

# *The labor market conjuncture assessment in the digital economy*

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**Abstract** — The article is devoted to the analysis of methodological approaches to the assessment of the labor market conjuncture, which is understood as the labor supply and demand ratio. The theoretical basis of the study is the Equilibrium Unemployment Theory by K. Pissarides. The purpose of the study is comparing the results of calculations indicators obtained by various methods; and the advantages and disadvantages and / or limitations systematization for each of the calculation methods. The author not only described the existing approaches to the calculation of the labor market conjuncture index (labor market tension according to the State Employment service and the hh.Index according to the largest labor portal hh.ru), but also calculated the indicators for Urals Federal District and the included subjects at similar time period. As a result, opposing trends in the labor market state were obtained. This discrepancy required the author's approach development to the labor market conjuncture assessment, which is justified and described in detail in the article. The conclusion is drawn out about the analyzed approaches complementarity; and it is determined also what tasks are going to solve each indicator.

**Keywords** — labor market, demand for labor, labor supply, labor market conjuncture, labor market tension.

## I. INTRODUCTION

The situation on the labor market is in constant motion. In the daily routine, it is difficult to track new trends and changes in order to change personnel policy promptly in companies. Each rational leader realizes that in the shortage resources conditions, they need to be saved, and on the contrary, in their excess conditions - to save on the implementation of resource saving programs. For the company labor is the most important resource, and the above principle is fully applicable to it. Unfortunately, company leaders and even the HR-directors in large organizations are rather slightly aware of the current trends on the labor market.

For several years, ordinal recruiting specialists have noted the trend of transition from the employer's dictates on the labor market to the workers' dictates, especially highly qualified ones; that means, that not employers choose the best from the set of qualified workers today, but qualified employees choose the best employers. However, the question arises whether this opinion is objective. Maybe the recruiters nether want no are able to work?

The purpose of this article is to compare the results of the labor market conjuncture assessment, carried out by using

different methodological approaches: case study the Urals Federal District.

## II. METHODOLOGY

Economy digitalization leads to the professions transformation: technological development has always influenced and continues to influence to the labor market. So, at the end of the last century, the IT sphere was born and a post-industrial economy emerged, and today the economy is determined by the rapid development of specific technologies - for example, artificial intelligence, robotization and neural networks. The level and direction of technology development have changed, but this does not generally affect on the labor market restructuring process. From the Equilibrium Unemployment Theory point of view [1], which is the theoretical basis of this study, the labor market has not changed so much with the digital economy development.

The situation on the labor market is been the object of study in various countries [2; 3], since it is closely related to the economic situation [4], business [5], migration [6] and social policy [7].

In the modern Russian labor market conditions, the author has identified two main methodological approaches to the assessment of a labor market conjuncture, the one that is accepted as the supply and demand ratio on the labor market [8, p. 56-57; 9, p.19; 10].

The first approach to the conjuncture assessment is the valuation of the labor market tension indicator, which is calculated as the ratio of the officially registered unemployed number to the vacancies number submitted to the state employment service [11, p. 81; 12, p.238].

The second methodical approach was developed and applied by one of the largest Russian labor electronic portals - HeadHunter (hh.ru). In accordance with this approach, an hh.Index is calculated, which "shows the shortage of specialists through the ratio of the active CV number to vacancies. A CV is considered to be active if being open for the employers, and the applicant has responded to the vacancy at least once in two months period, the CV have been updated or redacted.

III. RESULTS AND DISCUSSION

A. The labor market tension assessment by using the state employment service data

Indicators of labor market tension in the Urals Federal District (UFD) for 2017-2018 are presented in Tabl. 1.

In accordance with this indicator, we can conclude that the labor market in the Urals Federal District is experiencing a severe personnel shortage; however, you should hold off your conclusions. Specialists, particularly V.Ye.Gimpelson - Director of the Labor Research Center at the National University "Higher School of Economics", called this indicator "absolutely meaningless" [13]. Such sharply negative assessments are given because, companies report only a very small part of their vacancies to the state employment service, on the one hand, to prevent artificial increasing the incoming unemployed flow. Not only top management positions, but also others that require high or specific applicants' qualifications are not notified to the state employment service, since employers believe that qualified specialists are not registered for unemployment. On the other hand, no more than 30% of job-seekers apply for the state employment service with various questions even in crisis times, as studies show [14], and less than half of them register for unemployment. In this situation, we can agree with V.E.Gimpelson, that "there is a ratio in which both the numerator and the denominator have little economic meaning as a result" [13]. This approach does not take into account hidden unemployment [15]. Various attempts to modify this indicator [12] do not compensate shortcomings.

However, we believe that this indicator has of serious importance for the state employment service activities, since allows not only to plan its work in the short term, but to propose important management decisions, for example, on increasing / maintaining the unemployment benefits sums. So, since the main task for the employment service is exactly job assistance, low unemployment benefits motivate the unemployed to find work. But such motivation mechanism works only in the labor-deficient conditions or almost equilibrium conjuncture on the official regulated labor market

platform. Otherwise, low unemployment benefits can cause social tensions.

The following conclusion can be made about the using of this indicator: it does not show the true situation on the labor market in the region, but it is necessary to calculate it as a social indicator characterizing a certain direction of the state social policy. This indicator in the digitalization era is calculated automatically by the program after all territorial employment centers (state recruiting agencies) download information about the registered unemployed number and the vacancies number.

B. The competition evaluation on the labor market based on hh.Index

The status of this indicator in Ural Federal District in December 2018 is presented in Fig. 1. The red line demonstrated the level of this indicator for Russia in total; 5.5 people per vacancy.

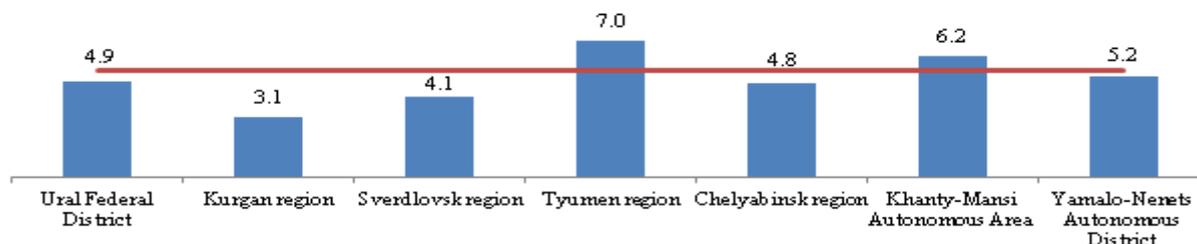
As we see in accordance with this index, the labor market conjuncture is labor surplus, the competition is moderate, but it is lower than in Russia as a whole.

The undoubted advantage of this indicator is that it includes vacancies and top managers' CV and highly skilled and narrowly skilled workers'. The average wage and its fluctuations is calculated in parallel. In addition, it should be recognized that this indicator covers a much larger part of the labor market, so, 203.6 thousand active CVs are taken into account in the district instead of 59.1 thousand unemployed, which is more than 3 times as much. Although this is far from complete indicators of job seekers, since according to the Rosstat polls, about 300 thousand people in the district consider themselves unemployed pursuant to the methodology of the International Labor Organization (ILO). Despite the fact that the CV placement is free, far from all unemployed people upload it on this labor portal. However, each applicant may publish several CVs for different positions, so if we start counting using the applicants' number, rather than CVs, the applicants proportion will be less.

TABLE I. LABOR MARKET TENSIONS IN THE URALS FEDERAL DISTRICT IN 2017-2018

Region	The total number of registered unemployed citizens, thous. pers.		Registered unemployment rate, %		Labor market tension, unemployed / 1 vacancy	
	At the end of December 2017	At the end of December 2018	At the end of December 2017	At the end of December 2018	At the end of December 2017	At the end of December 2018
Ural Federal District	70.3	59.1	1.1	0.9	0.6	0.6
Kurgan region	6.8	5.9	1.7	1.5	1.2	1.0
Sverdlovsk region	25.9	21.7	1.2	1.0	0.8	0.8
Tyumen region	4.4	4.2	0.6	0.6	0.1	0.2
Chelyabinsk region	26.6	21.5	1.4	1.1	1.2	1.1
Khanty-Mansi Autonomous Area	4.4	4.0	0.5	0.4	0.3	0.4
Yamalo-Nenets Autonomous District	2.0	1.8	0.6	0.6	0.1	0.2

Compiled by the author according to the data of the Federal Statistics Service



Compiled by the author according to the data of HeadHunter portal

Fig. 1. Hh.Index Level in the Urals Federal District in December 2018

As for the vacancies number, the author has even less confidence to this indicators, since a vacancy placement on this portal is paid for by the employer. This company is private. The cost is high enough for small businesses, and sometimes - for medium also. Therefore, practically only large companies place information about vacancies on the portal, which seriously distorts the final indicator.

We also noted some other deficiencies in hh.index calculation, which, by the way, are correctable:

- the average annual indexes are not considered (only monthly);
- the statistics archive is not published, therefore readers have no opportunity to study the dynamics of the indicator;
- the index is not calculated for individual rather large cities (for example, there is no information about Kurgan, Khanty-Mansiysk, Salekhard, not even speaking about big cities of regional subordination, such as Nizhny Tagil, whose population is higher than in Chita, Arkhangelsk, Kaluga, Smolensk, Vologda and some others).

There are other large Russian work-sites, for example, «Rabota v Rossii» (the Work in Russia - trudvsem.ru) website, which belongs to the Russian State Service for Labor and Social Protection. There were 73.5 thousand CVs registered in the Urals Federal District In March 2019, which is a quarter of the total number of people seeking for work. As for the information on this site, in addition to the previously mentioned shortcomings, the author also notes: the lack of information about the vacancies number (there is only the number of companies that uploaded vacancies – 36.7 thousand). And the information is presented only for the current moment, there are no dynamics.

Conclusion about the this indicator application for the labor market assessment: hh.index does not provide an adequate assessment of the labor market situation, however, it is a very convenient, accessible practical tool for recruiters and managers [16] when setting wages and requirements for candidates, planning period for filling the vacancies. This indicator is most relevant to the digital economy conditions, since all calculations are automated.

*C. The author's approach to the labor market conjuncture assessment*

Since no one of currently used approaches provides a real labor market situation assessment, author proposes to calculate the Labor Market Conjuncture Index by comparing the total unemployed number according to the ILO methodology (characterizing the labor market supply) [17] and the organizations needs of workers for vacant seats (demand), obtained by a sample survey of organizations conducted by Rosstat.

One of the fundamental International Labor Organization principles is the thesis that the particular person assignment to the category of employed, unemployed or economically inactive is possible only on the basis of his/her self-determination [11, p.13], therefore the survey “Labor and Employment in Russia”, conducted by the Federal State

Statistics Service, is the most comprehensive source of information about supply and demand in the labor market.

The results of the proposed index calculation for the Urals Federal District are presented in Tabl. 2.

An analysis of the labor market situation shows that there is the supply excess over demand in the labor market: in Urals Federal District in total it is moderate, but in Kurgan and Chelyabinsk regions it is significant; in Tyumen region labor market conjuncture is almost equilibrium; in the Yamalo-Nenets Autonomous District there is the demand excess over supply in the labor market.

This methodical approach allows obtaining the most accurate data about the demand and supply correlation on the labor market.

TABLE II. LABOR MARKET CONJUNCTURE INDEX IN THE URAL FEDERAL DISTRICT IN 2018

Region	The number of unemployed, thous. pers.	Number of vacancies, thousand	Labor market Conjuncture Index, unemployed / 1 vacancy
Russia in total	3658.5	1485.8	2.5
Ural Federal District	300.6	107.2	2.8
Kurgan region	30.6	6.2	4.9
Sverdlovsk region	103.0	31.8	3.2
Tyumen region	32.3	24.1	1.3
Chelyabinsk region	105.3	20.1	5.2
Khanty-Mansi Autonomous Area	22.7	14.8	1.5
Yamalo-Nenets Autonomous District	6.6	10.2	0.6

Compiled by the author according to the data of the Federal Statistics Service

As disadvantages of this approach may be mentioned two: calculations can be carried out only with a delay, since time is needed for processing sociological polls and surveys conducted by the Rosstat; moreover, monthly indicator levels cannot be obtained, since polls are conducted only a few times a year.

IV. CONCLUSION

Thus, the data obtained by using various approaches differ fundamentally: according to the state employment service, there is a labor-deficit conjuncture on the labor market, while other sources show a moderately excessive surplus. Statistics figures show that an average of 2-3 unemployed and / or job seekers accounted for one seat (vacancy) in Russia. It can be argued that in a moderately labor-intensive labor market conjuncture, the search of qualified workers is really difficult.

Hh.Index is most useful for employers and recruiters for making quick decisions, considering that the hh.ru-portal statistics allows studying the supply and demand in the context of certain professional groups, determining the average wage.

The state employment service should continue to calculate the labor market tension index for making decisions about employment methods and unemployment benefits. At the same time, the use of the Labor Market Conjuncture Index offered by the author will be most effective for making strategic socio-economic decisions at the national and regional

levels, as well as for coordinating long-term prospects for changing the educational and training structure [18].

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