Impact of Educational Standards on the Sustainable Development of the Labor Market

Vyacheslav Yu. Babyshev[a]
International Scientific and Educational Laboratory of Technologies for Improving the Well-being of the Elderly, National Research Tomsk Polytechnic University, Lenin Avenue, Tomsk, Russia

Keywords: Labor Market, Competition, Employment, Education, Educational Mismatch, Research Area Mismatch, Qualification Mismatch.

Abstract: This article examines two aspects of the impact of education on the sustainable development of the labor market: the impact of education on the level of employment and the educational mismatch between the knowledge and skills acquired in educational institutions and required at the workplace. Based on a theoretical review of the literature, it was concluded that there is no unanimous opinion among the authors on the impact of education on the level of employment. It was also concluded that employers consider people's skills insufficient for practical work, and scientists believe that educational skills of people are underutilized due to insufficient rates of scientific and technological progress. Based on the analysis of statistics, it was concluded that an increase in the level of education has a positive effect on the level of employment of the labor force in almost all countries in all the years under consideration in general and for both sexes in particular. The educational mismatch as a whole showed an increase in both under-qualification and over-qualification. It was also concluded that in more developed countries there is more often a qualification gap and a lack of knowledge and skills, while in less developed countries there is more often work outside the specialty and an excess of knowledge and skills. If work outside the specialty is considered in the context of the educational gap, then in general, there is an excess of knowledge in the framework of work outside the specialty and a lack of knowledge in the framework of work in the specialty.

1 INTRODUCTION

The modern labor market is characterized by a constant increase in the share of intellectual and creative processes, combined with a decrease in the share of routine and physical operations. In turn, the institution of mentoring for training within the production process, which functioned in Soviet times, has practically ceased to exist in modern market conditions. Therefore, for the smooth functioning of the economy, it is important for employers to match the professional knowledge and skills acquired in the course of education and required in practice. In turn, for employees, the issue of this compliance is relevant in terms of reducing the possible risk of unemployment and increasing their competitiveness in the labor market.

The shift in technological paradigms leads to a change in the qualifications and skills of the workforce on the part of employers. And although technological changes usually go hand in hand with an increase in the educational and qualification level of the labor force, recently, their inconsistency has increased. This phenomenon has received in the scientific literature the name of educational inconsistency or educational mismatch (Guillaume, Benoît and François, 2014).

Educational mismatch is understood as the gap between the acquired educational skills and the professional skills required in the labor market. Educational mismatch worsens both quantitative (total share of the employed) and qualitative (correspondence of the place of work to educational qualifications) indicators of the nature of employment. In addition to the deterioration of employment parameters, educational mismatch negatively affects the level of wages and, through it,

[a] https://orcid.org/0000-0003-2523-0542

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the quality of life. Also, educational mismatch leads to a waste of human capital.

Distinguish between vertical and horizontal educational discrepancy. Vertical discrepancy is understood as the work of people with higher education in low-skilled jobs. Horizontal is the discrepancy between work and education or education and profession.

Of particular interest for the study of educational mismatch is Russia, where a high educational level of the majority of the population was combined with a sharp economic failure after the collapse of the communist system. According to a study by V. Rudakov, H. Figueiredo, P. Teixeira and S. Roshchin, in Russia 32% according to the self-assessment criterion and 40% according to the statistical method of graduates do not work in their specialty. At the same time, the greatest discrepancy is in areas with general human capital (social sciences, business, law, services) or low wages (agriculture). At the same time, in certain areas with specific human capital (for example, medicine), educational mismatch is weaker. In other words, in areas where skills are easily transferable to other types of jobs, educational mismatch is more of areas with specific skills. In other words, the educational mismatch in Russia is more related to labor mobility than to the imbalance between the educational and required labor skills (Rudakov et al., 2019).

In Russia, there is a gap between the needs of the market and the training of graduates by profession and the number of people. As a result, there are socio-economic costs in the form of increased unemployment and unskilled labor in the workplace (Fedolyak, 2018).

According to research by consulting firm McKinsey, the US labor market is not experiencing a labor shortage, but a skill deficit. According to 45% of employers in the world, it is the lack of necessary skills that makes it difficult to fill entry-level vacancies. At the same time, 72% of heads of higher education and only 42% of employers believe that graduates are prepared for work (Bersin, 2013).

According to K. Marsikova and V. Urbanek, education increases the demand for labor in the labor market and allows you to find more interesting and highly paid jobs. However, according to their research, in developed countries there is an educational gap between the needs of employers and the individual desires of graduates, and most often there is an excess of education for jobs (15.5% for incomplete education and 28.6% for excess education) (Marsikova, Urbanek, 2015).

According to E. Varshavskaya, having a professional education increases the chances of finding a job (Varshavskaya, 2016).

However, A. Manuilova received the opposite data, that it is more difficult for people with higher education to find a job in comparison with people with secondary and specialized secondary education (Manuilova, 2017).

In turn, E. Ghignoni and A. Verashchagina believe that the most important role in overcoming educational imbalance lies on the side of technological progress, which favors highly educated workers and reduces the need for retraining. However, in countries with a low level of technological development, the factor of supply of labor with an excess of education for the labor market becomes more important (Ghignoni and Verashchagina, 2014).

K. Tijdens, M. Beblavý and A. Thum-Thysen come to the conclusion that a quarter of the professions are in excess demand, and a third of the professions have an excess supply of labor. At the same time, the level of education of personnel is on average higher than the skills required for the workplace (Tijdens, Beblavý and Thum-Thysen, 2018).

R. Muñoz de Bustillo Llorente, S. Sarkar, R. Sebastian and A. Jose-Ignacio agree that over-education is more common in the modern world, but according to their research, the level of over-education is gradually decreasing (Rafael Muñoz de Bustillo, Sudipa, Raquel, Jose-Ignacio, 2018).

Based on the analysis of the literature, it can be concluded that there are disagreements among the authors on the impact of education on employment. In terms of the educational gap, a more interesting picture is emerging: experts more or less unanimously speak of an excessive education of the workforce and insufficient rates of scientific and technological progress, while employers say the main problems are the lack of necessary skills and the lack of readiness of graduates for practical work.

2 RESEARCH METHODOLOGY

The research methodology consists in a statistical comparison of the unemployment rate for large groups of countries depending on the level of education: basic and advanced according to the method of the World Bank and the first, second and third degrees of education according to the method of the OECD.

The study of the educational gap between the skills and competencies acquired and required at work consists in a statistical comparison of dissimilar countries depending on the nature of the gap: insufficient, sufficient and excessive qualifications of workers for their jobs according to the ILO methodology and inconsistency in the field of study and qualifications inconsistency according to the OECD methodology. In turn, the qualification mismatch is divided into insufficient and excessive.

3 RESULTS OF THE STUDY

3.1 Unemployment and Education

First, let's check the impact of education on the unemployment rate.

The World Bank classifies education into two levels (basic and advanced), and also conducts statistical analysis on gender differences (Unemployment with advanced education, The World Bank).

Table 1: Unemployment among the workforce with basic education.

Group of countries	Total number (in%)		men (in%)		women (in%)	
	1999	2018	1999	2018	1999	2018
Highly developed countries	13,2	12,0	12,7	11,0	15,3	13,8
EEC	14,3	14,7	13,7	13,7	16,6	16,6
USA	9,3	5,9	8,2	5,2	11,3	7,1

Table 2: Unemployment Among the Advanced Workforce.

Group of countries	Total number (in%)		men (in%)		women (in%)	
	1999	2018	1999	2018	1999	2018
Highly developed countries	5,1	4,6	4,1	4,0	6,6	5,4
EEC	6,0	5,6	4,6	4,7	8,0	6,5
USA	2,1	2,5	2,1	2,4	2,1	2,5

The OECD Statistics Division introduces three levels of education: lower secondary, upper secondary and tertiary (Employment by education level, OECD Data).

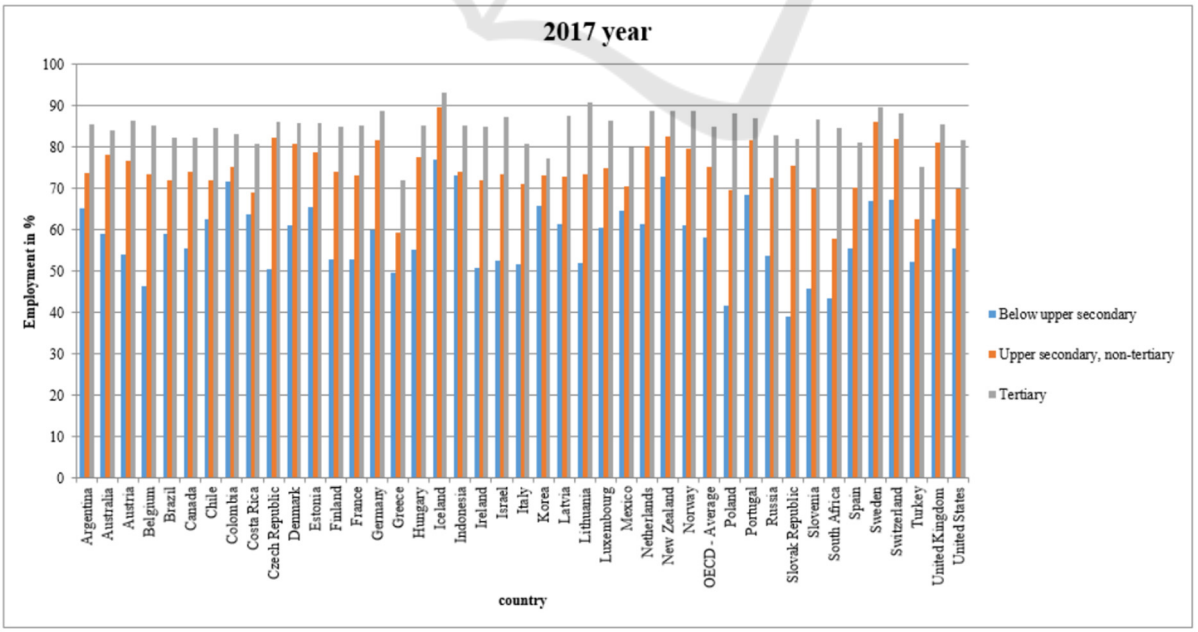

Figure 1: Labor force participation by education level by country.

Table 3: Employment of people by education level.

Country	Below the average	Completed secondary	Tertiary
Argentina	65,9	73,0	86,0
Australia	60,8	78,0	83,0
Austria	54,3	75,4	85,1
Belgium	48,2	73,8	84,6
Brazil	65,3	74,8	84,6
Canada	55,2	74,6	82,2
Chile	60,6	70,9	84,0
Colombia	71,4	75,6	82,8
Costa Rica	61,9	71,1	81,3
Czech Republic	46,5	77,8	86,3
Denmark	62,0	80,3	87,1
Estonia	52,1	74,4	83,2
Finland	56,0	74,8	84,6
France	56,2	75,2	83,7
Germany	53,3	74,2	85,4
Greece	55,5	63,3	78,7
Hungary	41,3	71,5	82,0
Iceland	78,3	87,2	92,1
Indonesia	72,6	72,2	81,4
Ireland	51,6	70,9	83,7
Israel	46,5	70,7	84,1
Italy	51,0	72,0	80,9
Korea	66,5	70,6	77,0
Latvia	51,1	70,6	84,1
Lithuania	44,3	71,2	88,6
Luxembourg	61,3	72,3	85,0
Mexico	63,0	70,7	81,6
Netherlands	58,7	78,4	86,5
New Zealand	67,1	80,9	83,8
Norway	63,3	81,3	89,6
OECD	56,3	74,3	83,9
Poland	41,9	66,5	85,3
Portugal	69,0	80,2	86,8
Russia	50,2	72,0	81,9
Saudi Arabia	60,8	64,9	74,7
Slovakia	32,4	72,5	83,9
Slovenia	51,5	73,0	86,6
South Africa	44,1	59,9	86,3
Spain	53,2	70,3	79,6
Sweden	69,1	83,7	88,7
Switzerland	67,5	80,8	89,4
Turkey	52,0	62,8	77,2
Great Britain	62,2	80,3	86,2
USA	54,9	72,2	83,4

3.2 Educational Discrepancy

Let us test the hypothesis described above about a significant level of educational mismatch between the properties of the labor force and the nature of jobs.

The ILO considers the nature of employment in three areas: insufficient, sufficient and over-qualification of workers for the workplace they occupy(Employment distribution by sex and 'educational mismatch', ILOStat).

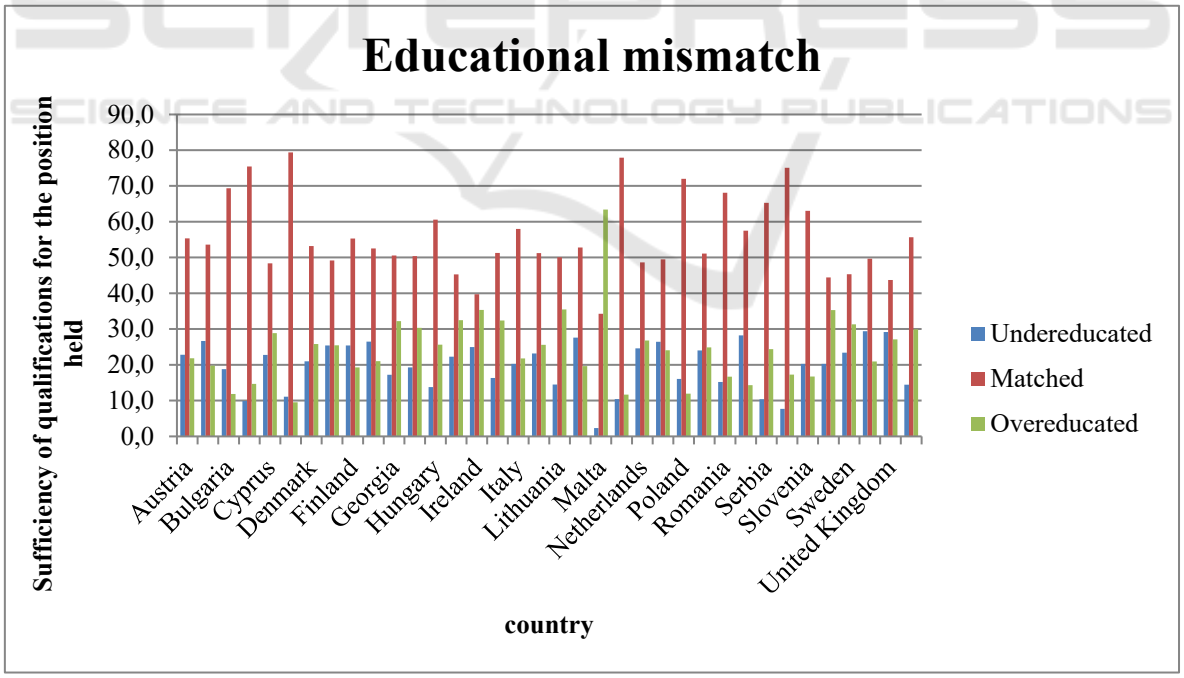

Figure 2: Educational mismatch for selected countries for 2018.

Table 4: Distribution of employment by educational mismatch, 36 countries.

indicator	Inadequate	Sufficient	Excess
minimal	2,3	34,3	9,0
maximum	31,4	83,1	63,4
average	18,7	59,2	22,0

Table 5: Trends in educational mismatch across 36 countries over a known period.

36 countries	Inadequate	Sufficient	Excess
Austria (2010-2018)	5,8	-6,8	1,0
Belgium (2011-2018)	-1,1	-4,6	5,6
Bulgaria (2010-2018)	6,4	-4,8	-1,6
Croatia (2010-2018)	0,7	-0,4	-0,3
Cyprus (2010-2018)	-3,3	-9,7	12,9
Czech Republic (2010-2018)	4,0	-3,7	-0,2
Denmark (2010-2018)	2,9	-7,5	4,6
Estonia (2010-2018)	5,9	-14,8	8,9
Finland (2010-2018)	0,5	-10,4	10,0
France (2010-2018)	-4,9	-5,6	10,5
Georgia (2010-2019)	4,8	-6,4	1,6
Greece (2010-2018)	1,2	-4,5	3,4
Hungary (2010-2018)	1,1	-13,4	12,3
Iceland (2010-2018)	7,2	-11,2	4,1
Ireland (2010-2018)	2,6	-10,8	8,2
Israel (2012-2017)	-1,5	-1,3	2,7
Italy (2010-2018)	2,3	-1,0	-1,3
Latvia (2010-2018)	3,9	-15,0	11,1
Lithuania (2010-2018)	0,0	-12,3	12,3
Luxembourg (2010-2018)	15,3	-14,0	-1,3
Malta (2010-2018)	-4,4	-9,5	13,9
Montenegro (2011-2018)	-0,8	0,4	0,4
Netherlands (2010-2018)	1,2	-6,8	5,6
Norway (2010-2018)	-1,0	-14,1	15,0
Poland (2010-2018)	4,6	-2,8	-1,8
Portugal (2010-2018)	11,5	-5,3	-6,2
Romania (2010-2018)	2,4	-1,6	-0,8
Russia (2010-2019)	-1,4	0,5	1,0
Serbia (2011-2019)	-10,1	12,4	-2,4
Slovakia (2010-2018)	-0,2	-7,3	7,5
Slovenia (2010-2018)	6,5	-11,2	4,7
Spain (2010-2017)	-6,4	-6,5	12,9
Sweden (2010-2018)	4,8	-18,7	13,9
Switzerland (2010-2018)	7,7	-7,2	-0,5
Great Britain (2010-2018)	7,5	-21,5	14,0
USA (2010-2019)	0,8	-3,2	2,4

Table 6: Relative educational mismatch across 36 countries.

	Corresponding minus insufficient	Corresponding minus excess	Excessive minus insufficient
Austria	45,2	41,3	3,8
	32,5	33,5	-1,0
Belgium	30,4	44,0	-13,6
	26,9	33,8	-6,9
Bulgaria	61,7	60,6	1,0
	50,5	57,5	-6,9
Croatia	66,6	60,8	5,8
	65,5	60,8	4,8
Cyprus	32,0	42,1	-10,1
	25,6	19,5	6,1
Czech Republic	75,9	73,3	2,6
	68,2	69,8	-1,6
Denmark	42,7	39,6	3,1
	32,2	27,4	4,8
Estonia	44,4	47,4	-3,0
	23,8	23,7	0,0
Finland	40,8	56,5	-15,7
	29,9	36,0	-6,2
France	26,8	47,6	-20,8
	26,0	31,5	-5,4
Georgia	44,5	26,3	18,2
	33,3	18,3	15,0
Greece	36,7	27,9	8,8
	31,1	20,0	11,0
Hungary	61,4	60,7	0,7
	46,8	34,9	11,8
Iceland	41,4	28,1	13,3
	23,0	12,8	10,2
Ireland	28,2	23,4	4,8
	14,8	4,4	10,4
Israel	34,8	22,9	11,8
	34,9	18,9	16,0
Italy	41,1	35,9	5,1
	37,7	36,2	1,5
Latvia	46,9	51,7	-4,8
	28,1	25,7	2,4
Lithuania	47,9	39,1	8,8
	35,6	14,6	21,0
Luxembourg	54,5	45,9	8,6
	25,2	33,2	-8,0
Malta	37,1	-5,7	42,8
	31,9	-29,1	61,1
Montenegro	66,4	66,3	0,1
	67,5	66,2	1,3
Netherlands	32,0	34,3	-2,2
	24,0	21,8	2,2
Norway	36,2	54,5	-18,4
	23,1	25,4	-2,3
Poland	63,3	61,0	2,3
	55,9	60,0	-4,1
Portugal	43,8	25,3	18,5
	27,1	26,2	0,8
Romania	56,9	52,2	4,7
	52,9	51,4	1,5
Russia	27,3	43,6	-16,3
	29,2	43,2	-13,9
Serbia	32,4	26,1	6,3
	54,9	40,9	14,0
Slovakia	74,5	72,6	1,9

	67,4	57,8	9,6
Slovenia	60,5	62,3	-1,8
	42,7	46,3	-3,6
Spain	24,2	28,5	-4,3
	24,1	9,1	15,0
Sweden	45,4	46,6	-1,2
	21,9	14,0	7,9
Switzerland	35,2	35,4	-0,3
	20,3	28,7	-8,4
Great Britain	43,6	52,1	-8,4
	14,6	16,6	-2,0
USA	45,2	31,3	13,8
	45,2	25,7	15,5

The OECD is making a more thorough classification(Skills for Jobs. Mismatch – National statistics OECD. Stat).

At first, she divides the educational mismatch into vertical (when people work in a field other than the education they received) and horizontal (when the skills acquired during the educational process do not fully meet the requirements of the workplace). And already within the horizontal educational mismatch, the OECD highlights inadequate and excessive qualifications.

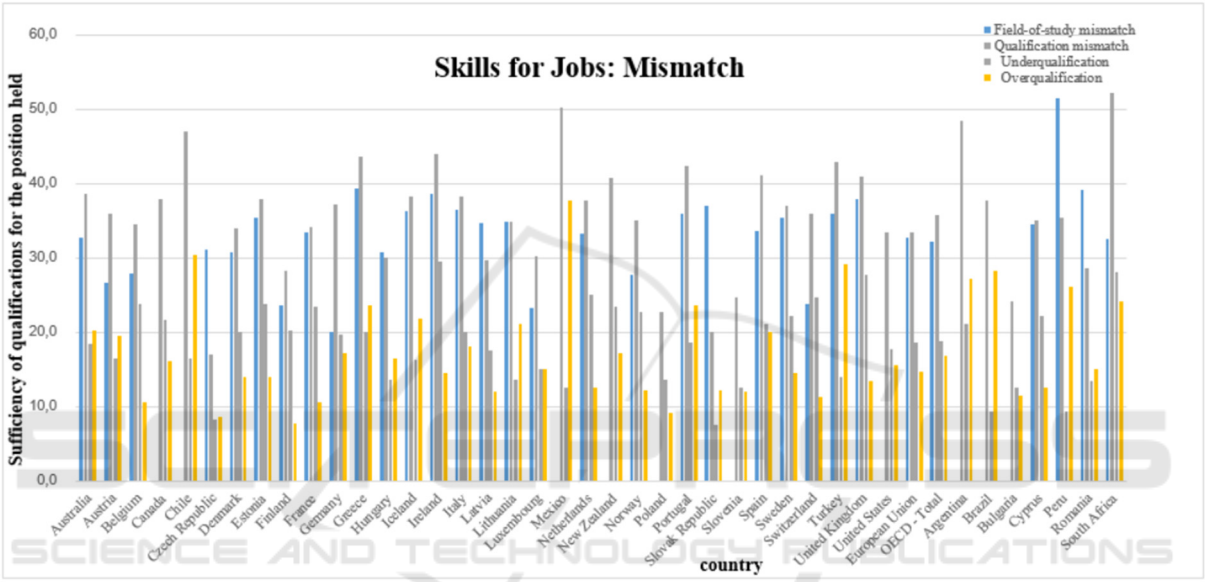

Figure 3: Educational mismatch for selected countries for 2016.

Table 7: Distribution of employment by educational mismatch, 42 countries.

indicator	Research area mismatch	Qualification mismatch	Insufficient qualifications	Overqualification
min	20,1	17,1	7,6	7,8
max	51,5	52,2	29,5	37,7
average	33,1	35,9	18,5	17,4

Table 8: Relative educational disparity across 42 countries.

42 countries	Excess mismatch of qualifications and mismatch of the field of study	Excess over qualification over insufficient qualification
Australia	6,0	1,7
Austria	9,4	2,9
Belgium	6,5	-13,2
Canada	-	-5,5
Chile	-	14,0
Czech Republic	-14,0	0,3
Denmark	3,2	-6,0
Estonia	2,5	-9,7
Finland	4,5	-12,5
France	0,8	-12,9
Germany	17,1	-2,5
Greece	4,3	3,7
Hungary	-0,6	2,9
Iceland	1,8	5,5
Ireland	5,3	-14,9
Italy	1,7	-1,8
Latvia	-5,0	-5,5
Lithuania	0,0	7,6

Luxembourg	6,9	0,0
Mexico	-	25,1
Netherlands	4,5	-12,5
New Zealand	-	-6,3
Norway	7,3	-10,4
Poland	-	-4,4
Portugal	6,5	4,9
Slovakia	-17,0	4,7
Slovenia	-	-0,6
Spain	7,5	-1,2
Sweden	1,6	-7,7
Switzerland	12,2	-13,4
Turkey	7,0	15,1
Great Britain	3,0	-14,2
USA	-	-2,1
EEC	0,7	-4,0
OECD	3,5	-2,1
Argentina	-	6,0
Brazil	-	18,8
Bulgaria	-	-1,0
Cyprus	0,5	-9,6
Peru	-16,0	16,9
Romania	-10,6	1,6
South Africa	19,7	-3,9

4 THE DISCUSSION OF THE RESULTS

4.1 Unemployment and Education

As we can see from the WB table, in highly developed countries and the United States, unemployment among people with basic education has decreased, while in the EEC, on the contrary, it has slightly increased both in general and for both sexes. At the same time, the unemployment rate of women with basic education was higher than that of men.

As we can see from the WB table, unemployment among people with advanced education is noticeably lower than the unemployment of people with basic education, both in general and for both sexes in particular.

At the same time, in highly developed countries and the EEC, unemployment among people with advanced education has decreased, while in the United States, on the contrary, it has increased both in general and for both sexes. At the same time, the unemployment rate of women with advanced education was higher than male indicators.

As we can see from the OECD chart, employment of people with completed secondary education in almost all cases was higher than employment of people with lower secondary education, and employment of people with tertiary education, in turn, was always higher than the same indicator for people with completed secondary education.

An analysis of data for 44 countries for 39 years from 1981 to 2019 showed that the employment rate of people with lower secondary education averaged 57%, people with completed secondary education 74%, and those with tertiary education 84% of the number of people of working age. Thus, completed secondary education increases employment by 16.7%, and tertiary education by 10.4%.

Comparative analysis for the entire period from 1981 to 2019 showed that with an increase in the level of education, the employment of people of working age is steadily increasing (the only exception: the employment of people with tertiary education in Australia in 1989 was lower than that of people with completed secondary education).

4.2 Educational Discrepancy

The ILO graph shows that for 36 countries except Malta, most jobs correspond to the skills of the labor force, and there is a contradictory trend in the share of underskills and overskills.

Thus, we can conclude that although the majority of employed people fit their jobs, more than 40% demonstrate inadequacy. At the same time, the level of underutilization exceeds the indicator of insufficient knowledge and skills.

For 1 column "lack of knowledge and skills" the following picture is observed: in 11 cases there is a decrease, 1 case has not changed, and 24 examples showed an increase. The growth was mainly observed (66.7%).

The following picture is observed for column 2 “sufficiency of knowledge and skills”: in 33 cases there is a decrease and 3 examples of growth. The decline was mainly observed (91.7%).

For column 3 "redundancy of knowledge and skills" the following picture is observed: in 10 cases, a decrease and in 26 cases, an increase. The growth was mainly observed (72.2%).

In general, it can be concluded that the level of insufficient qualifications showed an upward trend, the level of qualification matching - a fall, and the level of overqualifications also increased.

Most jobs are qualified everywhere, except Malta (which has the most overskilled people).

Out of 72 examples, in 44 cases, excess education is greater than insufficient, in 1 case they are equal, and in 27 examples, insufficient education exceeds excess.

In general, the world does not see a clear relationship between the nature of the educational gap and the level of socio-economic development.

In general, according to the OECD chart, it can be said that the mismatch of qualifications, on average, occurs more often than the mismatch of the field of study, and the lack and excess of qualifications shows a contradictory trend. At the same time, the opposite trend, when work outside the specialty exceeds the qualification gap, occurs only in some countries of Eastern Europe and Latin America. At the same time, there is a general trend in the OECD, EEC, Great Britain and France.

Thus, about a third of people do not work in their specialty, and the discrepancy between the qualities of the workforce and the nature of the workplace reaches 36%. At the same time, insufficient qualifications exceed the indicator of redundancy of knowledge and skills. At the same time, this preponderance is more often observed in the countries of Northern and Western Europe, while the preponderance of excess over insufficient qualifications is more often observed in the countries of Southern, Eastern Europe and Latin America. This phenomenon is also confirmed by the preponderance of insufficient over excess qualifications in the OECD, EEC, USA, Great Britain and France.

In terms of the ratio of work outside the specialty and the qualification gap, the following picture is observed: in 25 cases the qualification gap exceeded the work outside the specialty, in 1 case it was equal and in 6 cases the work outside the specialty exceeded the qualification gap. Data for 10 countries is unknown.

In terms of the ratio of sufficient and insufficient qualifications, the following picture was observed: in 16 cases overqualification prevailed, in 1 case it was equal, and in 25 cases inadequate qualifications prevailed.

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6 CONCLUSIONS

6.1 Unemployment and Education

Based on the impact of education on employment, it can be unambiguously concluded that an increase in the level of education increases the employment of the working-age population both in general and for both sexes in particular (although the gender gap still persists).

6.2 Educational Discrepancy

In terms of educational discrepancy, the picture is less rosy. Although for the majority of jobs there is a correspondence between the acquired and required knowledge and skills, a significant proportion is occupied by jobs with educational discrepancy.

At the same time, the discrepancy between qualifications is more common in comparison with work outside the specialty.

As the information technology paradigm develops, the working-age population, on average, is more likely to get a job in a specialty, but at the same time the qualification gap grows.

Insufficient qualifications are more common than redundant ones; however, as the information technology paradigm develops, a comparative excess of knowledge and qualifications is replaced by its deficit.

At the same time, taking into account work outside the specialty, on average in the world there is an excess of knowledge and skills, i.e. there is an increased percentage of overqualified people in the research area mismatch. In other words, for those working not in their specialty there is an excess of knowledge and skills, but for those working in their specialty, on the contrary, there is a deficit of knowledge and skills. Thus, the economy not only underutilizes the excess knowledge and skills of people in this field of activity, but also provides them with employment outside their specialty.

Based on the results obtained, two recommendations can be made. First, it is necessary to carry out more active work on the employment of graduates in the specialty. Secondly, it is necessary to adjust the existing educational programs in the direction of taking into account the practical needs of employers.

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