DOI 10.22394/1818-4049-2017-81-4-23-29
УДК 338.45 (571.6)

Vladimir Filippovich Efremenko – Candidate of Economics, docent, the Far-Eastern institute of management – branch of RANEPA (Khabarovsk) *E-mail: vladfilef@yandex.ru*

Sergey Mikhailovich Bakharev – Deputy Director for development of federal and regional instruments of innovation activities support NPO "The Far-Eastern Innovation Support Agency" (Khabarovsk). *E-mail: bakharev@dasi27.ru*

High-technology manufacturing industry as a factor of population conservation and development in the Russian Far East

The demographic situation observed in the Far East of Russia is directly connected with the possibilities of the economy to provide working places for the employable population. Despite the fact that the adopted and implemented State policy is aimed at consolidating and increasing the population in macro-region, a steady migration outflow is observed, which is directly related to the strengthening of the raw material trend of the economy and reducing jobs in manufacturing, as well as in supplying industries and social sectors. Our research shows that the migration outflow of the population has a positive correlation with the continuing decline of jobs in the manufacturing industries. The Pearson correlation coefficient between these two processes is 0.97, which indicates a high degree of influence of the employment structure change on the migratory behavior of the population. The changes in the basic sectors of the economy should be taken into account for consideration and prediction of demographic processes. The positive changes in the demographic situation are possible only due to transition to a qualitatively new model of economic development, based on new, technologically improved manufacturing activities.

Keywords: *migration factors, economy, specialization fields, manufacturing industry, correlation, the Far East of Russia, innovation activities*

Высокотехнологичная обрабатывающая промышленность как фактор сохранения и развития населения на Дальнем Востоке России

Демографическая ситуация, наблюдаемая на Дальнем Востоке России, непосредственно связана с возможностями экономики по обеспечению рабочими местами трудоспособного населения. При том, что принятая и проводимая государственная политика направлена на закрепление и прирост численности населения в макрорегионе, наблюдается его устойчивый миграционный отток, что непосредственно связано с усилением сырьевой направленности экономики и сокращением рабочих мест в обрабатывающих производствах, а также обеспечивающих отраслях и в отраслях социальной

сферы. Проведенные нами исследования показывают, что миграционный отток населения имеет положительную корреляционную связь с продолжающимся сокращением рабочих мест в обрабатывающих отраслях промышленности. Коэффициент корреляции Пирсона между этими двумя процессами составляет 0,97, что говорит о высокой степени влияния изменения структуры занятости на миграционное поведение населения. Рассмотрение и прогнозирование демографических процессов должно осуществляться с учетом изменений в базовых отраслях экономики. Положительные изменения в демографической ситуации возможны только при переходе к качественно новой модели экономического развития, основанной на новых, технологически улучшенных обрабатывающих производствах.

Ключевые слова: *факторы миграции, экономика, отрасли специализации, обрабатывающая промышленность, корреляция, Дальний Восток России, инновационная деятельность.*

The concept of population policy of the Far East until 2025 as a strategic objective determines stabilization of population of the Far East at the level of 6,2 million people by 2020 and its increase up to 6,5 million people by 2025. Achievement of this purpose is supposed including due to a reduction of migration outflow of the resident population what will demand "to provide identification and research of the factors stimulating migration moods of the population …" [1]. By L.L. Rybakovskiy's definition, "the reasons of population migration are nothing else as reaction of the individual (his requirements, installations, valuable orientations) to those factors which interact with this phenomenon" [2]. In turn, to the factors – conditions, being migration process determinants, also the other factors of natural and social environment surrounding the person belong: geographical, natural, social and economic (economic, social) [2]. From the point of view of management of migration the changeable economic factors are of the greatest interest.

The current state of migration situation in the Far-Eastern federal district of the Russian Federation (further the FEFD) is characterized by E.L. Motrich: "… The region lost the appeal and, since 1989, the Far East has the negative migration balance … In reduction of population in the Far East the natural losses made 225,5 thousand people (12,7%), migration outflow – 1554,5 thousand people (87,3%). The able-bodied population leaves the FEFD, first of all. Only for 2010 in the general loss of the population due to migration 73,1% …" fell to the share of the able-bodied population [3].

Thus, reduction of the population in the FEFD happens mainly due to the migration outflow (nearly 90% decreased), in the structure of which population at the working-age (nearly 75% of the leaving migrants) prevails that allows assume significant influence of economic factors on the change of demographic situation.

From here, the purpose of the real research is identification and measurement of interrelation between the dynamics of transformations in the economic system of the FEFD and reaction of the population to these

transformations which final form is migration as "one of the best indicators of social and economic welfare of the society is some kind of way of vote of the population by the legs" [4]. The degree of interrelation of change of the structure of economy of the macro-region as a driving force of demographic processes, and the number of population living here let's measure by the means of methods of the correlation analysis.

The economic growth in the macro-region measured by the indicators of the gross regional product (GRP) advances the average Russian rates. During 2005 – 2014 the total volume of GRP on the territorial subjects of the Russian Federation increased by 3,27 times whereas in the FEFD this indicator grew by 3,9 times [5]. However the advancing economic growth doesn't lead to improvement of the social and demographic indicators in the FEFD, and, on the contrary, is followed by their degradation. Apparently, the quality of growth, change of the structure of the made GRP matters.

We will consider the dynamics of development of the primary branches of specialization of the macro-region which are turning out the products focused on the export out of borders of the territory. They represent a kernel of productive forces of the region around which the serving, ancillary and the other industries of economy are formed. To the primary branches of specialization of the FEFD treat the extracting and manufacturing industry to which share in 2014 28,6 and 5,1 percent of the value added made in the macro-region fell respectively.

In 10 years the total volume of investment into the extracting productions exceeded the corresponding indicator of the processing productions by 6,4 times, and volumes of the value added made in a year increased in the extracting branch by 7,4 times, in processing – by 2,6 times. On average during 2010 – 2014 in the extracting branch for one ruble of investments was 0,42 rubles of profit whereas in processing the balanced financial result (profit minus a loss) is several orders less, or even negative. The investments enclosed in the extracting branches give the maximum return on the invested capital, however don't create additional work places. At the same time, relatively considerably the smaller volumes of investment into the processing productions lead to a conclusion of production capacities and reduction of work places.

However reduction of a number occupied in the processing branches has positive correlation connection with the reduction of population in the macro-region (tab. 1).

Table 1

The number of population and occupied in the branches of manufacturing industry of the FEFD of the Russian Federation, 2005 – 2015

Years	Average annual number of occupied in the processing productions, one thousand persons.	Population, one thousand persons
	X	Y

2005	318,0	6 460,0
2006	305,4	6 398,0
2007	307,4	6 369,0
2008	294,3	6 339,0
2009	294,6	6 320,0
2010	283,2	6 285,0
2011	290,8	6 266,0
2012	280,1	6 252,0
2013	277,1	6 227,0
2014	267,6	6 211,0
2015	262,0	6 195,0
Sum:	3 180,5	69 322,0
Arithmetic-mean value:	289,1	6 302,0

Source: it is made by the author on the basis of these collections of Rosstat "Regions of Russia" during 2007-2016.

The linear correlation analysis allows establish direct connections between the variables on their absolute values. The formula of calculation of the coefficient of correlation is made in such way that if the connection between signs has linear character, the Pearson's coefficient precisely establishes the narrowness of this connection.

Coefficient of linear correlation of Pearson for our case:

$$r_{xy} = \frac{\sum(x_i - \bar{x}) \times (y_i - \bar{y})}{\sqrt{\sum(x_i - \bar{x})^2 \times \sum(y_i - \bar{y})^2}} = \frac{13\ 893{,}8}{\sqrt{2\ 952{,}4 * 69\ 802{,}0}} = 0{,}968$$

Connection between the average annual number of occupied in the processing productions and the number of population is statistically significant and positive. Connection power is very high. The received directly proportional dependence says that he number of occupied in the branches of manufacturing industry is lower, the population and vice versa is lower.

Reduction of work places in the branch of the specialization forming a kernel of economic system of the region leads to the accompanying reduction of the number occupied in the branches providing and supporting production, such as production and distribution of the electric power, gas and water, transport and communication (tab. 2). At the same time, reduction of the number occupied in the economy and the number of living population determine the reduction of a number occupied in education, health care, providing social services that, in turn, leads to a further decrease of the attractiveness of the territory for accommodation of the population, speaking to "untwisting of a negative migration spiral".

Calculation of the coefficient of linear correlation of Pearson between the population and a number occupied in education yields the result 0,977 (very high power of positive connection), and with a number occupied in health care and providing social services makes 0,876 (the high power of positive connection).

Thus, change in the tendencies of migration behavior of the population living in the FEFD of the Russian Federation can happen only as a result of carrying out purposeful policy on creation of new work places in the branches of processing industry. This branch of specialization of the region exerts the determining impact on the situation with employment in general, including production and social infrastructure, and, as shown above, determines the migration outflow of population leading to the decrease in its number.

Unlike processing, mining industry doesn't create new work places, doesn't exert direct impact on the development of branches of the social sphere in the macro-region. However, possessing the high extent of return on the invested capital, mining industry is the main recipient of investments. In the country scales in general it creates the danger of decline in the quality of investments in sense of orientation of investment expenditure for creation and input of new, more effective technologies and appropriate means of work [6].

The task "stimulations of investments, first of all for the benefit of technological modernization and updating of the industry", formulated by the President of the Russian Federation V.V. Putin at the 18th St. Petersburg international economic forum, in the Far East of Russia is shown "with the regional coefficient", becomes "a survival formula" of the region.

Here with the greatest sharpness the need of transition to the qualitatively new model of economic development based not on an increasing production and the export of raw materials and energy resources, and on an increase in production of goods with the high value added on development of the knowledge-intensive branches, acceleration and increase in the efficiency of scientific and innovative activity is shown [6].

At the same time transition to the mainly innovative model of development of the macro-region, development of the hi-tech processing productions, will allow pass in the demographic situation to stabilization in the beginning, and then and to development of the resident population.

Literature and the sources:

1. Концепция демографической политики Дальнего Востока на период до 2025 г. : утверждена Распоряжением Правительства Российской Федерации от 20 июня 2017 г. № 1298–р.

2. Рыбаковский Л. Л. Факторы и причины миграции населения, механизм их взаимосвязи // Народонаселение. 2017. № 2. С. 51–61.

3. Мотрич Е. Л. Демографические перспективы Дальнего Востока России // Демографическое настоящее и будущее России и её регионов. Материалы Всероссийской научно-

практической конференции 30 – 31 мая 2012 года. Выпуск 2, тезисы. С. 289–292.

4. Практическая демография : учебник / под ред. Л. Л. Рыбаковского ; Рос. акад. наук, Ин-т соц.-полит. исслед. М. : Центр соц. прогнозирования, 2005 (Люберцы (Моск. обл.) : ПИК ВИНИТИ). 277 с.

5. Регионы России. Социально-экономические показатели. 2016 г. : стат. сб. // Росстат. М., 2016. 900 с.

6. Инновационное наполнение инвестиционной политики: монография / отв. ред. В. И. Кушлин. Москва : Проспект, 2017. 240 с.

References:

1. Koncepciya demograficheskoj politiki Dal'nego Vostoka na period do 2025 g. : utverzhdena rasporyazheniem Pravitel'stva Rossijskoj Federacii ot 20 iyunya 2017 g. № 1298-r.

2. Rybakovskij L. L. Faktory i prichiny migracii naseleniya, mekhanizm ih vzaimosvyazi // Narodonaselenie. 2017. № 2. S. 51–61.

3. Motrich E. L. Demograficheskie perspektivy Dal'nego Vostoka Rossii // Demograficheskoe nastoyashchee i budushchee Rossii i eyo regionov. Materialy Vserossijskoj nauchno-prakticheskoj konferencii 30 – 31 maya 2012 goda. Vypusk 2, tezisy. S. 289–292.

4. Prakticheskaya demografiya : uchebnik / pod red. L. L. Rybakovskogo ; Ros. akad. nauk, In-t soc.-polit. issled. M. : Centr soc. prognozirovaniya, 2005 (Lyubercy (Mosk. obl.) : PIK VINITI). 277 s.

5. Regiony Rossii. Social'no-ehkonomi-cheskie pokazateli. 2016 g. : stat. sb. // Rosstat. M., 2016. 900 s.

6. Innovacionnoe napolnenie investicionnoj politiki: monografiya / otv. red. V. I. Kushlin. Moskva : Prospekt, 2017. 240 s.