskaya, N.M., Migranova, A.L. and Toksanbayeva, S.M. 2014. Chelovecheskiy i trudovoy potentsial rossiyskikh regionov. [Human and Labor Potential of Russian Regions]. Population, 3, 106-119.

Russia by the Numbers. 2014. Brief Stat. (2014). Digest/Rosstat. Moscow.

Sovetov, P.M., Chekmaryova, A.Ye. and Panov, M.M. 2015. Teoretiko-metodologicheskiye aspekty issledovaniya trudovogo potentsiala selskikh territoriy [Theoretical and Methodological Aspects of Rural Territories Labor Potential Analysis]. Problems of Territory's Development 2015, 4 (78), 80-96.

Statistical Yearbook of Russia. 2014. 2014: Stat. Digest/Rosstat. Moscow, pp. 845.

Stroeva, O., Lyapina, I., Konobeeva, E. and Konobeeva, O. 2015. Effectiveness of Management of Innovative Activities in Regional Socio-Economic Systems. European Research Studies Journal, 18(3), 63-67.

Thalassinos, I.E., Ugurlu, E. and Muratoglu, Y. 2012. Income Inequality and Inflation in the EU. European Research Studies Journal, 15(1), 127-140.

The Conception of Sustainable Development of Rural Territories of the Russian Federation for the Period Up to 2020: Approved by the Decision of the Government of the Russian Federation. (November 30, 2010). Legislation Bulletin of the Russian Federation, 50, 6748.

Wang, X. Jikun, H., Linxiu, Z. and Scott, R. 2011. The Rise of Migration and the Fall of Self Employment in Rural China's Labor Market. China Economic Review, 22(4), 573-584.

Zinovyev, A.G. and Shchetinin, N.E. 2014. Metodicheskiye podhody po opredeleniyu kompleksnoy otsenki trudovogo potentsiala regiona. [Methodological Approaches to Determination of the Region Labor Potential Rating]. Bulletin of Altaic Science, 2(3), 210-214.