ATLANTIS PRESS
Advances in Social Science, Education and Humanities Research, volume 486
Proceedings of the Research Technologies of Pandemic Coronavirus Impact (RTCOV 2020)

Labor Market During the Post-pandemic Period: State and Perspectives of Development

Sankova L.V.* Yanchenko E.V. Ivanova N.A.

Yuri Gagarin State Technical University of Saratov, Saratov 410054, Russia,
**Corresponding author. Email: lsan@mail.ru*

ABSTRACT
The relevance of the study is determined by the need to assess the state and development prospects of the labor market in Russia in the post-pandemic period at the federal and regional levels. The authors consider the key indicators of the labor market before the start of the pandemic, during its first wave, as well as after its end. The article presents a typology of regional labor markets for a number of indicators, identifies the intergroup correspondences and evaluates the elasticity of employment. It is shown that the pandemic has a direct impact on the key indicators and structure of the labor market, causing a decrease in employment in different sectors to varying degrees, increasing the inequality of regional labor markets, determining different rates of recovery and movement towards a new employment model in the regions. The high asymmetry of the Russian labor market in the context of the pandemic and after its first wave in the regional aspect reproduces and even intensifies the previously existing imbalances. The research results can be used to study the “crisis profiles” of regional labor markets and identify the potential for their recovery.
Keywords: *labor market, employment, unemployment, salary, pandemic, regions*

1. INTRODUCTION

The recently begun and not abated second wave of the coronavirus pandemic has affected all countries of the world and all segments of the population, resulting in large-scale negative consequences for the nation's human capital - its health, ability to work, as well as the ability to actively work for the good of the country. The number of detected cases of a new coronavirus infection in the world has exceeded 30 mln. WHO estimates that at least 60-70% of herd immunity is required to stop the epidemic. While in Russian regions this indicator varies within the range of 6-50%. Specific restrictive measures aimed at preventing the spread of this life-threatening disease, amid falling consumer and investment spending, caused trade shocks, a decrease in demand for non-food products and services. Production reacted to the drop in aggregate demand by reducing supply, and, therefore, employment, hours of work, loss of jobs and means of a decent livelihood for workers and their families.

The deterioration in the structure of the labor market is due to the "subsidence", first of all, in the segment of the tourism business, rail and air transportation, the fitness industry, the automotive industry, etc. Although the impetus for accelerated development is acquiring online services that facilitate the independent performance of a number of tasks, subsequently this may lead to a decrease in the demand for labor of many categories of workers (in particular, legal consultants, managers, junior analysts, realtors, bank employees), but will expand the scope application of part-time and multidisciplinary employment. In our country, due to the insufficient level of digital skills among the majority of the population, a sharp surge in distance employment is unlikely.

The negative impact of the crisis exacerbates the problems of income, a decent standard of living in accordance with the consumption standards of a digital society and deepens inequality. The governments of many countries and the Russian Federation, including, have taken measures to support socially vulnerable segments of the population, anti-crisis regulation of the labor market.

The impact of the coronavirus pandemic on the labor market, employment and inequality is highlighted in the ILO reports and research materials at the international and national levels. There is a number of studies developing this direction. The impact of the pandemic on the economy, the labor market is considered by researchers in different aspects: the problem of employment in small and medium-sized businesses, the cost and effectiveness of government regulation, the experience of foreign countries in conducting economic policy in the context of the spread of COVID [1,2,3,4,5,6,7]. Recently, the number of studies modeling the dynamics of the pandemic and the economy to quantify the economic costs, as well as various measures of government regulation has been increasing [8].

A new perspective in the study of labor market problems during a pandemic at the level of workers - analysis of changes in working hours, number of meetings, e-mail activity [9].

Despite the growing number of studies of pandemic problems and employment policy, a whole range of problems remains unexplored related to the impact of demand shocks and during the epidemic on the labor market at the federal and regional levels, assessment of interregional differences, development prospects and justification of regulatory measures. The results of this study will allow solving the following tasks: (1) Determination of the possible vectors of development of the labor market and directions of stimulating employment in the post-pandemic period. (2) Specification of the depth of the impact of the crisis on the labor market, as well as the regions most affected by its consequences, (3) Assessment of the degree of impact and measures of elasticity (reaction) of regional labor markets to restrictions.

2. RESEARCH METHODS

General scientific and special (economic and mathematical) methods were used as a methodological basis for the study.
Methods of statistical analysis (calculation of dynamics indices), correlation-regression analysis of the relationship, and mutual influence of the volumes of national production and the level of unemployment were used to study the depth of the crisis consequences for the regions, which made it possible to cluster them. The degree of reaction of the labor market to crisis phenomena was assessed using the elasticity indicator.
The following parameters were used as parameters reflecting shifts in the labor market before the pandemic, during the pandemic, and after the 1st wave of the pandemic: labor force participation rate, unemployment rate, employment, wages, as well as GDP.
For the analysis at the regional level, the grouping method was applied according to the growth rate of the labor force participation rate of the population aged 15-72 years for the period February-April 2020-May-July 2020. Three groups of subjects of the Russian Federation are distinguished, characterized by different rates of change in this indicator.
The empirical basis of the study was the data of Rosstat presented on the official website of the Federal State Statistics Service of the Russian Federation.
At the same time, researchers rightly point out that many traditional official statistics are not suitable for measuring high-frequency events in a pandemic that develop over weeks rather than months [10].

3. RESEARCH RESULTS

A classic indicator reflecting the state of the labor market is the number of unemployed (Fig. 1). Along with the development of the crisis and the implementation of restrictive measures, the number of unemployed is growing: from January to June 2020, the increase was 28%.

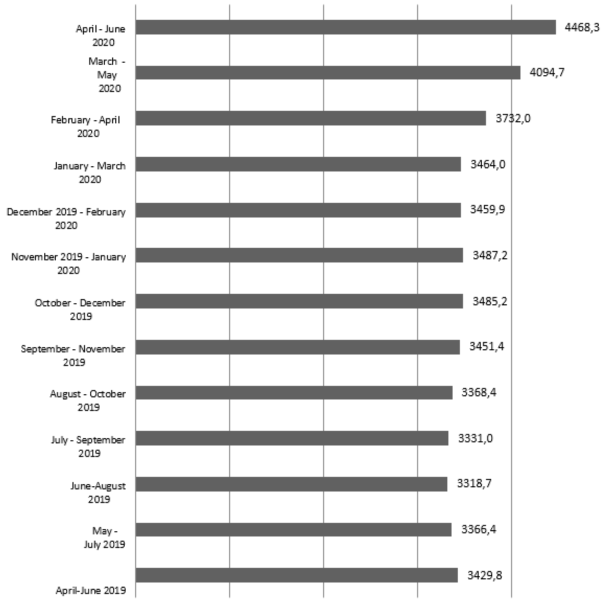

Figure 1: Dynamics of the number of unemployed (on average for three months, April 2019 - June 2020). Source: Rosstat.

Comparison of the industrial production index and the growth rate of unemployment reflects both a gradual increase in the crisis in the industry, which peaked in March 2020, and a parallel deterioration of the situation on the labor market. According to the latest statistics, the largest number of unemployed was recorded in April 2020, which corresponds to the highest rates of decline in industrial production (Fig. 2).

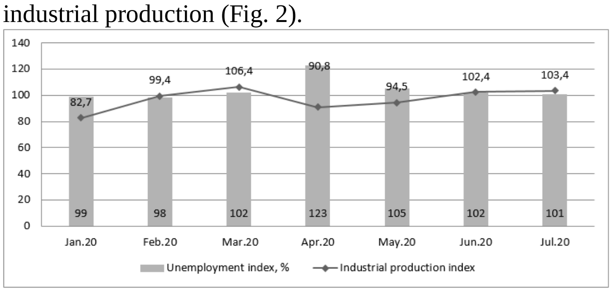

Figure 2: Ratio of industrial production index and unemployment growth rates (January - June 2020)

Correlation analysis of data on the gross domestic product (GDP) and the number of unemployed showed the presence of a feedback with a coefficient of = - 0.66 (average strength feedback).
In August 2020, the Federal State Statistics Service reported that the unemployment rate in Russia was 6.4%, which is far from the double-digit unemployment figures in the United States and several European countries. At the same time, the use of wage and time flexibility mechanisms poses new problems for the Russian labor market that will need to be addressed.
Figure 3 shows the dynamics of the number of employees and the average monthly accrued wages.

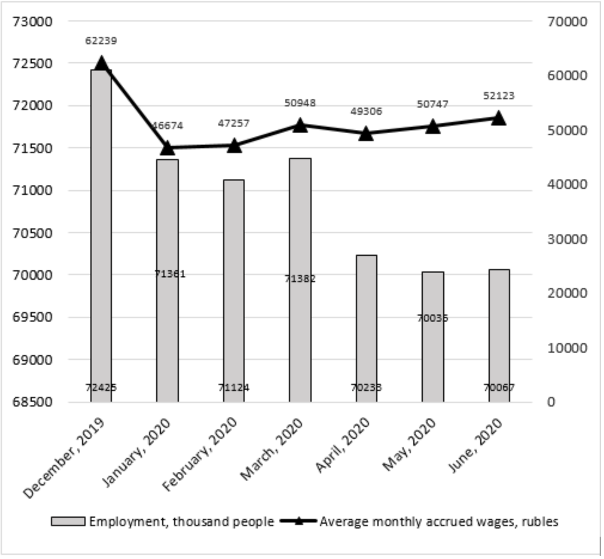

Figure 3: Dynamics of the number of employees and average

monthly accrued wages. Source: Federal State Statistics Service

If we understand the price of labor as the average monthly wage, then the calculation of the elasticity of employment in terms of price and gross output (GDP) reflects its rather weak response (degree of sensitivity) to fluctuations in the economic environment (tab. 1).

Table 1: Estimation of employment elasticity

	Employment, th. people	**Salary, RUR**	**Elasticity of employment with respect to wages**	**GDP, RUR bln**	**GDP employment elasticity**
1	2	3	4	5	6
Quarter 1, 2019	75,014	43,944	-	24,944.8	
Quarter 2, 2019	75,066	48,453	145.7	26,410.2	84.3
Quarter 3, 2019	75,632	45,726	-7	28,875.4	12.4
Quarter 4, 2019	75,877	51,684	43.3	29,815.6	11
Quarter 1, 2020	71,289	48,390	1.05	25,317.7	0.25
Quarter 2, 2020	74,580	50,784	1.08	No data	

Analysis of regional differentiation in the level of labor force participation during the pandemic showed a decrease from 1 to 6% in 37 constituent entities of the Russian Federation (the maximum decrease was observed in the Smolensk region - by 6% and the Republic of Mari El - by 4.2%, the minimum drop in group 1 noted in the Arkhangelsk, Tula and Saratov regions, the city of Sevastopol and the Republic of Ingushetia). The second group includes 32 constituent entities of the Russian Federation, wherein the level of participation in the labor force either remained stable or increased by 1%. A more “successful” situation with respect to others has developed with the level of labor force participation in 16 constituent entities of the Russian Federation (growth from 2 to 10%), and in the Ryazan region the growth was 6.4% and in the Republic of Tyva -10.2%. Thus, in 69 regions, the labor force participation rate for the period from February to July either decreased or remained stable.

We then compared the grouping results obtained with the grouping of regional labor markets by labor force participation. Thus, 14 regions of the Russian Federation characterized by a higher level of labor force participation (from 78% in the Chukotka Autonomous Okrug to 70.8% in the Belgorod Region), showed the different rates of change in this indicator: 9 regions (among them the Chukotka Autonomous District, the Republic of Ingushetia, Kamchatka and Khabarovsk Territories, Nizhny Novgorod Region) showed the slight decrease in the level of labor force participation during the pandemic; this indicator remained unchanged in Moscow, St. Petersburg and the Sakhalin Region; while the increase by 5.7% was observed in the Kabardino-Balkarian Republic.

In addition, let us turn to the analysis of the correspondence between the rates of change in employment during the crisis on labor markets characterized by a low level of participation of the population in the labor force (15 regions - the Republic of North Ossetia - Alania, the Republic of Dagestan, the Karachay-Cherkess Republic, the Kurgan region, the Republic of Buryatia, the Republic of Adygea, Republic of Khakassia, Ryazan Region, Altai Territory, Kostroma Region, Oryol Region, Arkhangelsk Region, Republic of Mari El, Ulyanovsk Region). This indicator remained unchanged only in the Republics of Dagestan, Buryatia, while it even increased in the Oryol and Ryazan regions. In the rest of the regions, the level of participation in the labor force during the study period decreased, and to a greater extent - in the Republic of Mari El and Altai Territory (Table 2).

Table 2 : Rate of change in labor force participation and unemployment rate (before the pandemic and after the 1st wave of the pandemic)

Rate of change in labor force participation rates May-July/February-April 2020	The rate of change in the unemployment rate in regional labor markets for the period May-July/February-April 2020
Group 1 - growth (2-10.15) - 16 regions	Group 1 - unemployment rate reduction - 2 regions Chukotka Autonomous Region (0.81), Jewish Autonomous Region (0.87)
Group 2 - stable (1.0-1.01) - 32 regions	Group 2 - "middle" zone (1.02-1.10) - 21 regions
Group 3 - reduction (0.99-0.95) - 37 regions	Group 3 - unemployment growth (1.11 -1.38) - 50 regions
	Group 4 - very high unemployment rate (1.41-1.89) - 11 regions

Our grouping of regional labor markets by the rate of change in the level of unemployment allows us to state the following: a) a high scatter of growth rates of unemployment in regional labor markets; b) the heterogeneous composition of groups of regions; c) the fastest growing unemployment rate in regions with initially low unemployment in the pre-crisis period December 2019 - February 2020 (from 1.5% in St. Petersburg to 5.7% in the Volgograd region) (Kostroma region, Volgograd region, Chelyabinsk region, Tomsk region, Leningrad region, Krasnoyarsk region, Samara region, Vladimir region, Saint Petersburg, Vologda region). The exception is the Republic of Tuva.

Comparison of the two groupings of regional labor markets allows to conclude that the situation in terms of changes in the level of labor force participation is relatively more favorable compared to the dynamics of the unemployment rate in the labor markets of the regions. At the same time, such regions as Kostroma region, Krasnoyarsk krai, Vologda region, Leningrad region, and Chelyabinsk region showed the high rates of unemployment growth together with a decrease in the level of labor force participation. This correspondence can be associated with the structure of the regional economy, the effect of a desperate worker. In a number of regions, despite high growth rates of unemployment, its level remains below the national average (for example, in St. Petersburg, the unemployment rate in December 2019 - February 2020 is -1.5%, and in May-July 2020 it is -3.2 %, Tyumen region -2.8% and 3.7%, respectively).

4. DISCUSSION OF FINDINGS

The study confirms the earlier findings of Russian researchers [11,12] that the differences between regional labor markets in Russia are complex (affect the entire range of quantitative and price parameters), stable over time.

The crisis caused by the epidemic leads to a reduction in employment in different sectors to varying degrees in different regions, forming new trends and consolidating the existing "digital" practices. Proven mechanisms for price and time flexibility are being strengthened. In particular, it is possible to highlight the reduction of bonuses and bonuses, the transfer to part-time work, forced vacations, forms of distance employment, sending to sick leave as the mechanisms most often used by employers to adapt to supply and demand shocks than mass layoffs.

The next important feature of the labor market during a pandemic is the increase in claims for benefits. One of their reasons is a temporary increase in benefits from 1.5 thousand rubles to 4.5 thousand rubles, the introduction by the government of benefits in the amount of 12 thousand rubles for citizens who lost their jobs after March 1, 2020. The increase in benefits and the simplification of the unemployment registration regime contributed to the increase in this indicator during the pandemic.

Key vectors of development of the labor market in the post-pandemic period are 1) expanding the formats for the use of civil contracts, agency contracts, etc. in connection with the desire of business to optimize; 2) legalization of a part of the informal sector (state aid is aimed at the formal sector); 3) the growth in demand for labor in the digital segment of the labor market and, accordingly, the "reallocation" of employment (to a lesser extent affected by restrictions and developing at a higher pace); 4) change in the formats of employment in the service sector (transition to temporary work, change in the proportion of self-employed); 5) increased competition in regional labor markets and in the interregional context; 6) an increase in the number of officially unemployed people during the crisis and an increase in the share of the economically inactive population (with differentiation in the regional context due to the different speed of recovery of the affected sectors).

The processes of "digitalization" of employment, the spread of telework helped to mitigate the consequences of the crisis for those industries and regions that are distinguished by a developed infrastructure of the digital economy, have a labor force with a sufficient level of development of skills in the use of information and communication technologies [13]. When developing regulatory measures, strategies for the development of labor markets, the various starting capabilities of the regions, first of all, in the issue of digitalization shall be considered.

Correlation analysis of the data on gross domestic product and the number of unemployed showed the presence of a negative relationship of average strength, which confirms the classical conclusion that an increase in the unemployment rate causes, in turn, losses in national output compared to the level at full employment. However, it is difficult to call the reaction of the Russian labor market to the decrease in aggregate demand caused by the crisis phenomena accompanying the pandemic unambiguous: the decline in the number of employed is accompanied by non-linear dynamics of wages (Fig. 3).

When assessing the degree of flexibility of the labor market to the shocks of the coronavirus crisis, an analysis of the elasticity of employment with respect to wages plays an important role. According to the calculations, the high elasticity of employment in the 1-3 quarters of 2019 is replaced by its low values during the crisis. Moreover, both in 2019 and at the beginning of the crisis in 2020, the elasticity of employment with respect to wages is characterized by both positive and negative values, which indicates a nonlinear dependence of these variables and the impact of non-market mechanisms. The Russian labor market is notable for its weak sensitivity to shocks in the economic environment: the regulatory mechanism keeps it in a fairly stable state.

Considering the importance of maintaining stability in the labor market, the state provides support to the population and businesses that face difficulties. Already from the end of March to the present, the Government of the Russian Federation has adopted several packages of such support. According to the Ministry of Finance of the Russian Federation, the total amount of support within the anti-crisis packages is 2.9 trillion rubles. The main directions of the system of the labor market regulation measures were to support the level of income of different groups of the population and employment, as well as to ease tax conditions for business and obligations to service credit debt. The federal authorities have adopted a number of priority measures aimed at supporting citizens who have lost their jobs and those who are under threat of dismissal: the procedure for registering as unemployed has been simplified, the amount of unemployment benefits has been increased, and the list of persons who are eligible for such benefits has been expanded. Citizens who lost their jobs due to the crisis and applied to the employment service after March 1, receive an allowance in the amount of 12,130 rubles and can get free training with the possibility of further employment. The Government allocated 2.99 billion rubles for these purposes. In addition, measures of state support for employment in the context of the pandemic were carried out in relation to enterprises, the most affected industries, SMEs, strategic enterprises, which also had a positive effect on the labor market.

5. CONCLUSION

The transformation of the employment structure, a surge in unemployment, a decrease in the quality of life of the population, the deepening of the existing inequality of regions, sectors of the economy, workers and their families under the influence of the pandemic appeal to the search for new approaches to solving this problem in the field of labor market regulation and employment policy as an effective response of Russian society to challenges of the modern complex epidemiological situation.

Macroeconomic policy measures in a pandemic and after its completion are of particular importance [14,15,16]. When analyzing the effectiveness of economic policy measures in response to the Covid-19 pandemic from the standpoint of short-term and medium-term effects, the researchers emphasize that expansive macroeconomic policies can stimulate aggregate demand, but if social distancing is imposed, they will not stimulate production and consumption [17].

Despite some revival in the labor market, a situation of complete uncertainty persists and, therefore, regardless of the further course of the pandemic, the fight against the virus will most likely have an impact on economic development and employment policy for a very long time. In addition, the Russian labor market has been experiencing interregional differentiation for many years, which has formed zones of sustainable disadvantage.

The pandemic has highlighted the enormous problem of inequality in different regions of the country, and poor regions have been hit harder. Currently, programs to stabilize the situation on the labor market in the regions shall be adjusted and meet modern challenges, threats and risks. In this regard, it is relevant to adapt the regulation of regional labor markets to the changing social-and-economic environment and risks, considering the new opportunities for the development of employment and job creation. In the post-pandemic period, the very content and instrumental orientation of labor market regulation is changing, whose purpose is not only to establish an equilibrium of supply and demand, mitigate the social consequences of the pandemic but also to form the prerequisites for the economic development of regions that contribute to their development.

Particular attention shall be paid to assessing risks in the labor market based on forecasting the factors of demand and supply of labor, which contributes to the development of targeted measures to regulate various segments of the labor market, taking into account the factors of uncertainty and risk. In turn, this involves the development of a set of methodological recommendations for risk assessment. The use of modern approaches to the regulation of the labor market in the post-pandemic period, based on forecasting and targets, increases the competitive position of regional labor markets, allows more efficient use of budget funds, and maintains a balance between the protection of workers' rights and the interests of employers. The selectivity and targeted nature of the measures will make it possible to use budget funds more efficiently, especially the limited funds of the very regions.

REFERENCES

[1] S.Baker, N. Bloom, S. J. Davis and S. J. Terry, COVID-Induced Economic Uncertainty. White-Paper, 2020.

[2] R. J. Barro, J. F. Ursúa, J. Weng, The Coronavirus and the Great Influenza Pandemic. Lessons from the “Spanish Flu” for the Coronavirus’s Potential Effects on Mortality and Economic Activity", NBER working paper (2020) 26866.

[3] O. Jordà, S. Singh, A ,Taylor , The longer-run economic consequences of pandemics, VoxEU.org, 8 (2020).

[4] P.-O.Gourinchas, S. Kalemli-Özcan, V. Penciakova, N. Sander, COVID-19 and SME Failures, National Bureau of Economic Research (2020) 27877.

[5] O.Blanchard, , Th. Philippon, Je. Pisani-Ferry, A New Policy Toolkit is Needed as Countries Exit COVID-19 Lockdowns, Peterson Institute for International Economics Policy Brief, 2020.

[6] Coibion, O. Y. Gorodnichenko, M. Weber, Labor markets during the covid-19 crisis: A preliminary view,” NBER Working Paper 27017 (2020).

[7] O. Coibion, Y. Gorodnichenko, M. Weber, Labor Markets During the COVID-19 Crisis: A Preliminary View, Working Paper ·2020-41 (2020).

[8] V. Guerrieri,, G. Lorenzoni, L.Straub, and I. Werning, Macroeconomic Implications of COVID-19: Can Negative Supply Shocks Cause Demand Shortages? NBER Working Paper 26918 (2020).

[9] E. D.Filippis, St, M. Impink, M. Singell, J. T. Polzer, R. Sadun, Collaborating During Coronavirus: The Impact of COVID-19 on the Nature of Work, NBER Working Paper 27612 (2020). DOI: 10.3386/w27612

[10] F. Alvarez, D. Argente, F. Lippi, A Simple Planning Problem for COVID-19 Lockdown. University of Chicago, Becker Friedman Institute for Economic Working Paper No. 2020-34, 2020.

[11] A. Oschepkov, R. Kapelyushnikov, Regional Labor Markets: 15 Years of Differences: Preprint WP3 /2015/10/ - M .; Ed. House of the Higher School of Economics, 2015.

[12] R. Kapeliushnikov, A. Oshchepkov, The Russian Labor Market: Paradoxes of Post-crisis Performance. Voprosy Ekonomiki 7 (2014) 66-92

[13] M. A. Sabelnikova, G. I. Abdrakhmanova, L. M. Gokhberg, O. Yu. Dudorova et al., Information society: the main characteristics of the constituent entities of the Russian Federation: statistical collection - M.: NRU HSE, 2018.

[14] G.W. Kolodko, After. Economics and politics of the post-pandemic world, Voprosy Ekonomiki, (5) (2020) 25-44. https://doi.org/10.32609/0042-8736-2020-5-25-44/

[15] L.M. Grigoryev, V.A. Pavlyushina, E.E. Muzychenko, The fall into 2020 recession...,Voprosy Ekonomiki (5) (2020) 5-24.

[16] M.S. Eichenbaum, S. Rebelo, M. Trabandt, The Macroeconomics of Epidemics, NBER Working Paper 26882, 2020.

[17] D. J. Snower, The Socio-Economics of Pandemics Policy, IZA Policy Paper 162 (2020). http://ftp.iza.org/pp162.pdf