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Professional and Qualification Asymmetries in the Labor Market of the Northern Regions of Russia

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Abstract. The article examines issues related to the correspondence between the qualitative characteristics of the employed population and their jobs. The practice of hiring workers with inadequate qualifications leads to additional costs for both the enterprise and the workers themselves. When this situation becomes widespread, the resulting losses are also felt at the meso- and macrolevels. The aim of this work is to develop tools for assessing the consistency of the professional and qualification characteristics of the employed population with the requirements of jobs. The object of the study is the labor market in the northern regions of Russia. The main source of information is the results of the Labor Force Survey conducted by Rosstat in 2022. The main occupational groups are assigned a corresponding level of qualification. Based on this, qualification asymmetry coefficients are calculated for each of the regions of northern Russia. The level of useful qualification asymmetry has been identified, expressed as a stock of competencies equal to one qualification level. In this case, more highly qualified workers ensure an increase in the level of equipment and efficiency of production processes, while workers with insufficient qualifications have the opportunity to improve their qualifications directly in the workplace. In this study, professional asymmetry is determined by respondents' subjective assessment of the connection between their current job and their profession. The results presented can be used to monitor the situation in the labor market and education, which will allow for more effective use of the labor potential of the population.

Keywords: labor potential, northern regions of Russia, labor market asymmetries, labor market structure, labor force

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Introduction

Aligning supply and demand, as well as the qualitative characteristics of the working-age population, is a key issue in the theory of economic development based on labor productivity growth. This problem has remained the focus of attention for both theorists and practitioners throughout the history of modern Russia¹ [1, Gimpelson V.E., Kapelyushnikov R.I., Karabchuk T.S.;

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¹ Bjørnstad R. Demand and supply of labor by education towards 2030. Linking demographic and macroeconomic models for Norway / Reports 2010/39. Statistisk sentralbyrå. 44 s. URL: <https://www.ssb.no/en/arbeid-og-lonn/artikler-og-publikasjoner/demand-and-supply-of-labor-by-education-towards-2030> (accessed 08 October 2024).

2, Gimpelson V.E., Sharunina A.V.; 3, Korovkin A.G., Dolgova I.N., Edinak E.A., Korolev I.B.; 4, Korovkin A.G., Korolev I.B., Edinak E.A.; 5, Brinca P., Duarte J.B., Faria-e-Castro M.].

An analysis of the structure of supply in the Russian labor market based on data from the Labor Force Survey revealed significant underutilization of the working population's potential and low efficiency of investments in human capital [1]. A high level of structural imbalance, or asymmetry, in the labor market limits economic development [6, Ivanter V.V. et al.]. Moreover, asymmetry in the labor market manifests itself with varying intensity in different regions. In addition, there are structural imbalances in qualifications across occupational groups [7, Toksanbaeva M.S., Popova R.I.]. The degree of alignment between professional and qualification characteristics in the labor market is influenced by such factors as the quality of training of personnel in the vocational education system, the relevance of the professional education received to the work performed, and the type of settlement [8, Klyucharev G.A.; 9, Lokosov V.V., Yarasheva A.V., Makar S.V.]. Professor A.G. Korovkin and his co-authors proposed a tool for analyzing the coordination of supply and demand of labor, taking into account its educational characteristics [4]. According to their estimates, structural imbalances in the labor market are unstable throughout a year and vary seasonally, but there are certain regions that stand out in terms of structural unemployment. Thus, 7 out of 20 regions with severe labor market imbalances are in the northern regions [3].

The need to ensure the country's economic and technological sovereignty in the short term is due to the aggravated foreign policy situation. The goals set can be achieved through the most effective and comprehensive use of the country's natural resources, production, innovation, and labor potential. N.M. Rimashevskaya, together with her colleagues, gave the most comprehensive definition of labor potential as "a complex socio-economic category that is a generalized (integral) assessment of the quantitative and qualitative characteristics of the economically active population's ability to perform creative work" [10, Rimashevskaya N.M., Bochkareva V.K., Volkova G.N. et al.]. Increasing labor potential makes it possible to improve the competitiveness and sustainability of the national economy [11, Kryshtaleva T.Yu.]. As a complex indicator, labor potential includes various qualitative components: intellectual, social-personal, psychophysiological [12, Migranova L.A., Toksanbaeva M.S.]. The intellectual component, determining the ability to perform work of a certain content and complexity (qualifications), is a key factor in economic development [7, Toksanbaeva M.S., Popova R.I.; 13, Heckman J.J., Kautz T.]. At the same time, the quantitative characteristic of labor potential is of significant importance, but demographic problems accumulated over previous decades are now a significant limiting factor for development. In the northern regions, the processes of depopulation and intensive migration are most acute [14, Fauser V.V., Smirnov A.V., Fauser G.N.].

The problem of an acute shortage of economically active population, especially in the northern regions of Russia, is combined with pronounced imbalances in the labor market, which makes it urgent to develop a methodology for assessing professional and qualification asymmetry

in the labor market of the northern regions of Russia and to identify reserves that increase the efficiency of using the labor potential of the population of the territory.

In recent years, the labor market has undergone significant changes related to both the structure of labor demand and the structure and quantity of labor supply. Developing a methodology for assessing qualitative characteristics, primarily educational and intellectual components, and their compliance at the local level is an integral part of the overall concept of economic development in the new economic conditions, which determines the practical importance of this study.

The aim of this work is to develop tools for assessing the compliance of the professional and qualification characteristics of the employed population with job requirements; to assess the level of professional and qualification asymmetry on the basis of the developed tools; to identify the share of useful asymmetry in the labor market of the northern regions of Russia. In this study, we define northern regions as regions that are fully or partially located in the Far North and equivalent areas². The object of the study is the employed population of the northern regions of Russia.

The novelty of this study lies in the development of a methodology for assessing professional and qualification asymmetry and the level of useful asymmetry. Using northern regions of Russia as an example, an assessment of the potential for reducing existing imbalances by utilizing useful professional and qualification asymmetry in the labor market was made.

Research methods

The main source of information is data from the 2022 Labor Force Survey³. This survey is conducted monthly by the Federal State Statistics Service in all regions of the country. The average annual data is the most accurate and representative for the constituent entities of the Russian Federation. The survey involves individuals aged 15 years and older, and data is collected through personal interviews according to the methodology of the International Labor Organization. Researchers studying labor market issues often use data from the Russian Longitudinal Monitoring Survey (RLMS)⁴ [2, Gimpelson V.E., Sharunina A.V., 15, Maltseva I.O., 16, Oshchepkov A.Yu.]. This survey differs from those conducted by Rosstat in its data collection methodology. It is conducted in a limited number of populated areas and does not cover all constituent entities of the Russian Federation, but is representative of the entire country. The unique nature of the RLMS data justifies the use of this survey data; however, its representativeness for Russia as a whole, rather than for its individual regions, imposes certain limitations. In addition to the microdata from the afore-

² According to the Russian Federation Government Resolution of 16.11.2021 N 1946 "On approval of the list of regions of the Far North and localities equivalent to regions of the Far North, for the purpose of providing state guarantees and compensation for persons working and living in these regions and localities, recognizing as invalid certain acts of the Government of the Russian Federation and recognizing as invalid on the territory of the Russian Federation certain acts of the Council of Ministers of the USSR".

³ Results of the Labor Force Survey. *Federal State Statistics Service*. URL: <https://rosstat.gov.ru/compendium/document/13265> (accessed 16 November 2024).

⁴ Russian Longitudinal Monitoring Survey (RLMS HSE), conducted by the National Research University Higher School of Economics and the Demoscope Research Center with the participation of the Population Center of the University of North Carolina at Chapel Hill and the Institute of Sociology of the Federal Research Sociological Center of the Russian Academy of Sciences. URL: <http://www.hse.ru/rlms>; <https://rlms-hse.cpc.unc.edu> (accessed 10 October 2024).

mentioned surveys, the study utilized statistical data from Rosstat and its regional offices, regulatory acts of the Ministry of Labor and Social Protection, laws and subordinate acts.

Results

A methodological tool for assessing professional and qualification asymmetry was developed on the basis of an analysis of documents by the Ministry of Labor and Social Protection of the Russian Federation, regulating professional requirements for employee qualifications in accordance with the All-Russian Classifier of Occupations.

Table 1

Correspondence of qualification levels to the main occupational groups according to the All-Russian Classifier of Occupations⁵

Managers	Qualification Level Four
Highly skilled specialists	Qualification Level Four
Mid-skilled specialists	Qualification Level Three
Employees involved in information preparation, documentation, accounting, and maintenance	Qualification Level Three
Service and trade workers, and those involved in citizen and property security	Qualification Level Two
Skilled workers in agriculture, forestry, fish farming, and fishing	Qualification Level Two
Skilled workers in industry, construction, transportation, and related occupations	Qualification Level Two
Industrial plant and machine operators, assemblers, and drivers	Qualification Level One
Unskilled workers	Qualification Level One

The mismatch between the qualification level and the job position is expressed in two ways:

- mismatch between the level of qualifications, competencies, and skills and the requirements of the job;
- underutilization of skills, knowledge, qualifications, and competencies in the workplace.

These two aspects of professional and qualification asymmetry in the regional labor market can be measured by assessing the ratio of the number of jobs where this mismatch is identified to the number of jobs where employee qualification requirements are met.

Therefore, the coefficient of qualification asymmetry ($A_{\text{нк}}$) will be determined by the formula:

$$A_{\text{нк}} = \frac{\sum(PM_{\text{B}} + PM_{\text{H}})}{\sum PM_{\text{N}}}, \text{ where}$$

$A_{\text{нк}}$ — qualification asymmetry;

PM_{N} — job occupied by an employee with qualifications appropriate for that job;

PM_{B} — job occupied by an employee with qualifications higher than those required for that job;

⁵ Compiled by the author based on data from the All-Russian Classifier of Occupations: OK 010-2014 (ISCO-08). All-Russian Classifier of Occupations (adopted and put into effect by Order of the Federal Agency for Technical Regulation and Metrology dated 12.12.2014 No. 2020-st) (as amended on 18.02.2021). URL: https://www.consultant.ru/document/cons_doc_LAW_177953/ (accessed 17 November 2024).

PM_H — job occupied by an employee with qualifications lower than those required for that job.

The level of labor market asymmetry that contributes to the socio-economic development of territories — the useful level of qualification asymmetry — has been determined. This level of asymmetry is expressed as a stock of competencies equal to one qualification level. In this case, more highly qualified workers ensure an increase in the level of equipment and efficiency of production processes, while workers with insufficient qualifications have the opportunity to improve their skills directly in the workplace.

The useful level of qualification asymmetry is calculated using the formula:

$$A_{\text{к.полез.}} = \frac{\sum(PM_{N+1}PM_{N-1})}{PM_N}, \text{ where}$$

$A_{\text{к.полез.}}$ — useful level of qualification asymmetry in the labor market;

PM_N — job occupied by an employee with the qualifications required for that position, the standard level of qualification;

PM_{N-1} — job occupied by an employee with qualifications one level below the standard;

PM_{N+1} — job occupied by an employee with qualifications one level above the standard.

Professional asymmetry in the labor market, representing a mismatch between the profession and the requirements of the job, was identified as part of the professional qualification asymmetry.

In order to measure professional asymmetry in the labor market, the employed population with a profession was surveyed. Respondents' subjective assessment of the relevance of their current job to their profession revealed that approximately half (49.4%) of them do not consider their current job to be related to their profession.

It was found that those with an education in healthcare are more likely to associate their future career with their acquired profession, while those with an education in agriculture are less likely to associate their future career with this profession. Table 2 presents respondents' answers about the connection between their current job and their profession by occupational groupings.

Table 2

*Relationship between job and acquired profession by occupational groupings*⁶

	Yes	Rather yes	Rather no	No	Total
Mathematical and Natural Sciences	47%	13%	8%	32%	100%
Engineering, Technology, and Technical Sciences	45%	14%	7%	34%	100%
Healthcare and Medical Sciences	82%	9%	1%	8%	100%
Agriculture and Agricultural Sciences	31%	12%	9%	48%	100%
Social Sciences	47%	17%	8%	27%	100%
Education and Educational Sciences	68%	10%	4%	18%	100%
Humanities	45%	13%	8%	35%	100%
Arts and Culture	56%	11%	5%	28%	100%
National Defense and Security. Military Sciences	59%	14%	8%	19%	100%

⁶ Compiled by the author based on data from the All-Russian Classifier of Occupations. Results of a sample survey of the labor force. *Federal State Statistics Service*. URL: <https://rosstat.gov.ru/compendium/document/13265> (accessed 16 November 2024).

Based on microdata from the Labor Force Survey conducted by Rosstat in 2022, a methodology for assessing professional and qualification asymmetry in the labor market was tested using the northern regions of the Russian Federation as an example. A measurement of qualification asymmetry among the working population based on the analysis of contingency tables was proposed.

Using the developed methodology, indicators of qualification asymmetry are presented and a rating of the regions of northern Russia is compiled (Table 3).

Table 3
Qualification asymmetry coefficients in the labor market of the northern regions of Russia⁷

Region	Asymmetry coefficient, overall	Asymmetry coefficient is higher	Asymmetry coefficient is lower	Asymmetry coefficient useful	Share of useful in overall asymmetry
Chukotka Autonomous Okrug	0.36	0.11	0.25	0.29	79.4%
Khanty-Mansi Autonomous Okrug	0.54	0.31	0.23	0.44	81.1%
Murmansk Oblast	0.55	0.34	0.21	0.42	75.6%
Primorskiy Krai	0.59	0.31	0.28	0.45	77.0%
Tomsk Oblast	0.63	0.34	0.29	0.52	82.8%
Tyumen Oblast, excluding Autonomous Okrugs	0.64	0.44	0.20	0.47	74.0%
Khabarovsk Krai	0.64	0.27	0.37	0.49	75.5%
Russian Federation	0.65	0.35	0.31	0.50	76.1%
Kamchatka Krai	0.66	0.34	0.31	0.50	76.4%
Arkhangelsk Oblast, excluding Autonomous Okrug	0.66	0.37	0.29	0.49	73.9%
Northern regions of Russia	0.68	0.34	0.34	0.50	74.4%
Krasnoyarsk Krai	0.68	0.30	0.38	0.47	68.6%
Tuva Republic	0.68	0.32	0.37	0.47	69.4%
Amur Oblast	0.70	0.39	0.31	0.50	70.9%
Republic of Karelia	0.71	0.40	0.31	0.52	74.1%
Magadan Oblast	0.71	0.27	0.43	0.53	74.2%
Republic of Buryatia	0.71	0.42	0.29	0.54	76.3%
Sakhalin Oblast	0.71	0.32	0.38	0.53	74.1%
Altai Republic	0.71	0.36	0.35	0.50	70.7%
Perm Krai	0.71	0.37	0.34	0.54	76.3%
Yamalo-Nenets Autonomous Okrug	0.73	0.44	0.29	0.54	74.8%
Irkutsk Oblast	0.75	0.35	0.40	0.57	76.4%
Komi Republic	0.76	0.46	0.30	0.58	76.3%
Zabaikalskiy Krai	0.77	0.29	0.48	0.52	67.1%
Nenets Autonomous Okrug	0.79	0.40	0.39	0.57	72.6%
Yakutia Republic	0.80	0.37	0.44	0.62	76.8%

According to calculations, the average indicators for Russia and its northern regions differ insignificantly in terms of both the qualification asymmetry coefficient and the useful qualification asymmetry coefficient. In addition, across the northern regions of Russia, there is equality between the indicators of overqualification and underqualification in the structure of the qualification asymmetry coefficient in the labor market. Useful qualification asymmetry across all the regions considered has a significant share in the overall asymmetry indicator.

⁷ Source: compiled by the author.

Conclusion

This study developed a methodology for assessing labor market asymmetries and calculated asymmetry by regions. Among the northern regions, the highest skill asymmetry is observed in the Republic of Sakha (Yakutia). There, the ratio of jobs occupied by professionals with lower or higher qualifications to those occupied by professionals with the required qualifications reaches 0.8. At the same time, the average for the northern regions is 0.68, which is slightly above the average for Russia. In addition to the skills asymmetry coefficient, the useful asymmetry coefficient was calculated, which shows the percentage of jobs with skills asymmetry that, due to this, allow for upgrading employee qualifications to the required level in the event of a shortage, or improving the efficiency of production processes if an employee has qualifications above the required level. In the northern regions, these ratios vary significantly: from 67% in the Zabaikalskiy Krai to 83% in the Tomsk Oblast. The phenomenon of overqualification, when a job is filled by an employee with qualifications higher than required, is widely discussed in global science. On the one hand, such an employee can become a driving force for the company's development and contribute to the introduction of new technologies [17, Nelson R., Phelps E.]; on the other hand, failure to use some of the available knowledge and skills often leads to their loss. Although this study calculates the level of useful asymmetry, it should be noted that this indicator reflects the potential for growth when certain conditions are met, namely ensuring the growth of employee qualifications in the workplace when there is a shortage of such qualifications, developing production processes, and equipping workplaces with qualifications higher than those required. Since measures to bring existing qualifications into line with workplace requirements require additional investment, the useful asymmetry indicators are in fact significantly lower, especially in the northern regions, given their educational and investment potential.

In addition to the regional aspect of qualification asymmetry, the subjective assessment of the relationship between current employment and the acquired profession is shown on average across various professional groups in the northern regions. Medical specialists are most likely to work in this profession, while agricultural specialists are less likely to occupy jobs with the required qualifications: more than half of respondents with an agricultural education have current employment unrelated to their profession. Thus, the results confirm the conclusions of E.Y. Varshavskaya about the correspondence between the structure of demand in the Russian labor market and the structure of labor supply ⁸.

The presented methodology for determining labor market asymmetry by profession and qualification has several limitations: in particular, it only takes into account formal education, but does not consider its recentness or advanced training. Knowledge and skills acquired through educational process may become outdated, while a motivated employee can actively improve their competencies within their profession.

⁸ Varshavskaya E.Ya. Where and as whom do highly educated Russians work? *Demoscope Weekly*, 2017, no. 713–714, pp. 1–20. URL: <https://publications.hse.ru/articles/201325681> (accessed 11 December 2024).

The developed methodology adequately reflects the existing problems of effective use of labor potential. Using data from regular statistical surveys for a large-scale assessment of asymmetries at the macro- and meso-levels, the methodology provides an overview of the demand for professions and the skills of employees for expanding production. At the same time, monitoring the situation on the labor market allows authorities, employment centers and businesses to respond quickly to changing conditions.

References

1. Gimpelson V.E., Kapelyushnikov R.I., Karabchuk T.S., Ryzhikova Z.A., Bilyak T.A. Choice of Occupation: Where Have We Studied and Where Are We Working? *HSE Economic Journal*. 2009; 13 (2): 172–216.
2. Gimpelson V.E., Sharunina A.V. Labor Flows in the Russian Labor Market (2000-2012). *HSE Economic Journal*. 2015; 19 (3): 313–348.
3. Korovkin A.G., Dolgova I.N., Edinak E.A., Korolev I.B. The Labor Supply and Labor Demand Adjustment on the Regional Markets: The Experience of Analysis and Models Construction. *Scientific Proceedings: Institute of Economic Forecasting RAS*. 2012; 10: 319–343.
4. Korovkin A.G., Korolev I.B., Edinak E.A. The Educational Characteristics of Labor Force as a Factor of Labor Demand and Labor Supply Adjustment on the Russian Labor Market. *Scientific Proceedings: Institute of Economic Forecasting RAS*. 2015; 13: 222–239.
5. Brinca P., Duarte J.B., Faria-e-Castro M. Measuring Labor Supply and Demand Shocks during COVID-19. *European Economic Review*. 2021; 139: 103901. <https://doi.org/10.1016/j.euroecorev.2021.103901>
6. Ivanter V.V., Govtvan O.D., Gusev M.S., Ksenofontov M.Yu., Kuvalin D.B., Moiseev A.K., Porfiriyev B.N., Semikashev V.V., Uzyakov M.N., Shirov A.A. System of Measures to Recovery of Economic Growth in Russia. *Studies on Russian Economic Development*. 2018; 1 (166): 3–9.
7. Toksanbaeva M.S., Popova R.I. Indicators of the Labor Potential Quality of the Russian Regions Population. *Population*. 2023; 26 (4): 110–122. <https://doi.org/10.19181/population.2023.26.4.10>
8. Kliucharev G.A. “Rupture” of Education and Labor Market: Experts’ Opinions. *Sociological Studies*. 2015; 11: 49–56.
9. Lokosov V.V., Yarasheva A.V., Makar S.V. Spatial Distribution of Human Resources: Education and Labor Spheres. *Population*. 2024; 27 (2): 4–13. <https://doi.org/10.24412/1561-7785-2024-2-4-13>
10. Rimashevskaya N.M., Bochkareva V.K., Volkova G.N., Migranova L.A. Quality of Labour Potential in Russian Regions. *Population*. 2012; 3 (57): 111–127
11. Kryshchaleva T.Yu. Assessment Method of the State of Labour Potential in Regions of the Russian Federation. *World of Economics and Management*. 2017; 17 (3): S. 35–46.
12. Migranova L.A., Toksanbaeva M.S. Quality of Labour Potential of Russian Regions. *Population*. 2014; 2: 102–120.
13. Heckman J.J., Kautz T. Hard Evidence on Soft Skills. *Labour Economics*. 2012; 19 (4): 451–464. <https://doi.org/10.1016/j.labeco.2012.05.014>
14. Fauzer V.V., Smirnov A.V., Fauzer G.N. Demographic Assessment of the Sustainability of Small and Medium-Sized Cities in the Russian North. *Economy of Regions*. 2021; 17 (2): 552–569. <https://doi.org/10.17059/ekon.reg.2021-2-14>
15. Maltseva I.O. Labor Mobility and Stability: How High is the Return on Specific Human Capital in Russia? *Higher School of Economics Economic Journal*. 2009; 13 (2): 243–278.
16. Oshchepkov A.Yu. Gender Wage Gap in Russia. *Higher School of Economics Economic Journal*. 2006; 10 (4): 590–619.
17. Nelson R., Phelps E. Investment in Humans, Technological Diffusion, and Economic Growth. *The American Economic Review*. 1966; 56 (1/2): 69–75.

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