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# LABOR FORCE INTERSECTORAL MOVEMENT AS A FACTOR OF RUSSIAN LABOR MARKET DEVELOPMENT

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## Abstract

The paper is devoted to assessing the impact of intersectoral labor movement trends on the situation in the employment sphere and RF labor market. The purpose of the work is to show the features of labor movement processes at the industry level and identify how labor movement trends affect local labor markets' state and dynamics. The dynamics of labor movement indicators by types of economic activity are analyzed; the intensity of labor force movement by economic activities is compared. Using the specially constructed index of the level of tension in the industry's labor markets is estimated. A modified tension index is proposed to assess the level of tension, taking into account the labor movement factor. It is shown that taking into account trends in the population and labor force movement significantly changes the conclusions about the state of employment and the labor market, particularly about the level of tension in local labor markets. The role of the movement factor in the process of labor demand and labor supply adjustment is evaluated.

*Keywords:* Employment, labor force, labor market, movement, sector

## 1. Introduction

One of the key economic tasks relevant to our country's economy is to achieve the complete coordination of labor demand and labor supply. During recessions or periods of low economic growth, this task becomes even more urgent. Ongoing and prospective structural shifts and institutional changes in the Russian economy and the domestic labor market potentially seriously increase the risks of a deterioration of the employment sphere (Akindinova et al., 2020) and (Porfiryev et al., 2020). The structural changes caused by the crisis and the transformation of the current system of jobs are likely to lead to a further increase in structural imbalances, especially in a situation where the prospects for the Russian economy's exit are ambiguous and directly depend on the success of the implemented economic policy (Gurvich and Vakulenko, 2018) and (Ivanter et al., 2018). Since the interaction of labor demand and supply is mediated by the processes of labor movement and jobs, for a complete analysis and prediction of the results of this interaction, it is necessary to study labor movement processes and changes in its intensity under the influence of various socio-economic factors. In turn, the population and labor force's movement affects the dynamics of national and local labor markets. Trends in the movement of population and labor force can be considered as a factor of economic dynamics. Or even as a set of factors, if we consider different forms of movement of the population and labor force, which can affect the socio-economic dynamics and the state of the labor market in different ways. Ignoring this factor under certain conditions can lead to mistakes by analysis and forecasting.

## 2. Problem Statement

Intersectoral labor movement is closely related to other forms of labor movement, particularly with professional and qualification movements. The intersectoral movement of labor itself is a multidimensional phenomenon that combines different types of movement and labor force flows and labor supply. A comprehensive study of the processes of intersectoral movement of labor, taking into account all the features identified or hypothetically possible interdependencies and relationships due to several information restrictions, is difficult. The existing information problems also create quite certain difficulties when choosing predictive and analytical research methods and adapting already developed tools for research purposes.

The intersectoral labor movement issues are closely related to the problems of creating and eliminating jobs, since the trends in the movement of labor and jobs determine and complement each other. The approach to assessing the process of creating and eliminating jobs that has become a classic over time is described in (Davis et al., 1996). Its further development in the analysis of the relationships between creating and destroying jobs with other macroeconomic processes is given in many works (Andersson et al., 2018) and (Haltiwanger et al., 2018). A separate research direction is to investigate factors that stimulate job creation or job reduction under certain conditions (Haltiwanger, Hyatt, Kahn et al., 2018). For example, the correlation between job loss and regional mobility is focused in (Huttunen et al., 2018).

In Russia, population and labor force movement problems and the assessment of their dynamics and structure are often considered in the scientific literature, among other, more general and complex issues. This also applies to intersectoral movement of the population and labor force.

The most developed research area is the inter-regional movement of the population, labor resources, and labor force. It is considered an inter-regional movement of the population as a whole and their groups separated by one or another socio-demographic feature. First of all, the analysis of both external and internal interregional migration of the population is quite extensive (Kartseva et al., 2020); (Vakulenko & Mkrtchyan, 2020) and (White, 2007).

Problems of other forms of population and labor force movement, particularly the movement of labour by types of economic activity, occupations, are usually much more immersed in the broader context of available employment and labour market problematic issues, analysis of the current situation and evaluation of possible perspectives. Such an approach is implemented (Gimpelson et al., 1997); (Gurvich & Vakulenko, 2018); (Korovkin, 2018). At the same time, there are also examples of specialized studies, including those involving microeconomic data (Gimpelson & Sharunina, 2015); (Gimpelson et al., 2016) and (Podverbnykh & Samokhvalova, 2019).

## 3. Research Questions

The article considers the following range of research questions. First, we test the hypothesis that the intensity and productivity of labor force movement differ significantly by economic activity, and these differences are fairly stable over time, at least on the level of economic activity. Second, the hypothesis is tested that labor force movement trends affect the labor market situation, namely, the estimate of the tension level on the local labor markets.

## 4. Purpose of the Study

The purpose of this work is to identify the features of the processes of labor force intersectoral movements, namely, at the level of kinds of economic activities and take into account their impact on the current and future state of the employment sphere and the Russian labor market. So we can clarify the contribution of individual factors that affect the state of employment. Even more important is the possibility of obtaining more accurate estimates of the future dynamics of the main parameters of the russian labor market and local labor markets.

## 5. Research Methods

### 5.1. Statistical information used and its characteristics

The primary source of information is the official data of the national statistics service (Rosstat). In particular, information was used on the dynamics of admission and dismissal of employees of large and medium-sized enterprises (small businesses are not taken into account, as well as movements in the informal sector of Russian economy). According to the criteria adopted by Rosstat, the main feature of classifying a workplace as a workplace in an informal sector is the lack of legal entity status. Thus, the

available data characterize not the whole process of the labor force movement in the Russian economy, but a significant part of it. It certainly impoverishes the analysis somewhat, and also makes it necessary to make additional assumptions.

### 5.2. Approach to estimate the level of tension

To assess the level of tension in the Russian labor market by kinds of economic activity, an integral index was used that takes into account the unemployment rate, the share of unsatisfied demand in the total demand for labor, the share of part-time workers, and the tension coefficient (the ratio of the number of unemployed to the number of vacant jobs). The level of tension grows if the unemployment rate increases. More difficulties for potential employees to find a new job means that the level of tension on the labor market becomes higher and vice versa. The situation with a possible shortage of skilled labor, in this case, is not considered as a situation of high tension on the labor market, although, of course, it is also an example of labor demand and labor supply discoordination. Moreover, it also can negatively affect the socio-economic dynamics (Korovkin, 2018).

Each kind of economic activity was assigned a rank depending on the value of the considered indicators of the labor market, mentioned above. High values of three indicators (the unemployment rate, the percentage of part-time workers, and the tension coefficient) correspond to the higher rank. For the share of unsatisfied demand for labor and the balance of workers movement, the higher the rank value, the lower the value of the indicator. Since a high share of unmet demand indirectly indicates that there are sufficient jobs, that is, relatively low tension. In turn, a positive balance in the workers' movement means that in certain kinds of economic activity the number of hired workers exceeds the number of dismissed workers, the number of employed people increases (at least in the sector of large and medium-sized enterprises). So it is also a sign of relatively low tension on the local labor market. After determining individual ranks for all kinds of economic activity, the average rank value is calculated. A comparison of the corresponding average rank values gives the desired tension index. The level of tension in the local labor market is higher than average if this index's values are greater than one. Otherwise, the opposite situation is observed.

## 6. Findings

The analysis shows that a significant number of employees are involved in the processes of labor force movement. In 2000-2019 the turnover was from 55 to 63% of the total number of employees of large and medium-sized enterprises (with maximum in 2006-2007). In absolute terms, the labor force movement turnover reached its maximum values (24,3-24,4 mln. employees) in 2001-2002. In 2002-2008, the turnover fluctuated at the levels of 23-24 million employees. Since 2009 the turnover began to decrease, although in some years or even periods (2012-2013; 2017-2019) the labor force movement turnover, on the contrary, increased. In 2019, it amounted to 18,8 million employees with a negative balance of 374 thousand employees or 1,1% of their total number.

In reality, the share of employees involved in the moving process is less, since the same employees can participate in both the admission and dismissal process. Even more important is the fact that some employees participate in the movement process repeatedly.

At the same time, the movement of employees of large and medium-sized enterprise is only part of a complex process of labor force movement, which also involves those employed in the informal sector of the economy, the unemployed, potential labor force, and other persons who are not part of the labor force.

It is obvious that the movement of the labor force also occurs outside the sector of large and medium-sized enterprises, although it is quite difficult to estimate reliably with limited statistical information. For example, if we assume that the intensity of movement of employees of enterprises of different sizes is comparable, then about 6-7 million employees of small enterprises also participate in the movement process.

### 6.1. The estimation of labor force movement intensity

During the entire period under review the number of dismissed people on the large and medium-sized enterprises exceeded the number of admitted people, that is, as a result of the labor force movement, this segment of the labor market was constantly declining. In total, in 2000-2019, the difference was about 10 million people with the maximum in 2009 (1,5 million). Minimal differences between the number of dismissed and admitted people took place in 2006-2007.

The types of economic activities differ markedly in the intensity and effectiveness of the labor force movement. For example, for the period 2017-2019, in RF economy as a whole the were 1,1 mln. more dismissed persons than admitted. At the same time, in two sections of economic activities (mining and quarrying; information and communication), a trend has developed that is the opposite of the all-Russian one. The balance between two values was close to zero in one more section of economic activity (professional, scientific and technical activities). The group of economic activity sections where the dismissal was particularly high above the admission includes sections agriculture, forestry and fishing; manufacturing; electricity, gas, steam and air conditioning supply; water supply, sewerage, waste management and remediation activities; construction.

Suppose we consider the balances of dismissed and admitted persons separately by year. In that case, the list of economic activities with a positive balance (at least for one particular year) will expand significantly, which may indicate the instability of the ongoing structural changes.

The flows of the dismissal and admission are concentrated. Both in the structure of dismissal and admission, almost 40% in 2017-2019 is accounted for three types of economic activity: wholesale and retail trade; repair of motor vehicles and motorcycles; manufacturing; and education.

If you rank the types of economic activities (according to the turnover relative to the number of employees), then in the first place in 2017-2019 will be the accommodation and food service activities about 150%). The second place with an average of 113% is occupied by construction. Finally, in wholesale and retail trade, repair of motor vehicles and motorcycles the analyzed ratio amounted to 110% during this period. Thus, these three sections of economic activities form a group characterized by a particularly intensive labor force movement. On the contrary, for such types of economic activities as Public administration and defense, compulsory social security; Education; Human health and social work activities, this indicator's values were minimal and did not exceed 40%.

In general, the intensity of labor force movement was below the average for the economy, in 7 sections of economic activities. And in 12 sections the intensity of labor force movement was higher than the average for the economy.

### 6.2. Industrial labor markets and its characteristics

There is a marked differentiation of types of economic activity in terms of labor market indicators. Thus, according to the data of labor force surveys, the difference in the unemployment rate by types of economic activity in 2017-2019 reached three times (Table 1).

**Table 1.** Unemployment rate and unemployment to vacancies ratio by sections of economic activity in 2017-2019

| Section of economic activity | Unemployment rate | Tension coefficient (Unemployment to vacancies ratio) |
|---|---|---|
| RF, total | 4,9 | 2,9 |
| Agriculture, forestry and fishing | 6,0 | 11,1 |
| Mining and quarrying | 3,1 | 3,4 |
| Manufacturing | 3,8 | 4,3 |
| Electricity, gas, steam and air conditioning supply | 2,9 | 1,5 |
| Water supply; sewerage, waste management and remediation activities | 3,9 | 1,9 |
| Construction | 5,0 | 14,3 |
| Wholesale and retail trade; repair of motor vehicles and motorcycles | 4,7 | 10,0 |
| Transportation and storage | 3,1 | 2,1 |
| Accommodation and food service activities | 5,5 | 8,0 |
| Information and communication | 2,7 | 1,5 |
| Financial and insurance activities | 2,8 | 1,7 |
| Real estate activities | 4,2 | 1,4 |

| | | |
|---|---|---|
| Professional, scientific and technical | 2,0 | 1,1 |
| Administrative and support service activities | 3,9 | 2,5 |
| Public administration and defence; compulsory social security | 3,0 | 0,8 |
| Education | 2,4 | 3,1 |
| Human health and social work activities | 2,0 | 0,7 |
| Arts, entertainment and recreation | 3,1 | 2,4 |
| Other service activities | 2,7 | 23,3 |

The highest unemployment rate was observed in agriculture, forestry and fishing (6,5% in 2017 and 5,9% in 2018), in accommodation and food service activities (5,6% in 2019). Two sections with the lowest unemployment rate to be mentioned: professional, scientific and technical activities and human health and social work activities. It is necessary to mention, that over the past three years, the minimum unemployment rate has decreased by only 0,2 percentage points (from 2% to 1,8%).

Among other economic activities, it makes sense to distinguish two sections: wholesale and retail trade; repair of motor vehicles and motorcycles) and real estate operations. In the first of these sections, the fairly high unemployment rate (4,8%, rank 16 among 19 sections) has not changed in three years (while the overall unemployment rate in the Russian economy has decreased by 0,6% p.p., among those with work experience-by 0, 4% p.p.). And real estate activities became the only economic activity where unemployment rate even increased.

The structural factor plays an important role in explaining the existing unemployment in industrial labor markets: the share of industrial structural unemployment in its total value in 2017-2019 was estimated at about 40% the Jackmen-Roper structural unemployment index (Jackman & Roper, 1987) was used. At the same time, it is obvious that along with industry structural imbalances, there are other imbalances, so the structural unemployment is even higher.

The maximum value of the tension coefficient (18,3 in 2019) was observed in the provision of other services, which consistently had the highest rank for this indicator. Without taking into account this type of economic activity, the spread of values becomes significantly smaller (13,4 times in 2019). The group of sections with a very high (two or more times higher than the national average) tension coefficient includes agriculture, forestry and fishing; construction; wholesale and retail trade; repair of motor vehicles and motorcycles; accommodation and food service activities. It is obvious that in this case we see many intersections with the results obtained earlier by analyzing the unemployment rate.

Values of the tension coefficient less than one were observed only in public administration and defence; compulsory social security  and human health and social work activities. These two types of economic activity are also characterized by a fairly high proportion of unsatisfied labor demand.

It should be noted that relatively high unsatisfied labor demand indicators in certain local labor markets can be combined with a significant amount of unsatisfied labor supply. Among other things, this indirectly indicates the intensity of labor force movement in this segment of the labor market, the increased involvement of employees in the relevant sector in intersectoral labor force  movement processes. This seems to be the pattern observed in the accommodation and food service activities.

The maximum value of the admission and dismissal of employees (in % of turnover)  was observed  in mining and quarrying (2017) and in information and communication (2018-2019). However, the composition of the leaders is not stable from year to year. But the composition of the sections in the other part of the list, with the worst values of the indicator under our consideration, is more stable.

### 6.3. The level of tension on industrial labor markets and its estimation

The calculation of the integral index of tension takes into account the impact of all the above factors to assess the state of local labor markets and on this basis to compare the types of economic activities by the level of tension (Table 2). Tension index is calculated taking four parameters into account. Labor force movement is not taking into account.  Then we calculate the modified tenыion index, we take labor force movement into account.

**Table 2.** Values of the integral tension index by type of economic activity, with or without consideration of the movement factor.

| Section of economic activity | Tension index | Modified tension index | Difference, in % |
|---|---|---|---|
| Agriculture, forestry and fishing | 1,21 | 1,26 | -4 |
| Mining and quarrying | 1,01 | 0,85 | 16 |
| Manufacturing | 1,37 | 1,40 | -2 |
| Electricity, gas, steam and air conditioning supply | 0,50 | 0,67 | -34 |
| Water supply; sewerage, waste management and remediation activities | 0,82 | 0,98 | -19 |
| Construction | 1,28 | 1,34 | -5 |
| Wholesale and retail trade; repair of motor vehicles and motorcycles | 1,26 | 1,12 | 11 |

| | | | |
|---|---|---|---|
| Transportation and storage | 0,80 | 0,82 | -2 |
| Accommodation and food service activities | 1,31 | 1,17 | 11 |
| Information and communication | 0,56 | 0,51 | 9 |
| Financial and insurance activities | 0,72 | 0,77 | -7 |
| Real estate activities | 0,72 | 0,72 | 0 |
| Professional, scientific and technical | 0,68 | 0,63 | 8 |
| Administrative and support service activities | 0,89 | 0,81 | 9 |
| Public administration and defence; compulsory social security | 0,27 | 0,40 | -49 |
| Education | 1,13 | 1,09 | 4 |
| Human health and social work activities | 0,38 | 0,48 | -26 |
| Arts, entertainment and recreation | 1,15 | 1,03 | 10 |
| Other service activities | 1,31 | 1,25 | 5 |

The maximum level of tension is observed in manufacturing, where it is above the average of 37%. The minimum level of tension is recorded in public administration and defence; compulsory social security where it was only 27% of the national average. Thus, the spread of the index values was about five times. It is greater than the spread in unemployment rate, but lower if we compare with the level of standard tension coefficient (unemployment to vacancies ratio). All types of economic activity are divided into almost half: in nine sections of the 19 types of economic activity, the level of tension is higher than the national average, and in 10 sections it is lower than the national average. The influence of labor force movement on the tension level on the labor market is not very high. As we can see from Table 2, two estimates of tension index are close to each other, at least for seven types of economic activity the difference does not exceed 5%. Only for one type of economic activity (mining and quarrying), taking into account the movement factor qualitatively changes the conclusion about the degree of tension on the local labor market. There is also a noticeable decrease (by 10-11%) in the level of tension for wholesale and retail trade; repair of motor vehicles and motorcycles; and Accommodation and food service activities. The sufficient percentage change is observed in public administration and defence; compulsory

social security; and electricity, gas, steam and air conditioning supply (by 50 and 30%, respectively). But in both cases, this does not change the conclusion that these economic activities are characterized by a lower than average level of tension. When taking into account the movement factor, the spread of the maximum and minimum values of the intensity index decreased significantly (from 5 to 3,5 times). This result is due to a certain increase in the level of tension in those sections where they were (without taking into account the labor force moving factor) especially low.

## 7. Conclusion

The analysis has shown that trends in the labor force movement significantly impact the employment sphere's current state and dynamics and the labor market. The hypothesis about the different intensity and effectiveness of the labor force movement by types of economic activities was confirmed. All types of economic activities could be divided in several groups according to the intensity of labor force movement. Trends in intersectoral labor force movement affect local labor markets, but the influence is not very strong. In particular, it is proved by comparing estimates of the level of tension without taking into account and considering the indicators of labor force movement. Excluding or including individual indicators, can significantly change the results of the analysis and the influence of individual factors can change over time, which increases the relevance of regular monitoring of their dynamics. At the same time, types of economic activity can have different ranks for individual indicators indicate. So one can see how crucial is a particular problem for a specific local labor market. This can help in choosing the emphasis of the state employment policy being implemented in the practical field.

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