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INTER-STATUS MOBILITY IN UKRAINE'S LABOR MARKET

The article studies the functioning of Ukraine's labor market in 2019–2021 through the prism of the status flows of labor force, for which various methodological techniques of analytical research are consistently applied, which, complementing each other, allow analyzing the flows from different angles of view. So, using micro data on labor force indicators and their characteristics, probabilistic matrices of transitions of Ukraine's population between employment, unemployment and economic inactivity are constructed, assuming that such transitions occur according to the Markov process. As a result, the scope, nature and dominant vectors of the movements of Ukrainians between the three main statuses on the labor market are revealed. Based on the algorithms for calculating Shorrocks' indices – proxy indices of mobility, the author carries out an integral assessment of the intensity of inter-status movement in Ukraine's labor market. A similar assessment for a number of European countries makes it possible to propose a basis for cross-country comparison of the level of mobility in Ukraine. Using economic-mathematical modeling of multiple choice, the author reveals socio-demographic factors determining the individual's status on Ukraine's labor market, and in so doing also answers the question of stability of the observed status.

It is shown that the analysis of inter-status mobility of labor force provides a powerful basis for better understanding of the functioning of the labor market, characterizes the mechanisms of adaptation of the latter and allows observing the direction and intensity of flows behind any specific change in gross employment, unemployment or economic inactivity, which makes relevant policy measures on the labor market more targeted. In particular, since the analyzed period was marked by increased unemployment in

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Ukraine, the author establishes the role of flows in the above mentioned dynamics and in the distribution of the risk of job loss, taking into account such socio-demographic characteristics of individuals as gender, age and education level. Understanding such connections is important for developing high quality solutions aimed at reducing unemployment in the country.

Keywords: *mobility, labor force, employment, unemployment, economic inactivity, labor market, Ukraine*

The entire adult population is divided according to its status on the labor market into employed, unemployed and economically inactive (that is, persons who are not part of the labor force). An individual's status is not permanent, and movement between employment, unemployment, and inactivity is the norm. The direction and intensity of such movements directly affect the dynamics of aggregated indicators, such as the level of employment or unemployment, and the analysis of information on the parameters of flows opens up new opportunities for understanding more general mechanisms of labor market functioning.

For example, in fig. 1 presents indicators of unemployment, employment and economic inactivity in Ukraine in recent years.

Together with the macroeconomic picture of an increase in the unemployment rate (from 8.2% in 2019 to 9.9% in 2021), the use of data on labor flows can help reveal whether this dynamic is driven by the increase in the number of people transitioning to the status unemployed due to high rates of job loss, or do the unemployed leave this state more slowly due to a decrease in their ability to find work? And what is the role of inactivity in the formation of the unemployment rate? Similarly, data on labor flows can help assess whether the decline in employment (from 58.2% in 2019 to 55.7% in 2021) is the result of changes in inflows into the employed category, or are we talking about changes in outflows? Or maybe it's a combination of both? The answers to all these questions are important if we want the appropriate policy measures to be properly formulated. For example, steps aimed at encouraging outflows from unemployment may not be as relevant in an economy where the rise in unemployment has been caused by changes in the rate of inflows into the ranks of the unemployed.

Thus, the analysis of interstatus labor mobility offers greater advantages compared to the analysis of only macroeconomic changes, providing a powerful basis for a better understanding of the functioning of the labor market, characterizing the mechanisms of adaptation of the latter and providing an opportunity to observe the direction and intensity of flows accompanying any particular change in aggregate level of employment, unemployment or inactivity.

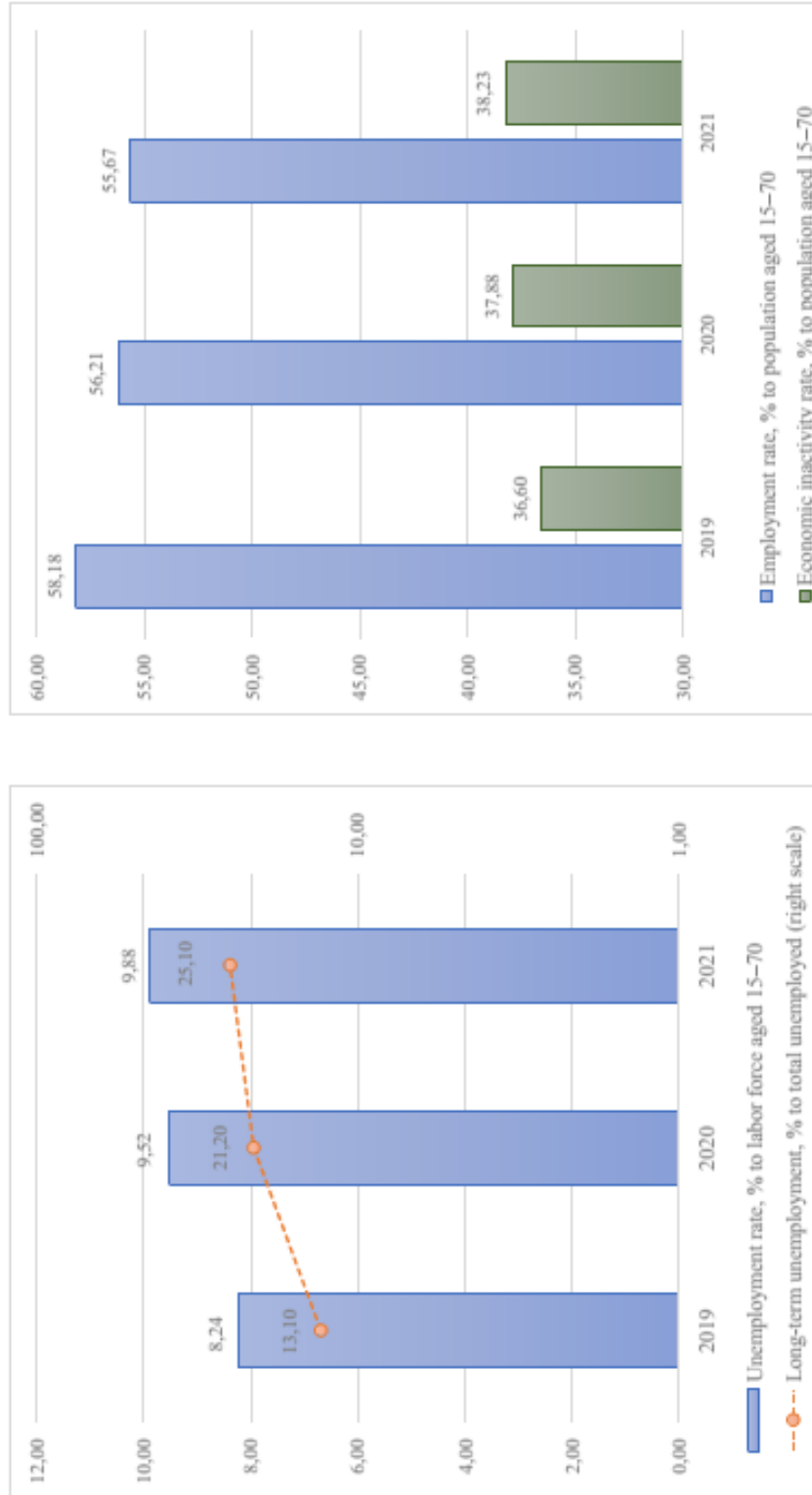


Fig. 1. Indicators of unemployment, employment and economic inactivity in Ukraine, 2019-2021

Source: compiled by author on data of State Statistics Service of Ukraine. URL: <http://www.ukrstat.gov.ua>

And therefore, *the purpose* of this article is to present the specifics of the functioning of the labor market of Ukraine in 2019–2021 through the prism of labor flows, which should show who, where and how they moved. Since the analyzed period was marked by an increase in the level of unemployment, attention is focused, among other things, on the role of flows in this dynamic and the distribution of the risk of job loss depending on the gender, age or level of education of individuals, which is important for the development of quality solutions aimed at reducing unemployment in the country.

The first relevant studies of labor flows in the context of labor market functioning were a series of works from the 1970s [see, for example, 1–4]. In the 1980s, scientific exploration of this issue continued through the development of empirical research, and this periodic practice continues to this day. Published scientific results concern the labor markets of both the group [for example, 5] and individual countries, such as Great Britain [6, 7], Greece [8], Estonia [9], Italy [10], Latvia [11], Germany [12], Slovenia [13], the United States of America [12, 14, 15], France [16], etc. Regarding the labor market of Ukraine, there are no relevant studies.

In order to obtain information about the scale, nature and dominant directions of transitions of Ukrainians between three statuses on the labor market (employment, unemployment and economic inactivity), the analytical approach in this study corresponds to K. Clark and L. Summers [3], L. Bellmann, S. Estrin, H. Lehmann and J. Wadsworth [17], assuming that such transitions occur according to a Markov process. Thus, according to the standard Markov assumption that future states depend only on the current state, the probability of a person being in status j on the labor market in period t , provided he is in status i in period $t-1$, will be determined by the formula:

$$P_{ij} = \frac{F_{ij}}{S_i}, \quad (1)$$

where i and j are labor market statuses: E (employment), U (unemployment) and I (economic inactivity);

F_{ij} - the number of individuals who were in status i in the first survey period and in status j in the next period²;

S_i - the total number of individuals who were in status i at the initial stage of the survey³.

Having three standard statuses in the labor market, we get nine potential transitions, which can be represented in the form of a matrix P :

² Will be estimated by author using microdata files for labor force indicators and their characteristics (<http://www.ukrstat.gov.ua>). These data make it possible to track the status of an individual in Ukraine's labor market with an annual interval between observations.

³ Ibid.

$$P = \begin{bmatrix} P_{EE} & P_{EU} & P_{EI} \\ P_{UE} & P_{UU} & P_{UI} \\ P_{IE} & P_{IU} & P_{II} \end{bmatrix} \quad (2)$$

where, for example, P_{EU} is the share of those employed in period $t-1$ who became unemployed in period t .

Probability matrices of transitions (P) make it possible to calculate mobility indices (M), first proposed by A. Shorrocks [18], which provide an integral assessment of the flexibility of the labor market:

$$M = \frac{n - \text{trace}(P)}{n - 1}, \quad (3)$$

where n is matrix size;

and $\text{trace}(P)$ is trace of the matrix P , that is, the sum of all elements on the main diagonal.

By definition, the mobility index is bounded between $[0, 1]$, where $M = 0$ corresponds to a situation of complete stability (all individuals remain in their statuses between annual observations, i.e. all diagonal elements of the transition matrix are equal to one), while $M = 1$ represents an ideal or full mobility (*perfect mobility*, according to Shorrocks).

Matrices of transitions and mobility indices built on their basis give an averaged idea of the intensity and directions of movement of individuals, without taking into account the heterogeneity of the latter. In this regard, in order to find out how certain characteristics (other things being equal) affect the respondents' choice of the appropriate status on the labor market, we estimate a dynamic multinomial logit model, in which, along with the observed sociodemographic parameters of individuals, as regressors, with a lag of one year, *dummy variables* to indicate the statuses of employment, unemployment or inactivity. That is, with the help of such modeling, we are also looking for an answer to the question of the stability of the observed statuses and the presence of a predetermined "path" that is set by the past situation on the labor market. Expecting different behavior depending on the gender of the respondent, we build regression equations separately for men and women, and based on the obtained coefficients, we estimate the probability of an individual choosing one or another status on the labor market with the given characteristics and fixation of all other parameters.

The main source of information in this study is micro-data on labor force indicators and their characteristics, which make it possible to monitor changes in the status of individuals and assess the intensity and composition of labor flows in the labor market of Ukraine. The set of used characteristics and the distribution of the main variables are presented in the Table 1.

Table 1

**Characteristics of the labor force in the study of inter-status mobility of
Ukraine's population**

Indicator	Initial values of the characteristic (labor force characteristics)
Labor force status	employed; unemployed; outside the labor force (economically inactive)
Age group	5-24; 25-29; 30-34; 35-39; 40-49; 50-59; 60-70
Place of residence	Urban settlements; Rural areas
Gender	Woman; man
Marital status	Married; Never married Divorced; Widower/widow
Education level	Higher education; Vocational education; Secondary and elementary education

Source: compiled by author using microdata files on labor force indicators and their characteristics (<http://www.ukrstat.gov.ua>).

In the studied sample, on average, over the entire analyzed period, about 56% were employed, 6% were unemployed, and the rest were economically inactive persons. Approximately half (53%) of the respondents are women, on average 46% had a higher education, and 24% had a professional and technical education. In general, all parameters are close to the data of official statistics.

Fig. 2 summarizes the average annual labor force flows for 2019-2021. The presented data inform us about the number of persons who changed their status on the labor market of Ukraine as a percentage of the population aged 15-70 (s, %) and as the probability of such a transition (p, %)⁴.

⁴ The probabilities of interstatus movements are easy to interpret, but do not take into account the difference in the number of individuals by status. And therefore, a high value of the coefficient (p_{ij}) can be reached with a small absolute value of the flow itself, which could create a false impression of strong dynamics, although it concerns only a small number of individuals. Hence, it is advisable to supplement the estimates of the probability for individuals to move from status i to j by the calculation of the shares involved in the relevant flows in the total population, which would facilitate comparison.

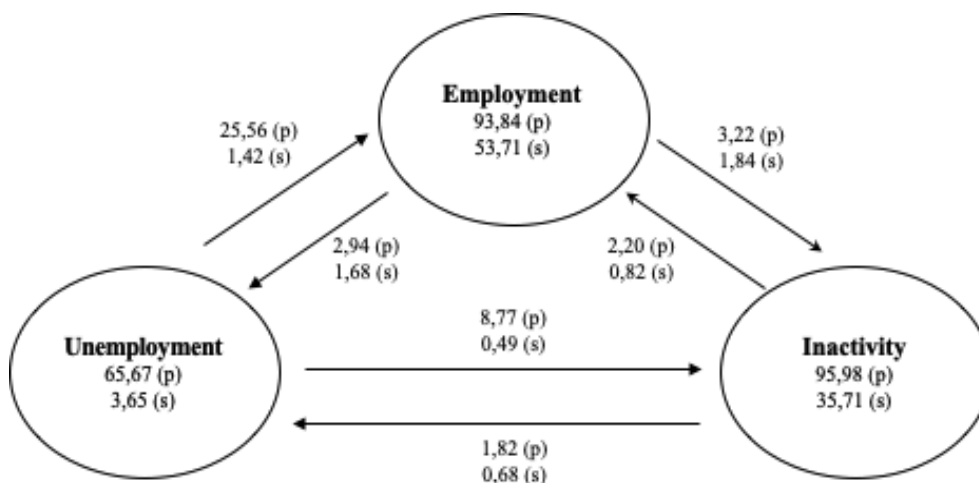


Fig. 2. Average annual flows of labor force on Ukraine's labor market, 2019-2021

Source: calculated by author using microdata files on labor force indicators and their characteristics (<http://www.ukrstat.gov.ua>).

We find that the probability of maintaining the same status between two consecutive periods is high. But let's start with employment. The probability of staying with a job during the annual cycle was 94%. Those leaving the employment status were divided between the unemployed and the economically inactive in a ratio close to 1 to 1. At the same time, a negative balance of exchange of employment with economic inactivity and unemployment was maintained. Giving unemployment to 3.5% of the population aged 15-70 (unemployment 1.7% and economic inactivity 1.8%), the employed pool received back only 2.2% from there (the flow from unemployment was 1.4% of the population, and from economic inactivity - 0.8%).

As for the unemployed, 25.6% of them had a job a year later, 65.7% remained in the same status, and about 9% absorbed inactivity, as can be assumed, due to despair in the search for work, the unattractiveness of vacant jobs, the availability of alternative sources existence or for other reasons (personal or family). Conversion to gross flows shows that 1.4% of the population moved from unemployment to employment, and 0.5% left the labor market. Replenishment of the unemployed took place by 2/3 at the expense of those who lost employment, and at the expense of one third at the expense of the economically inactive, who entered the labor market in search of work with readiness to begin it⁵.

⁵ Unemployed (according to the ILO methodology) are persons aged 15 and older who simultaneously meet three conditions: did not have a job (profitable occupation); during the last four weeks preceding the examination, actively looked for job or tried to organize their own business; were ready, within the consequent two weeks, to start work, that is, to start working for hire or in their own enterprise for the purpose of receiving payment or income.

Inactivity status between two consecutive examinations was maintained in 96% of cases, the rest found work (2.2%) or became unemployed (1.8%). These flows cover, respectively, 0.8 and 0.7% of the entire population aged 15-70. Giving less than 1% to unemployment, the economically inactive pool received little from it.

It should be noted here that the economically inactive population is a very diverse group. So, according to the level of connection with the labor market, they can be classified as: persons who are looking for work, but are not ready to start it in the near future (due to incapacity for work, studies (apprentices, students), fulfillment of household duties, etc.); want to work and are ready to start work, but are not looking for it (for example, persons who have given up on the search, did not know where and how to look for work, or believed that there is no suitable place of employment for them, etc.); do not want to work because they don't have to (pensioners, students and full-time students, people who perform family responsibilities at home, take care of children, sick people, dependents, etc.). And, obviously, some give this group stability, others - dynamism. In particular, controlling for retirement and education flows shows that the probability of remaining economically inactive (excluding retirement and education) for two consecutive periods drops to 86%.

In general, the analysis revealed that of all six flows that connected different statuses on the labor market, the largest in size were from employment to inactivity and unemployment. Moreover, in each case, the outflow prevailed over the inflow, so the final balance of movements was not in favor of employment.

The results described above, by themselves, will not help to reveal a direct relationship between the observed mobility in the labor market and the change in aggregate indicators, in particular the unemployment rate. Using the research of S. Fujita and G. Ramey [19], R. Shimer [20], M. Elsby, J. Smith and J. Wadsworth [21], B. Petrongolo and K.A. Pissarides [22], it would be possible to show what part of the variance of the unemployment rate in a steady state is explained by changes in the rates of flows between statuses. However, reliable compliance with the approach used by the authors requires data collection over a much longer period than is currently available for Ukraine. Therefore, in this study, similar to, for example, works [23–25], a "flow" decomposition of observed changes in unemployment levels is proposed for use.

Thus, the unemployment rate depends on the net change in the number of unemployed (U) and/or the change in the size of the labor force (LF), which can be mathematically written as follows:

$$\Delta \left(\frac{U}{LF} \right) = \frac{U_t}{LF_t} - \frac{U_{t-1}}{LF_{t-1}} = \left(p^{EU} \frac{E_{t-1}}{LF_t} + p^{IU} \frac{I_{t-1}}{LF_t} \right) - \left(p^{UE} \frac{U_{t-1}}{LF_t} + p^{UI} \frac{U_{t-1}}{LF_t} \right) + U_{t-1} \left(\frac{1}{LF_t} - \frac{1}{LF_{t-1}} \right) \quad (4)$$

The net change in unemployment in formula (4) is determined through the corresponding gross flows, which can additionally be expressed through the product of the rate of transition of the flow (p) and the labor market stock (E, U, I) in the period $t-1$. Thus, the change in the unemployment rate is decomposed into the contributions of "inputs" and "outputs" from it and the third component, which shows the effect of changes in the labor force. In the table 2 shows the results of such calculations for Ukraine.

Table 2

**Decomposition of the dynamics of unemployment rate in Ukraine,
2019-2021, pp**

Components	2019/2020	2020/2021
$\Delta \left(\frac{U}{LF} \right)$	1.28	0.36
Contribution of "inflows" to unemployment (+)	+3.90	+3.70
$p^{EU} \frac{E_{t-1}}{LF_t}$	2.85	2.56
$p^{IU} \frac{I_{t-1}}{LF_t}$	1.05	1.14
Contribution of "outflows" from unemployment (-)	-2.79	-3.40
$-(p^{UE} \frac{U_{t-1}}{LF_t})$	-2.17	-2.43
$-(p^{UI} \frac{U_{t-1}}{LF_t})$	-0.62	-0.97
Contribution of labor force change	0.17	0.05

Source: calculated by author using microdata files on labor force indicators and their characteristics (URL: <http://www.ukrstat.gov.ua>).

According to the received data, the increase in the level of unemployment is due to inflows into it, and, first of all, from employment. Exiting from unemployment to employment or from the labor force somewhat improved the overall picture, but it was not enough to change the balance of "driving forces".

It is logical to assume that even mutually directed flows can differ in their content, not to mention multidirectional ones. And therefore, in the next step, we will consider the structure of flows between the main statuses in the labor market by gender, age and educational characteristics (Table 3).

Table 3

The structure of flows between the main statuses in the labor market by gender, age and education level, averaged estimates for 2019–2021, %

	Gender		Age group, years			Educational level		
	women	men	15-29	30-49	50-70	higher	vocational	secondary and elementary
E⇒E	50.89	49.11	12.37	53.49	34.13	47.86	28.83	23.31
U⇒U	47.04	52.96	20.63	53.08	26.30	42.87	29.96	27.17
I⇒I	60.79	39.21	18.01	15.31	66.68	32.51	23.47	44.01
E⇒U	52.04	47.96	12.82	61.84	25.34	42.33	35.46	22.21
U⇒E	41.69	58.31	21.67	55.50	22.83	39.60	34.41	26.00
E⇒I	54.00	46.00	7.38	20.76	71.86	41.21	31.07	27.72
I⇒E	56.67	43.33	24.10	33.40	42.50	32.65	27.96	39.39
U⇒I	55.70	44.30	14.91	46.40	38.69	41.35	34.45	24.20
I⇒U	46.17	53.83	52.08	34.85	13.07	33.06	25.08	41.86

Source: calculated by author using microdata files on labor force indicators and their characteristics (<http://www.ukrstat.gov.ua>).

More women move from employment to unemployment, while more men move in the reverse direction. As for age characteristics, the distribution of the flow from employment to unemployment is slightly shifted (relative to the reverse direction) towards the older contingent. Thus, among them, about 13% are under the age of 29, compared to almost 22% in the reverse flow, and 25% are over 50 years old, compared to 23%, respectively. Such an asymmetry emphasizes the fact that it is more difficult for people to find work as they age. The same, actually, applies to those with a higher education level, as evidenced by the educational structure of the relevant transfers. Highly educated people probably face a shortage of vacancies of the appropriate skill/pay level and are reluctant to accept "second-rate" work.

The reciprocal flows between employment and inactivity are dominated by women. The latter are more often involved in moving between the above statuses, which, in particular, is due to the birth of children and, as a result, temporary cessation of work. The age distribution in the analyzed streams is not symmetrical. Thus, people of older age often move from employment to inactivity, while younger and middle-aged people move vice versa. Such a shift looks logical, since the renewal of labor force occurs due to the influx of young people from outside the labor market and the outflow of elderly people into inactivity. As for education, individuals with medium and lower levels of training are more represented in the flow from inactivity to employment than vice versa. The situation is reversed with people with higher education.

As for the exit of the unemployed from the labor force, women predominate here, while men more often enter the labor market in search of work. The movement from inactivity to unemployment is clearly younger than the opposite one. In the first case, persons younger than 30 make up 52%, while those older than 50 only constitute 13%. In the reverse flow, these age groups make up 15 and 39%, respectively. That is, once again, the data indicate a situation in which, with age, the search for an attractive job becomes more difficult, and the prospects of inactivity become more acceptable. Individuals with medium and lower levels of educational training are more represented in the flow from inactivity to unemployment, while persons with higher education, on the contrary, are more represented in the opposite flow, which may relate to the lack of incentives of highly qualified unemployment specialists to search work (due to distrust, unattractive vacancies, etc.).

Regarding the structural changes in the movement between the main statuses on the labor market, here the first thing to note is the increase in the shares of women, elderly people and those with higher education in the flows to unemployment, especially after the loss of employment.

It is obvious that Ukraine's population is heterogeneous in terms of gender, age and education level, which affects the prospects of inter-status movements. Therefore, the labor market flows disaggregated by the above listed characteristics are presented below. Thus, the chances to maintain employment for the next year are higher for men, while women are more stable in inactivity. Women are more likely to remain without work (income bringing occupation), and then suffer from difficulties with re-employment after a period of unemployment or inactivity (Table 4).

Table 4

Transition probabilities and gross flows between main labor market statuses by gender, averaged estimates for 2019-2021

Indicators	Gender	Labor force turnover		Exit from labor market		Entry to labor market	
		$E \Rightarrow U$	$U \Rightarrow E$	$E \Rightarrow I$	$U \Rightarrow I$	$I \Rightarrow E$	$I \Rightarrow U$
Transition probability, %	Women	2.99	22.94	3.41	10.52	2.07	1.39
	Men	2.88	27.82	3.03	7.25	2.41	2.47
Gross flows, % of population in relevance group	Women	1.61	1.09	1.83	0.50	0.86	0.58
	Men	1.76	1.81	1.85	0.47	0.78	0.80

Source: calculated by author using microdata files on labor force indicators and their characteristics (<http://www.ukrstat.gov.ua>).

In terms of the volume of flows, we find the dominance of outflows from employment to inactivity and unemployment, which conclusion is valid for both men and women.

Workers of active working age (30-49 years) have a relatively higher risk of losing jobs and becoming unemployed. While the unemployment risk faced by the previously inactive persons is highest among young people, the transition from inactivity to unemployment is also higher in this age group than the transition from inactivity to employment. At the same time, younger unemployed people have more chances to find a job within a year, while people 50+ after losing their job have lower chances to find a job, so they more often have to pass to inactivity (Fig. 3a).

The status change among young people is the most intense (Fig. 3b), here 8.5% of people change their status every year (while this indicator is 7% for the entire sample), being the most common type of status change the entry to labor market by moving from inactivity to unemployment (2.3%) or to employment (1.3%). The participation of this age group in labor force turnover is also significant: on average, 2.0% of people under 30 move yearly from unemployment to employment (while 1.4% move in the opposite direction). However, the indicators of the flows between employment and unemployment reach their maximum values among persons aged 30-49.

In the older age group, the intensity of flows generally decreases, except for the flow outward from the labor market. Annually, about 3.0% of people over 50 years of age move from employment to inactivity, and 0.8% move in the opposite direction. This corresponds to the gradual withdrawal from the labor force with age.

In general, those not in the labor force are more likely to be employed than unemployed a year from now, which especially applies to job searchers having vocational training. The latter also have a relatively higher chance of transitioning from unemployment to employment (Fig. 4a).

For those with lower educational attainment, exits from employment to inactivity are more common, while those with higher levels of training are more likely to move from unemployment to inactivity. This is presumably explained by hopelessness, unattractiveness of vacant jobs, availability of alternative livelihoods, or other personal or family reasons.

All educational groups are dominated by the flow from employment to inactivity (exit from the labor market) and the flow from employment to unemployment (labor turnover), being the outflows in each case higher than inflows. The share of persons who retain employment for the next year is the lowest (relative to other educational levels) in the group with secondary and primary education, while the stability of inactivity in this group is the highest, which emphasizes the growing marginalization of workers with low education. The latter phenomenon manifests itself in the gradual displacement of this group from the labor market (Fig. 4b).

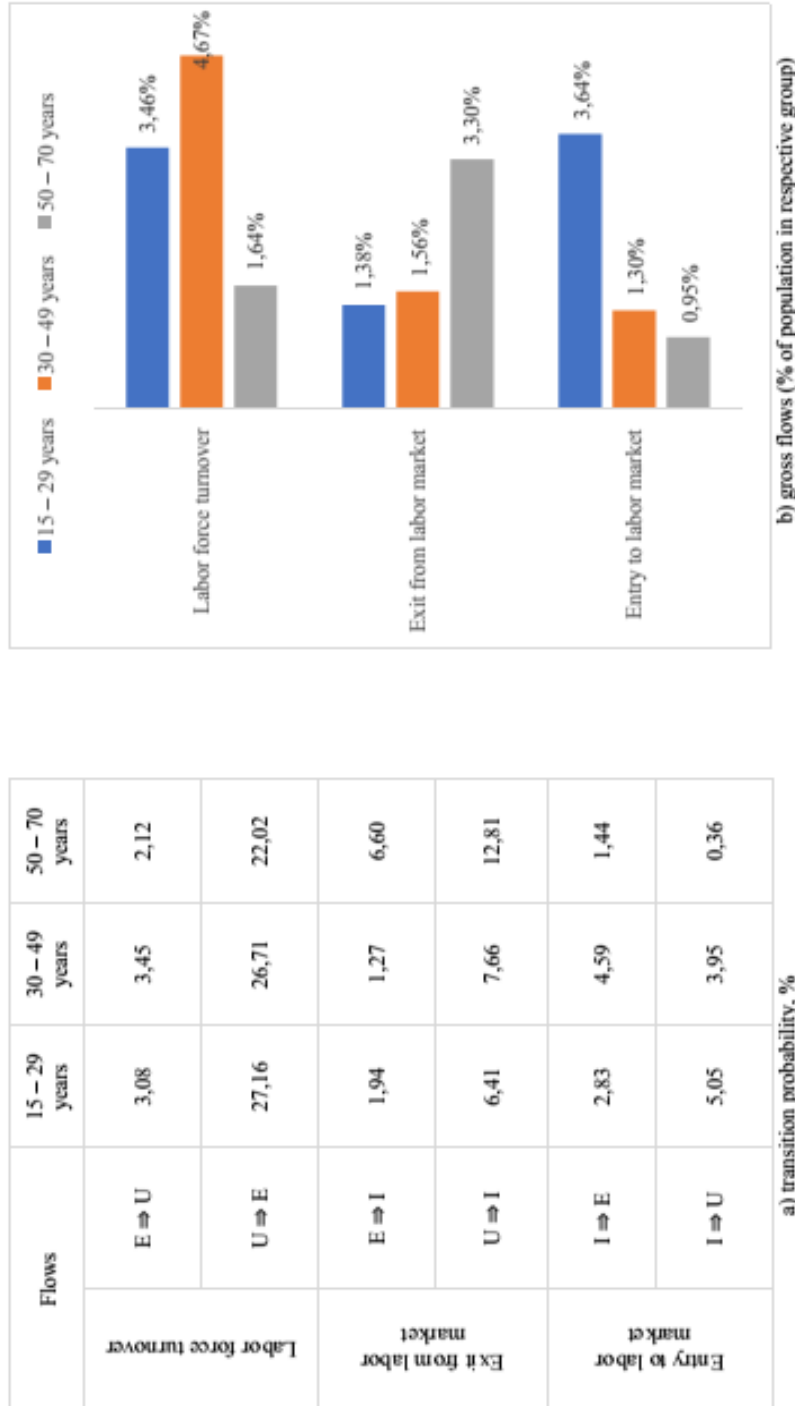


Fig. 3. Transition probabilities and gross flows between main labor market statuses by education, averaged estimates for 2019-2021

Source: calculated by author using microdata files on labor force indicators and their characteristics. URL: <http://www.ukrstat.gov.ua>

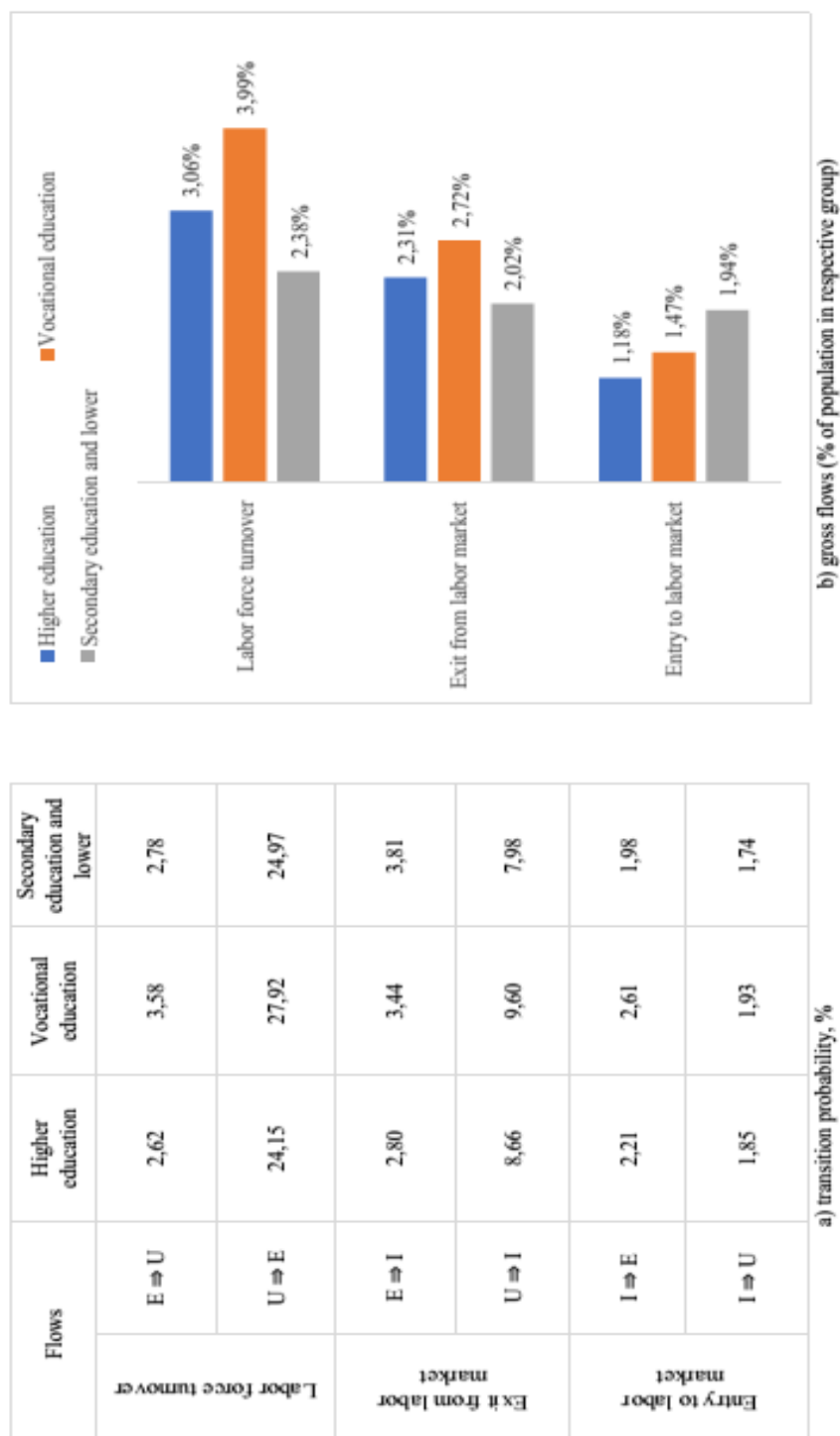


Fig. 4. Transition probabilities and gross flows between main labor market statuses by education, averaged estimates for 2019-2021

Source: calculated by author using microdata files on labor force indicators and their characteristics. URL: <http://www.ukrstat.gov.ua>

And what about dynamics? There is an increase in the probability of transition from employment to unemployment among women, older persons and those with higher education. In addition, in general, the probability of moving from unemployment to inactivity has increased. It should be noted that the research period covers the stable (pre-crisis) year 2019, as well as the crisis years 2020-2021, which are marked by the powerful impact of the COVID-19 pandemic on Ukraine's labor market. Therefore, the observed changes in the interstatus mobility of the labor force reflect the action of this factor, which led to decreased business activity, reduced need for personnel, and the return of labor migrants from abroad. Women appear to be more vulnerable to economic consequences of the pandemic than men, which is a global trend. Increased risks of unemployment are caused by a higher concentration of women in sectors more affected by quarantine restrictions (culture and art, education, trade in non-food products, the hotel and tourism sector, hairdressing, etc.). In addition, due to the temporary closure of kindergartens and schools during the periods of strict quarantine measures, women were forced to take care of children, due to which paid work may often fade to the background. Older people were more likely to be fired due to poorer digital skills and lower capacity for remote work. The "coronacrisis" has speeded up the transformation of business models and algorithmization of human labor, which resulted in a massive loss of jobs by professionals, specialists, and employees with a significant share of people with higher education in all sectors of the economy.

In this study, until now, the intensity of inter-status mobility in Ukraine's labor market has been analyzed by indirect comparisons. For a direct assessment, Shorrocks indices are calculated - both for the entire sample and for selected socio-demographic groups, which will make it possible to compare the level of mobility in time and space (Fig. 5). Note that mobility in this context is associated with status instability and a higher probability of inter-status flows.

The main conclusions that can be made based on the data in Figure 5, consist in the following. The middle age group (30-49 years) is the most mobile, and men and persons with vocational education more often cross the status boundaries. By the end of the analyzed period, labor force mobility in Ukraine remains almost unchanged. However, some dynamics are noticeable in individual groups. Thus, men and young people have become less mobile (primarily due to increased employment stability), while the mobility of women and people of active working age has somewhat increased (due to decreased probability of remaining unemployed).

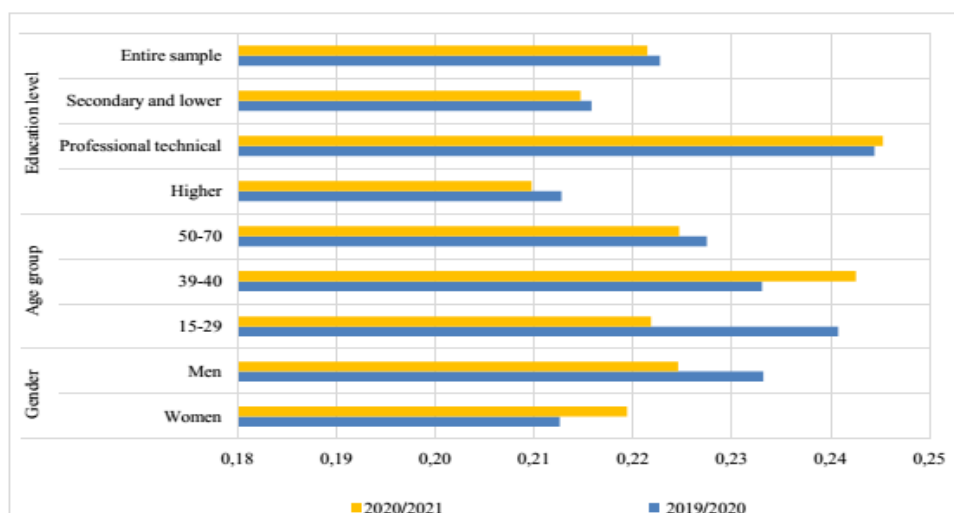


Fig. 5. Shorrocks mobility indices, total and by individual population groups, averaged estimates for Ukraine for 2019-2021

Source: calculated by the author using microdata files on labor force indicators and their characteristics (<http://www.ukrstat.gov.ua>).

Cross-country comparisons make it possible to conclude whether the obtained mobility values are high or, on the contrary, low. Therefore, the estimates of the Shorrocks indices for Ukraine and a number of European countries are given below (Fig. 6).

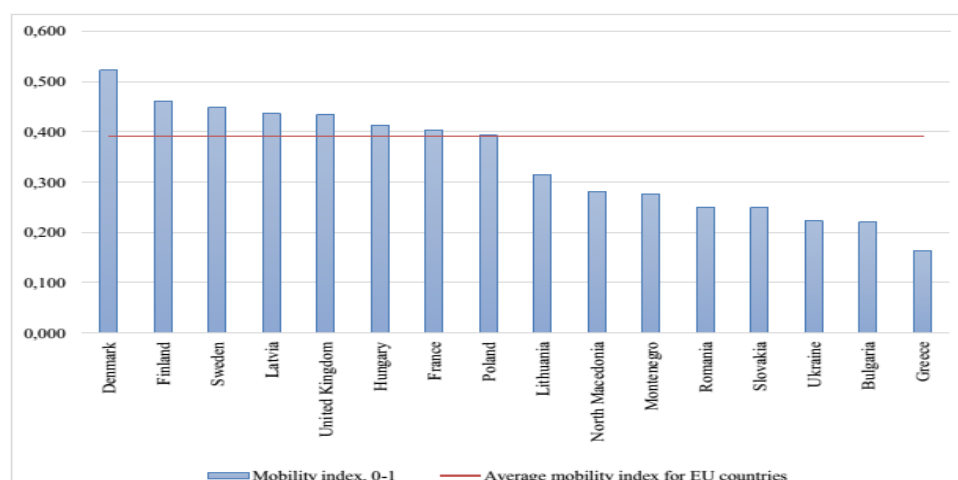


Fig. 6. Shorrocks mobility index for Ukraine and a number of other European countries, 2019-2020

Note: a higher index indicates greater labor market mobility, with 1 being the maximum possible value of the index.

Source: calculated by author based on Eurostat data, as well as using microdata files on labor force indicators of Ukraine (<https://ec.europa.eu/eurostat/web/main/data/database>; <http://www.ukrstat.gov.ua>).

It should be noted that such comparisons require a certain caution in interpretation, since the index for Ukraine is built based on annual transitions, while for the rest of the countries - based on quarterly averages. At the same time, the difference in the obtained values is so noticeable that it cannot be explained by the features of the measurement alone. It is obvious that Ukraine, like a number of Eastern European countries, is characterized by lower mobility of the population in contrast to the northern part of Europe, where people are much more mobile.

Certainly, the analysis presented above provides some information about the relationship between the status on the labor market and the monitored characteristics of individuals. However, such results are bivariate and it remains unclear whether the relationship with a specific factor is significant on its own, *ceteris paribus*. Therefore, as the next step, to assess the influence of certain socio-demographic characteristics of an individual on his choice between one or another status on the labor market, the author uses a dynamic multinomial logistic regression, while Table 5 presents the estimated conditional probabilities of the corresponding choice.

Table 5

Ukraine's population by labor market status: an econometric analysis

Characteristics	Women			Men		
	Employed	Unemployed	Inactive	Employed	Unemployed	Inactive
Age group						
15-29	0.5316***	0.0655***	0.4029***	0.6158***	0.0901***	0.2941***
30-49	0.5421***	0.0626***	0.3953***	0.6214***	0.0815***	0.2971***
50-70	0.5064***	0.0438***	0.4498***	0.5851***	0.0528***	0.3621***
Marital status						
married	0.5231***	0.0524***	0.4245***	0.6076***	0.0665***	0.3259***
unmarried, included divorced, widower/widow	0.5231***	0.0550***	0.4219***	0.5938***	0.0705***	0.3357***
Education level						
higher	0.5281***	0.0547***	0.4172***	0.6095***	0.0714***	0.3191***
vocational	0.5249***	0.0590***	0.4161***	0.6029***	0.0748***	0.3223***
secondary and lower	0.5140***	0.0487***	0.4373***	0.5961***	0.0602***	0.3437***
Residence area						
urban	0.5242***	0.0511***	0.4247***	0.6061***	0.0629***	0.3310***
rural	0.5218***	0.0564***	0.4218***	0.5991***	0.0729***	0.3280***

Note: Region under control. Statistical significance is marked as follows: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Source: calculated by author using microdata files based on labor force indicators and their characteristics, 2019–2021 (URL: <http://www.ukrstat.gov.ua>).

As we can see, men are more likely to be employed than women, while women are more likely to be inactive. As to the probability of unemployment, it is relatively low, but still higher for men. The risk of unemployment decreases with age, and the risk of inactivity is higher in the older age group (50+). The connection of the status on the labor market with the individual's years of marriage is more pronounced in men due to increase probability of employment and decreased inactivity and unemployment. As the level of education increases, the chances of

being employed increase too, while the risk of inactivity, on the contrary, decreases. At the same time, the risk of unemployment is higher in the group with vocational and technical education. The effect of residence area of residence is only expressed implicitly, but the probability of unemployment for men is increased in rural areas.

But of particular interest are the estimated conditional probabilities of inter-status transfers based on the results of econometric modeling (Table 6).

Table 6

Matrix of conditional probabilities of inter-status transitions in Ukraine's labor market, averaged estimates for 2019-2021

	Women			Men		
	E _t	U _t	I _t	E _t	U _t	I _t
Conditional probabilities						
E _{t-1}	0,9280***	0,0299***	0,0421***	0,9344***	0,0282***	0,0374***
U _{t-1}	0,2476***	0,6039***	0,1485***	0,3097***	0,5943***	0,0960***
I _{t-1}	0,0300***	0,0198***	0,9502***	0,0400***	0,0422***	0,9178***
Unconditional probabilities						
E _{t-1}	0,9360	0,0299	0,3410	0,9410	0,0288	0,0303
U _{t-1}	0,2294	0,6653	0,1052	0,2782	0,6493	0,0725
I _{t-1}	0,0207	0,0139	0,9654	0,0242	0,0247	0,9511

Note: statistical significance is marked as follows: * p < 0.05; ** p < 0.01; *** p < 0.001.

Source: calculated by author using microdata files on labor force indicators and their characteristics (<http://www.ukrstat.gov.ua>).

Thus, a comparison of two sets of estimates (unconditional and conditional) shows that the results are qualitatively close, but the unconditional probabilities underestimate the intensity of mobility. Recall that the Shorrocks indices are proxy indices of the intensity of mobility. When moving to conditional probabilities, they increase from 0.22 to 0.26 for women and from 0.23 to 0.28 for men. The probability of maintaining the status decreases - the values of the corresponding elements of the main diagonal in the matrix with the control of the observed variables turn out to be lower. This is mostly due to increased probability of the transition of persons of both genders from unemployment to inactivity and employment, as well as because of the flow of women and, especially, men from inactivity to the labor market.

Conclusions

Thus, the author considers the functioning of Ukraine's labor market through the prism of inter-status flows of labor force, for which various methodological techniques of analytical studies are consistently applied, which complement each other and make it possible to analyze the flows from different angles.

In particular, probabilistic matrices of flows of Ukraine's population between employment, unemployment and economic inactivity are constructed, which allows, firstly, to reveal the scale, structure and dominant directions of the flows of Ukrainians between the three main statuses on the labor market, and, secondly, to calculate the

Shorrocks indices - mobility proxy indices that provide an integrated assessment of the intensity of labor force flows.

In order to offer a basis for comparison and to understand whether the obtained values of mobility in Ukraine are high or, on the contrary, low, the author evaluates the relevant indices for a number of European countries. Using the economic-mathematical modeling of multiple choices, the socio-demographic factors that determine the involvement of an individual in one or another status on the labor market in Ukraine are identified, and the answer is obtained to the question of the stability of the observed statuses and the presence of the effect of a predetermined "path" set by the past position on the labor market.

As a summary of all these calculations, one can make a few generalizations. Thus, the migration matrices show high values of the probability of the country's population staying in the same status between two consecutive surveys, which indicates a relatively low level of mobility on Ukraine's labor market. A comparison of the Shorrocks indices calculated for Ukraine with the corresponding mobility indicators for European countries confirms this conclusion.

Of all the six flows that connect different statuses on the labor market, the largest in size are the following: the one from employment to inactivity and the one from employment to unemployment. Moreover, in each case, the outflow prevails over the inflow, thereby ensuring a negative exchange balance. In addition, every year about 10% of the unemployed left the labor market, probably due to the loss of positive incentives to look for job from the state of unemployment.

Among other things, the "absorbing" properties of inactivity have a few structural and demographic explanations, such as a relatively early retirement or high involvement in higher education on a full-time basis.

Studies of the dependence of the current status in the labor market on the past status reveal that such a dependence is significant, but not absolute.

The analysis also documents that the transition from employment to unemployment was a decisive source of the increase in unemployment during the analyzed period. Job placement of the unemployed, as well as the exit of the unemployed from the labor force somewhat improves the overall picture, but the pace of these flows is not sufficient to change the balance.

Job loss (unemployment) is measured by job loss rates, which rise during a crisis and fall during the periods of economic recovery and growth. Whereas the job placement of the unemployed is related to the rate of creation of new jobs, that is, to the intensity of absorption of the unemployed by the newly generated jobs. Since Ukraine is currently in a state of war, companies stop work, the country's production, infrastructure, and logistics are being destroyed, and the entire economy is in a deep crisis. All that will be accompanied by further loss of

employment, higher unemployment⁶, as well as the reduction in the number of new job finders - and not only due to a significant decline in economic activities, but also due to the aggravation of professional and qualification disproportions between the demand and supply of labor force. In particular, internal migrants from conflict zones, even with the relocation of enterprises, will create additional pressure on the labor market, since in the eastern regions the employment structure was significantly shifted towards industry compared to the western and central regions where they arrive.

From a political point of view, urgent measures to slow down the growth of unemployment and increase the pace of job placement, including that of long-term unemployed, who feel more acutely the weaker motivation to actively search for job, the loss of professional skills and abilities, decreased competitiveness, as well as decreased standard of living and gradual degradation of the personality.

The possibilities of reducing the unemployment should be sought even during the current hostilities in territories not directly affected by war. Stabilization of the economy, and hence the social and labor sphere in relatively safe regions of Ukraine, is possible via displacement of businesses, promoting the development of the private sector, training entrepreneurship, as well as organizing partnerships for local employment based on the cooperation between public and private partners (the government, local authorities, trade unions, employers' associations, educational institutions, and employment agencies), who are trying to solve the problems on the labor market of their community.

It is also advisable to direct efforts to the preservation and stabilization of the companies' personnel. Flexible forms of labor organization and payment have significant reserves in this area.

Measures that increase the effectiveness of the unemployed's job search and/or professional training measures (training, retraining or advanced training) that raise the competitiveness of the "problematic" groups of unemployed, including internally displaced persons, as well as compensation for the employment of long-term unemployed all are potential tools to increase the outflow from unemployment. In this sense, also worthy of attention is the mechanism developed and proposed by Ukraine's government, according to which the unemployed will be involved in public works that are needed in the regions (liquidation of the consequences of emergency situations of man-made, natural and military nature; works aimed at meeting the needs of the Armed forces, other military units and civil defense forces; work to ensure the general needs of the economy and everyday social needs). The unemployed will be paid for their work at an amount not lower than the minimum wage, which in most cases is higher than

⁶ According to the estimates of the Ministry of Economy, due to the war in Ukraine, the level of unemployment is expected to be about 30% by the end of 2022 [26].

unemployment benefits. In addition, fixed-term labor contracts will be concluded with the performers of such works in accordance with the Labor Code [26].

We all understand that it is not worth hoping for a sharp improvement in the situation on the labor market. However, historical hindsight shows that countries ignoring the problems of purposeful job creation in the crisis caused by war will result in long-term economic stagnation and persistent unemployment.

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МІЖСТАТУСНА МОБІЛЬНІСТЬ НА РИНКУ ПРАЦІ УКРАЇНИ

Досліджено функціонування ринку праці України 2019–2021 рр. крізь призму міжстатусних потоків робочої сили, задля чого послідовно застосовано різні методичні прийоми аналітичних досліджень, які, доповнюючи один одного, дали можливість проаналізувати ці потоки під різними кутами зору.

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Так, використовуючи мікродані за показниками щодо робочої сили та їх характеристиками, побудовано ймовірнісні матриці переходів населення України між зайнятістю, безробіттям та економічною неактивністю, припускаючи, що такі переходи відбуваються згідно з марковським процесом. Як результат, виявлено масштаби, характер і домінуючі вектори переміщень українців між трьома основними статусами на ринку праці. На основі алгоритмів розрахунку індексів Шоррокса – проксі-індексів мобільності здійснено інтегральну оцінку інтенсивності міжстатусного руху на ринку праці України. Аналогічне оцінювання для ряду країн Європи дало змогу запропонувати основу для міжкраїнного порівняння рівня мобільності в Україні. За використання економіко-математичного моделювання множинного вибору виявлено соціально-демографічні фактори, які детермінують залученість індивіда до того чи іншого статусу на ринку праці України, а також отримано відповідь на питання про стабільність спостережуваних станів.

Показано, що аналіз міжстатусної мобільності робочої сили забезпечує потужну основу для кращого розуміння функціонування ринку праці, характеризує механізми адаптації останнього та дозволяє спостерігати за спрямованістю й інтенсивністю потоків, які викликають будь-яку конкретну зміну в сукупному рівні зайнятості, безробіття чи економічної неактивності, тим самим перетворюючи відповідні заходи політики на ринку праці на більш цілеспрямовані. Зокрема, оскільки аналізований період позначився зростанням рівня безробіття в Україні, встановлено роль потоків у цій динаміці та розподілі ризику втрати роботи з урахуванням таких соціально-демографічних характеристик індивідів, як стать, вік чи рівень освіти. Розуміння таких зв'язків важливе для вироблення якісних рішень, спрямованих на зниження безробіття в країні.

Ключові слова: мобільність, робоча сила, зайнятість, безробіття, економічна неактивність, ринок праці, Україна