

Transformation of Labor Market of Ukraine: Professional Qualifications Assessment

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Abstract. The article analyzes the structural shifts in professional qualifications employment of the Ukrainian population, revealing the trends and nature of their changes. It has been found that the labor market is characterized by multidirectional trends. On the one hand, according to formal features, the professional qualifications structure of the population is approaching the indicators peculiar to a developed labor market: set against the reduction of the employed in the simplest occupations, there is an increase in the number of professionals, and trade and services workers. At the same time, the analysis of the interprofessional distribution of the workforce, carried out by the method of resulting shifts, has shown that in a number of professional groups of exclusive value for the country's economic development, there is a net outflow of workforce.

The revealed destructive processes indicate the absence of a well-formed basis for a profound qualitative restructuring of the national labor market. The available trends are due to the following key factors: inadequate level of the institutional provision of the labor market, and the impact of global employment trends. With the beginning of the full-scale Russian military aggression against Ukraine, the national labor market initially froze, but is gradually adapting to war conditions. Under the outlined conditions, the priority tasks of state bodies will be the complex reconstruction and development of the real sector on an innovative basis in connection with the labor market development strategy, the key task of which is to improve the wage mechanism and increase the cost of labor.

Keywords: labor market, workforce, professional qualifications structure, state employment policy.

Introduction. A rapid technological development not only brings about the emergence of an increasing number of new professions, but also changes the functionality of the existing ones, and this process is continuous. Today there are practically no types of activities that would not be affected by progress. Therefore, there is a certain objective component in the discrepancy between the workforce structure and qualifications, and the needs of the economy. Tracking and analyzing changes in employment in terms of professional qualifications make it possible to understand and evaluate changes in the need for workforce and its use. Formation and training of specialists with account of market needs are particularly relevant to Ukraine. The steps carried out by the government to reform the educational system, in particular technical and vocational training, promotion of digital skills development by application of "Diia" (Action) can serve as the confirmation.

The issue of assessment of the actual labor market condition, its professional qualifications parameters, the problems of tracking statistical data on employment were reflected in the works by such scientists and experts as Alekankina K. [1], Tsymbal O., Yarosh O. [21] and multidisciplinary researches in pharmaceutical and medical fields conducted by Shapovalova V., Chuiev Y. [24-25] and others. However, the regulation of interprofessional shifts and their impact on the structure of employment still remain the least investigated subjects.

The purpose of the study was to research professional structure of the population's employment, its formation peculiarities, trends, and key factors of development, and to outline the priority directions of its regulation by the state.

Materials and methods. The subject of research is tendencies and transformations of professional qualifications employment of the population. For a deeper understanding of the structural changes in the professional employment of both the population in general and specific

professional groups, the research was carried out by the method of resulting shifts, and the dynamics of the indicators of the mass of structural shifts was analyzed for the period from 2012 to 2022. This method allows determining changes of the share of an analyzed professional group in the combined structure of the employed, finding out the essence of those changes. If there is a resonance effect, this means that changes in the professional group under study to a greater extent are due to the changing number of the employed in other professional groups, against the background of conditional consistency of the number of the employed in this group. In case of the predominance of the compensatory effect, the situation is reverse – the shifts are due, in the first place, to changes in the group under study, against the background of conditional consistency of the number of the employed in other professional groups.

The first stage of the study involves identification of the general trends in the development of the professional qualifications structure of the population's employment, its gender and age composition, and level of work remuneration depending on occupational distribution. At the second stage, an actual analysis of professional qualifications employment was carried out. In the course of the study, the basic professional qualifications structure of employment, and the conditional number of the employed, broken down by professional groups, were determined; the internal and external shifts, and the mass of structural shift were calculated; the nature of the brought about effect was specified. Conclusions about public authorities' priority measures in the context of eliminating destructive processes of the professional qualifications structure of the population's employment are given.

The empirical basis for calculations was the data of the State Statistics Service of Ukraine [17]. The investigated period of eight years was considered sufficient to detect and track the structural shifts.

Results and discussion. An analysis of the professional qualifications structure of the employed population was carried out based on the National Classifier of Ukraine "Classifier of Professions DK 003: 2010", which systematizes data on labor according to occupational features [14]. Pursuant to the Classifier of Professions, all types of work are united into nine sections of professional classification, ranking in the order of decreasing the qualification necessary for their implementation.

Over the period of 2012-2022, professional groups of the simplest occupations, professionals, and trade and services workers steadily accounted for the largest share in the structure of employed population (Fig. 1). It is in these groups that the most significant shifts took place: e.g., as of 2012, professionals and representatives of the simplest occupations amounted to 14.9% and 23.4% of the employed, respectively. In 2020, the indicators equated, with the portion of each group being 17.9%. Regarding trade and services workers, their share increased by 1.5%, amounting to 16.5% in 2020. Together, the above categories make up 52.3% of the employed population [4-10].

The indicators of the share of skilled workers handling tools, specialists, and workers maintaining and operating equipment, vary within the 11%–12% range. At the same time, the smallest share among the employed population is made up of technical employees and skilled workers of agriculture and forestry, fish farming and fisheries.

Thus, during the research period, it is the share of workers servicing and operating equipment and representatives of the simplest occupations that decreased. The rest of professional groups increased, except officials and executives, the share of which remained unchanged, amounting to 8.0%.

It should be noted that the list of professions most demanded in the labor market practically has not changed. According to the statistical and analytical reviews, carried out by the State Statistics Service of Ukraine (official website), in 2012, enterprises had the greatest demand for skilled workers handling tools (19.9% of the total number of vacancies by the end of the year); professionals (16.8%); workers of the simplest occupations in the fields of trade, services, production, construction, transport, etc. (14.1%); workers performing maintenance, operation and control of technological equipment, assembly of equipment and machinery (13.8%) [16]. As of 1

December, 2020, according to the State Employment Service (available at <https://www.dcz.gov.ua/analytics/view>), among professional groups the highest demand was for: workers handling tools (24%); workers performing maintenance, operation of equipment and machinery (16.7%); professionals (over 13%); and the simplest occupations (12.4%) [3].

Trends in the number of registered unemployed per one vacancy by professional groups are also stored: the highest number is in groups of skilled agricultural workers; officials and executives, and technical employees.

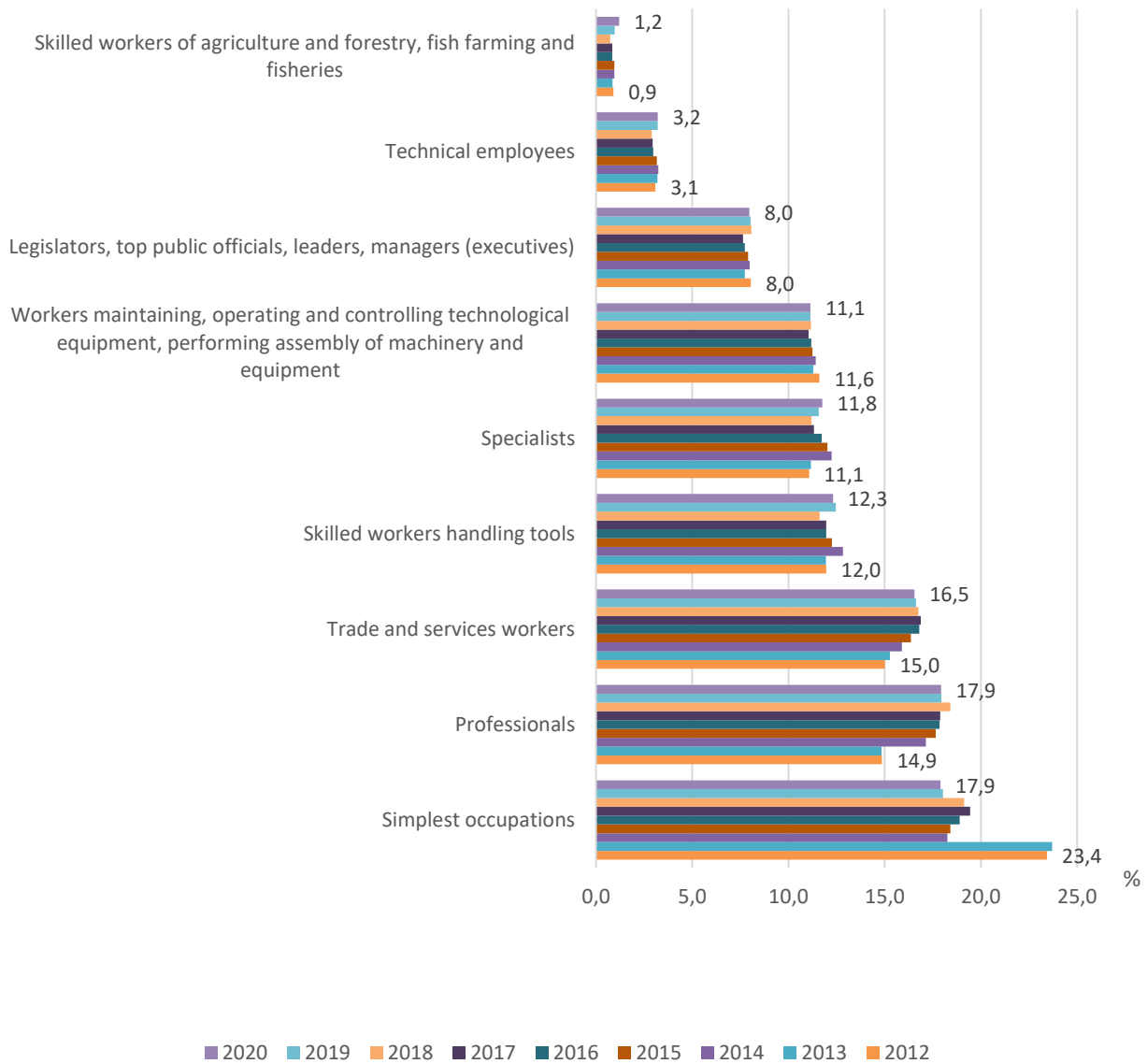


Fig. 1. Professional structure of employment of the population in Ukraine, 2012-2020.

Source: Author

The smallest number is among skilled workers handling tools, and professionals. As is seen from the given data (Fig. 2), the number of unemployed per a vacancy in the professional group of officials and executives has almost doubled. However, experts note that a real picture of selecting and placing vacancies is hard to obtain due to the fact that the State Classifier of Professions is updated with some delay and does not fully reflect the skills and professions currently in demand. On the contrary, employment websites provide more detailed information on skills and competencies required of job candidates [1].

The most numerous age group is that of 40–49-year-olds: among officials and executives, this age category amounts to 29.2%; among professionals – to 24.4%; among specialists – 25.9%;

among technical employees – 22, 0%; among trade and services workers – 25.6%; among skilled agricultural and forestry workers – 26.1%; among skilled workers handling tools – 27.0%; among workers servicing and operating equipment – 27.9%. The only exception is representatives of the simplest occupations, where 25.9% of workers are aged 50-59.

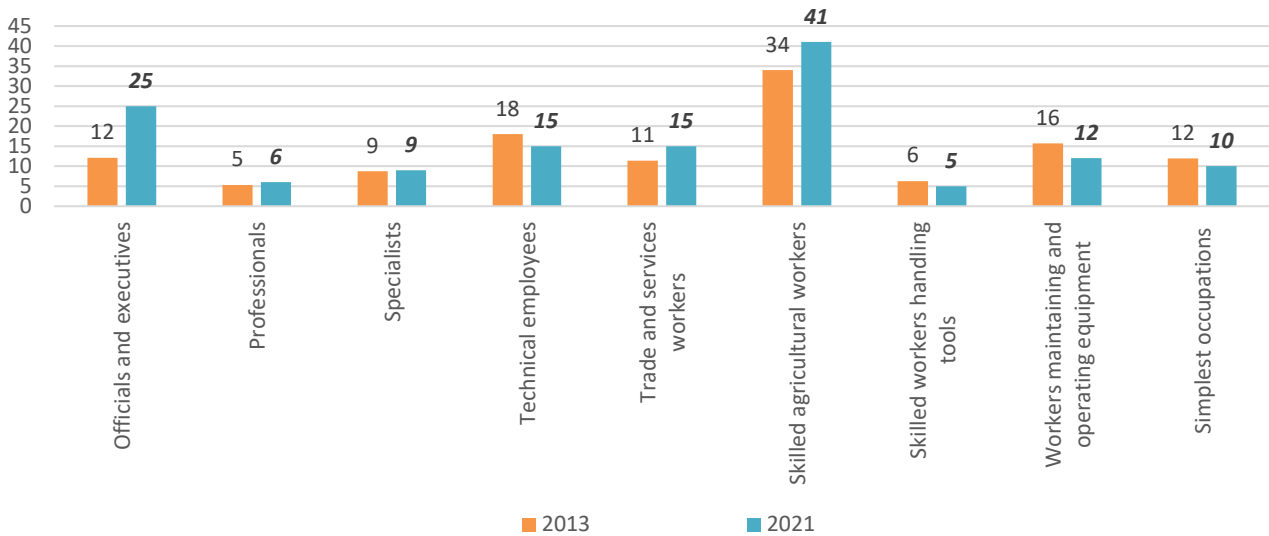


Fig. 2. The number of the unemployed per 1 vacancy by professional groups, 2013, 2021.
 Source: Author

The distribution of workers by gender shows that in 2012 practically a quarter of women, specifically 24.2%, were involved in the simplest occupations; while in 2020, the largest number of women were employed in trade and services – 23.5%. In 2012, the largest share of men was employed in the simplest occupations – 22.7%; in 2020 – in the group of skilled workers handling tools (19.9%). Women dominate numerically in the following professional groups: technical workers, where the ratio of women to men is 82.3% to 17.7%; trade and services workers – 67.8% to 32.2%; specialists – 64.3% to 35.7%; and professionals – 60.8% to 39.2%.

Thus, during the investigated period, the distribution by gender of the employed population in professional groups did not change significantly. Although the number of men increased by 5% in groups of technical employees, workers servicing and operating equipment, and in the simplest occupations.

Traditionally, the shares of the employed in the informal sector remain high: representatives of the simplest occupations – 58%, skilled agricultural workers – 46%, trade and services workers – 20.2%.

Since 2012, every 4 years, Ukraine has arranged a selective survey of enterprises titled “The level of wages of workers depending on gender, age, education and professional groups”, which, in particular, characterizes the remuneration in professional groups [22-23]. The conducted analysis showed that both in 2012 and 2016, the most highly paid professional groups were: officials and managers (in particular, higher officials of public authorities, managers in processing industry and in production of electricity, gas, and water); professionals (in the first place, in the field of computerization), and specialists (specialists who handle ships and planes, providing navigation and flights). According to the results of 2016, the professional group of skilled agricultural workers gave way to skilled workers handling tools in terms of wages. The lowest wages are still paid to the workers of the simplest occupations (Fig 3).

However, it should be taken into account that half of the workers of the simplest professions, skilled agricultural workers, one fifth of trade and services workers are employed unofficially, most of them receiving their wages “in envelopes”. In addition, statistical information on work remuneration is fragmentary, since it does not include data on enterprises with less than 10 workers.

Therefore, official statistics does not fully reflect the situation regarding remuneration of workers by professional groups.

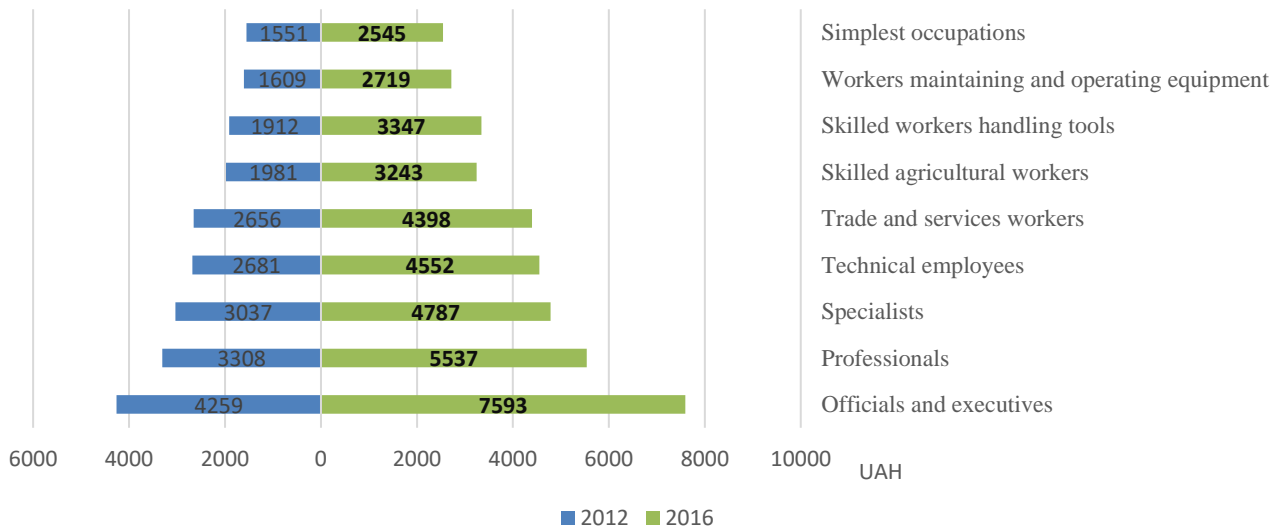


Fig. 3. Average monthly payment of workers (full-time) in professional groups, 2012, 2016.

Source: Author

The imperfect mechanism for setting labor prices is one of the negative features of the national labor market. Insufficient formalization and standardization of labor content, volume, and workers’ skills lead to significant differences in the levels of payment, and the existing social and management institutions are not configured to overcome that [21].

The presented review provides a general idea of the distribution of the employed by professions, but it does not resolve the question what mutual effect is produced by changes occurring within each professional group: does a reduced number of the employed in some professional groups lead to an increase in others, and to what extent. A further study of changes in the professional composition of workforce was carried out by the method of resulting shifts, with its results presented in the Table 1.

Table 1. Dynamics of the mass of structural shifts, internal and external shifts by professional groups of the population’s employment, 2012-2020.

No.	Professional group	Year										
		Group I										
1	2	3	4	5	6	7	8	9	10	11		
1	Professionals	2012	2013	2014	2015	2016	2017	2018	2019	2020		
	mass of structural shift, p.p.	–	- 0.02	2.28	2.80	2.99	3.03	3.55	3.09	3.07		
	internal shift, p.p.	–	0.02	1.03	0.18	0.19	0.12	0.66	0.50	- 0.04		
	external shift, p. p.	–	- 0.04	1.25	2.62	2.80	2.91	2.89	2.59	3.11		
				R								
2	Trade and services workers	2012	2013	2014	2015	2016	2017	2018	2019	2020		
	mass of structural shift, p.p.	–	0.26	0.89	1.36	1.79	1.87	1.74	1.62	1.54		
	internal shift, p.p.	–	0.26	- 0.07	- 0.89	- 0.70	- 0.73	- 0.67	- 0.59	- 1.15		

	external shift, p. p.	–	0.00	0.97	2.25	2.49	2.60	2.41	2.22	2.69
			R							
	Group II									
3	Simplest occupations	2012	2013	2014	2015	2016	2017	2018	2019	2020
	mass of structural shift, p.p.	–	0.26	-	-	-	-	-	-	-
	internal shift, p.p.	–	0.25	-	-	-	-	-	-	-
	external shift, p. p.	–	0.01	-	1.38	1.64	1.88	1.62	1.18	1.71
				R			C			
4	Workers maintaining and operating equipment	2012	2013	2014	2015	2016	2017	2018	2019	2020
	mass of structural shift, p.p.	–	-	-	-	-	-	-	-	-
	internal shift, p.p.	–	-	-	-	-	-	-	-	-
	external shift, p. p.	–	-	0.61	1.45	1.53	1.56	1.48	1.35	1.71
				R			C			
5	Officials and executives	2012	2013	2014	2015	2016	2017	2018	2019	2020
	mass of structural shift, p.p.	–	-	-	-	-	-	0.02	-	-
	internal shift, p.p.	–	-	-	-	-	-	-	-	-
	external shift, p. p.	–	-	0.45	1.07	1.10	1.13	1.13	1.04	1.29
				R			C			
6	Skilled workers handling tools	2012	2013	2014	2015	2016	2017	2018	2019	2020
	mass of structural shift, p.p.	–	-	0.88	0.31	0.00	0.01	-	0.50	0.35
	internal shift, p.p.	–	0.01	0.08	-	-	-	-	-	-
	external shift, p. p.	–	-	0.80	1.64	1.66	1.73	1.54	1.60	1.95
				R			C			
7	Technical employees	2012	2013	2014	2015	2016	2017	2018	2019	2020
	mass of structural shift, p.p.	–	0.10	0.16	0.08	-	-	-	0.11	0.12
	internal shift, p.p.	–	0.11	-	-	-	-	-	-	-
	external shift, p. p.	–	-0.1	0.20	0.45	0.45	0.46	0.42	0.44	0.54
				C		R				
8	Skilled agricultural workers	2012	2013	2014	2015	2016	2017	2018	2019	2020
	mass of structural shift, p.p.	–	-0.5	0.05	0.04	-	-	-	0.06	0.30
	internal shift, p.p.	–	-	-	-	-	-	-	-	0.09

			0.05	0.01	0.10	0.19	0.20	0.28	0.08	
	external shift, p. p.	–	0.00	0.06	0.14	0.13	0.13	0.11	0.13	0.21
			R		C					R
9	Specialists	2012	2013	2014	2015	2016	2017	2018	2019	2020
	mass of structural shift, p.p.	–	0.10	1.18	0.96	0.67	0.26	0.13	0.50	0.69
	internal shift, p.p.	–	0.11	0.37	-0.72	-1.04	-1.41	-1.41	-0.10	-1.22
	external shift, p. p.	–	-0.02	0.80	1.68	1.70	1.67	1.54	1.50	1.91
			C	R		C				

Note: R – resonance effect, C – compensatory effect

Source: statistical information of the State Statistics Service of Ukraine, author's own calculations

The conducted calculations shown that throughout the analyzed period the external shift had a stable resonance effect on the internal one only in two professional groups – trade and services workers and professionals. That is, an increase in the share of the employed in these professional groups takes place, in the first turn, due to a change in the number of the employed in other professional groups. At the same time, the growth of the share of professionals took place both at the expense of a growing employment in the group itself and due to changes of employment in other professions, the latter circumstance being predominant. At present, Ukraine is a powerful provider of IT services; accordingly, we have an increase of employment in this field. However, in 2020, the internal shift acquired a negative value, and the trend came to a halt.

The negative values of internal shift in the number of trade and services workers indicate that since 2014, there has been an outflow of workforce from this professional group, but the reduction of employment in other professions has been even more intense, resulting in that the share of representatives of this profession as a whole demonstrates ascending dynamics.

In the rest of the groups, a compensatory effect prevailed, i.e., a change in the number of the employed in these groups occurred against the background of conditional stability of trade and services workers, and professionals.

With a general compensatory effect, the internal shift prevailed over the external one, and namely: in 2016-2018, in professional groups of skilled workers of agriculture and forestry, fish farming and fisheries, skilled workers handling tools, and technical employees; in 2014-2020, in professional groups of legislators, top public officials, leaders, managers (executives), and workers maintaining, operating and controlling technological equipment, performing assembly of machinery and equipment. In the specified time periods, interprofessional shifts became the key structure-changing factor in these professional groups. That is, the portion of the employed decreased, to a great extent, through the outflow of labor precisely from these professions, and not due to the reduction of employment in general. For the category of officials and executives, such processes can be partly attributed to public administration reform, which, in particular, provides for reduction of the number of civil servants. This situation is of special concern for the group of workers handling tools, since this category, just like that of professionals, as a rule, is less elastic and its representatives are less inclined to change their profession due to the need for specific knowledge and skills.

It should be noted that in 2020, the situation for skilled workers of agriculture and forestry changed, and there was a resonance effect. Such changes were the result, in particular, of pandemic restrictions which complicated travelling abroad. This is the only group that showed an increase in the number of the employed of about 10% during the investigated period.

The biggest differences between internal and external shifts characterize the group of the simplest occupations: as of 2020, the internal shift prevailed over the external one more than four-fold, i.e., there was an absolute outflow of labor.

Thus, professions in the categories of officials and executives, workers maintaining and operating equipment, and the simplest occupations, over the last six years have been the least popular with the Ukrainian population. Whereas professionals are the only more or less “alive” professional group among the nine types of work.

Full-scale Russian military aggression against Ukraine was a shock for the economy as a whole and for the labor market in particular. According to various estimates [18-20], in the period from the beginning of 2022 to the beginning of 2023, the labor market underwent the following changes and upheavals.

With the beginning of a full-scale invasion, about 53% of people were left without work [11]. The state employment center reports that about 4.8 million jobs have been lost. According to the International Labor Organization, job losses reach 2.4 million. As of the beginning of October 2023, there were 166,000 officially registered unemployed people. For comparison, in January 2022, there were 315,400 such people.

A third of the enterprises stopped working, and 50% reduced their capacities [18]. Sociological group "Rating" provides the following figures based on the conducted survey. Only 61% of those who worked before the war are working, of which: full-time – 36%; remotely or partially – 19%; found a new job – only 6%. 37% of those who lost their jobs are currently not working. Residents of the East suffer the most from unemployment, especially women.

Paradoxically, the coronavirus pandemic and the need for labor market participants to adapt to the conditions of a remote format contributed to the fact that employers and employees, with the beginning of the war, quickly oriented themselves and, where possible, were able to adapt to work in war conditions. Thus, 23% of those who were forced to go abroad kept their jobs and work remotely [2, 20]. According to the National Bank of Ukraine, 1.07 million Ukrainians lost their small and medium-sized businesses.

Data from the State Employment Service show that during the full-scale war, employers were still most interested in skilled tool workers, professionals, equipment and machine maintenance workers, specialists, trade and service workers, and unskilled workers.

The structure of the unemployed and employed unemployed by profession also confirms that the movement of workers was the most intense in these categories (Table 2).

Table 2. Occupational Structure of the Unemployed and Employed Unemployed.

Employment of the unemployed, (structure, %) in 2022		The structure of the unemployed registered in employment centres as of January 1, 2023, %	
workers performing maintenance, operation of equipment and machinery	26,9	20,5	trade and services workers
simplest occupations	16,8	15,5	simplest occupations
trade and services workers	14,3	12,8	maintenance, operation of equipment and machinery
skilled workers handling tools	9,8	10,9	officials and executives
specialists	9,4	10,4	specialists
professionals	7,3	9,8	skilled workers handling tools
officials and executives	7,2	8,7	professionals
technical employees	4,6	7,5	technical employees
skilled agricultural and forestry workers	3,7	3,9	skilled agricultural and forestry workers

Data from private employment agencies show that the most common professions employed by citizens were: food seller; pharmacist's assistant, labeler, pharmacist, cook, motor vehicle driver,

specialist, waiter, administrator, sorter in food production, logistics manager; seller-consultant; fruit grower, porter [17].

According to research by the Razumkov Center, the IT sector was the most stable in terms of vacancies. There was also demand for doctors, pharmacists, drivers, porters, couriers, nannies, construction workers, and logisticians. Popular Ukrainian employment sites such as Work.ua, Robota.ua, grc.ua opened vacancies in the field of sales and telecommunications. The specifics of the current labor market are certainly the emergence of jobs in the military-industrial complex and volunteer vacancies [19].

A full assessment of professional and qualification changes that took place during this time is currently impossible, firstly, due to the limitedness of statistical data, and secondly, due to the continuation of mass labor migration. However, it can be said that among the main factors determining further structural changes in the labor market are the following:

- physical reduction in the number of labor resources due to the war;
- forced emigration,
- decrease in the birth rate (in 9 months of full-scale Russian military aggression in 2022, 152,000 births were registered in Ukraine, which is 36,000 less compared to the same period in 2021);
- increase in the number of employees with disabilities;
- forced professional reorientation of part of the working population.

Conclusions. The conducted research showed that in the pre-war period the Ukrainian labor market in terms of professional qualifications was characterized by the following parameters.

Professional qualifications assessment of the Ukrainian population's employment in the period of 2012-2022, carried out by the method of resulting shifts made it possible to distinguish two groups of professional types of employment: the first group is characterized by the resonance effect; the second group – by predominantly compensatory effect, although this group is not quite homogeneous.

The growth of employment in the first group was taking place against the backdrop of employment decline in the second group. Notably, professionals are the only professional group, the growth of the specific weight of which occurred not only due to the reduction of the share of other professional groups and interprofessional shifts, but also due to increased employment in this very professional category. The second group is associated with a constant outflow of labor, with an intensive “washout” of workers of the simplest occupations.

At the same time, in the categories of workers handling tools, specialists, workers operating equipment and machinery, which, along with the group of professionals, play a key role in economic development, there is a clear outflow of labor. This is a non-typical situation, because the supply of workforce of this category is under-elastic. For the period under study, the indicators of the gender and age structure were practically unchanged. At the same time, we can observe a relative consistency of the professional structure with regard to professions most demanded in the labor market; hence the problem has not been fully addressed. Similarly, the issue of forming adequate work remuneration in terms of professional qualifications remains unresolved either. By the indicators of workforce professional distribution, the national labor market is increasingly approaching the figures of the developed one: a steady reduction of representatives of the simplest occupations; a growth of the share of professionals, and a stably high share of trade and services workers. But heterogeneous and destructive processes in interprofessional shifts, detected by the method of resulting shifts, speak about the absence of solid grounds for deep quality structural changes in the population's professional employment. The outlined trends are primarily based on the impact of external factors: firstly, a strong development of technologies produces demand for professionals of high-tech industries, for whom foreign labor markets are more attractive in terms of wage levels. Secondly, the institutional provision of the Ukrainian labor market is imperfect. On the one hand, a low level of market regulation contributes to free movement of labor resources, development of informal professional education, which is exemplified, for instance, by IT-industry. On the other hand, labor force in Ukraine remains undervalued – there is practically no connection

between the level of work remuneration and the professional qualifications characteristics of workers.

The assessment of the situation on the Ukrainian labor market in the context of the professional and qualification structure during the war period is complicated due to the lack of statistical data and the war, however, the following can be concluded for now. During the period of active hostilities, the labor market continues to experience a shortage of skilled workers with tools, professionals, and equipment and machine maintenance workers. The main factors that will determine the structure of the labor market in the future are the physical reduction in the number of labor resources due to the war; forced emigration, decrease in birth rate; increase in the number of employees with disabilities, forced professional reorientation of part of the working population.

Obviously, the presence and solution of problems in the field of employment in general cannot be carried out separately from those processes that take place in the real sector of the country's economy and will now be dictated by the requirements of post-war recovery. Without creating core conditions for the development of the national economy, to balance labor force demand and supply, both in quantitative parameters and professional qualifications characteristics, to achieve high performance indicators, to form a favorable environment for the reproduction and development of human capital as a whole is not possible. That is why the efforts of the state authorities should be directed to the comprehensive reconstruction and development of the real sector on an innovative basis in connection with the post-war strategy of the development of the labor market, one of the key tasks of which should be the improvement of the labor payment mechanism and the increase in the cost of labor.

Conflict of interests. The author confirm that she is the author of this work and have approved it for publication. The author also certify that the obtained clinical data and research were conducted in compliance with the requirements of moral and ethical principles and in the absence of any commercial or financial relationships that could be interpreted as a potential conflict of interest.

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