

Development of Regional Labor Markets in Ukraine as a Tool to Regulate Internal Migration and Reduce Social Vulnerability¹

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Abstract

Purpose: The article explores links between the attractiveness of regional labor markets and internal migration as a change in the usual place of residence in Ukraine.

Methodology: Based on the migration theory of “push-pull” a study of the attractiveness of regional labor markets as determinants of the intensification of internal migration in 24 regions of Ukraine (2010–2020) was conducted with the use of integrated assessment and balance econometric modeling.

Findings: The study found that the internal migration activity in Ukraine is of urbanistic nature because the development of rural-urban area migration vectors dominates in the country. The most attractive regions in the focus of internal emigration and immigration processes are defined based on the developed rankings of the regions' attractiveness by the system of labor market and employment development indicators.

Research limitations: This article studies a specific country and its regions, along with the local labor market. One should be careful when generalizing the results to other regional labor markets.

Originality/value: The level of regional labor markets' attractiveness correlated with internal migration activity. The attractive regional labor market, high IT market development level, and increasing innovative-technological capacity proved the main attraction factors of these regions.

Keywords: migration, labor market, regulation tools, attractiveness, employment, balance, Ukraine.

JEL: J40, J60, J68

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Introduction

After the permanent stabilization of the economic system in Ukraine in 2010–2013, the social vulnerability of the population – especially its social-labor component – has substantially increased since 2014 due to military conflict in the east and its negative consequences, including the large numbers of internally displaced persons, aggravated employment problems, and growing international migration. There have been trends of increasing stratification of the population by living standards, growing poverty, labor precarization, social exclusion, and the emergence of new socially vulnerable groups. It is confirmed by research conducted by the International Labour Organization (ILO). According to its criteria, Ukraine is now a country with high poverty and a largely informal economy.

Internal migration is defined as the change of the usual place of residence inside the country, whose level and intensity correlate with the attractiveness of the socio-economic environment and the competitiveness of regional labor markets in Ukraine. Interregional migration does not impact the number and composition of the country's population in general, yet it causes changes in the settlement, age, and gender structures of the population in some regions, showing a causal relationship with asymmetries of regional development, urbanization, and rural depopulation processes.

The internal migration level of the Ukrainian population globally is 12%, while that of international migration – over 3% (Eurostat, 2020). The reasons for the emergence of internal migration are the same as the reasons for international migration, including migration from depressed to dynamically developing regions, from rural areas to cities, and the expansion of awareness that migration to other regions is the key to prospective development and achievement of personal goals.

The above provides fertile ground to argue about the direct correlation between the level of attractiveness of regional labor markets and interregional migration activity. Therefore, the implementation of proactive regional labor markets development policy, the creation of new competitive jobs, and the stabilization of the social-labor environment for the implementation of the intellectual-labor capacity of the population serve as powerful tools to both regulate migration processes, use them to reduce the intensity of international migration, keep labor resources in the country – especially the youth – and reduce the population's social and labor vulnerability.

The purpose of the research is to conduct a balance correlation analysis and detect relationships between the attractiveness of regional labor markets and interregional migration activity. To achieve this goal, we planned the following research structure:

- 1) assessment of migration activity levels by regions of Ukraine according to migration balance, internal migration activity, pendulum migration movements, and the intensity of arrivals/departures;
- 2) comprehensive integrated assessment of the level of attractiveness of regional labor markets and its links with internal immigration and emigration, gross migration activity, and the migration activity structure by regions;
- 3) identification of links and assessment of the impact of labor market development parameters on migration activity.

The study described below followed in the footsteps of the Lviv School of Regional Research (Mulcka *et al.*, 2021; Sadova *et al.*, 2020; Semiv *et al.*, 2021; Levytska, 2022; Vasylytsiv *et al.*, 2020; Voznyak *et al.*, 2021) in the migration theory of push-pull. Therefore, in the context of limited studies on internal migration in Ukraine as determinant of the attractiveness of regional labor markets, there was a need to generate logical information and an analytical system regarding (1) the scale and structural characteristics of interregional disproportions of migration activity, (2) the attractiveness of regional labor markets and employment, and (3) causal links between migration and the attractiveness of regional labor markets. The implementation of such a research algorithm allows us to determine the measures that will contribute to the use of migration potential for the socioeconomic development of regions.

The article will be organized as follows. The next section will delineate the theoretical framework based on the push-pull theory of migration and a review of the literature on changes in development tendency and attractiveness of the internal labor market. Next, we will present the methodology of our study. Then, we will describe the study's analyses, while the concluding section will discuss managerial implications, limitations, and recommendations for future research.

Literature Review

Internal Migration: Social and Economic Development Causal Nexus

The study on issues related to migration has gained relevance of late, because of growing mobility capacity, globalization, and differentiation by income, job opportunities, or the quality of life of the population. The situation has caused the emergence of

a range of comprehensive studies addressing the scales, trends, and challenges of migration processes intensification (Hugo, 2000; Carletto *et al.*, 2006; Castles and Miller, 2009; Rausser and Strielkowski, 2013; Enflo and Henning, 2016; Vollmer and Malynovska, 2016; Mulcka *et al.*, 2020; 2021; Lupak, 2021).

The socioeconomic development of a country is the object of different studies that show how it is defined by a wide range of various internal and external factors. Meanwhile, most factors prove to have both positive and negative impacts, while having no relationship with socioeconomic growth. Paying attention to the results of the current most relevant publications, the problem of the course of migration processes – along with the change of their intensity, forms, and consequences – is the most popular among the preconditions and challenges of economic growth (Dastidar, 2017; Andersson *et al.*, 2020).

Migration is both the consequence and factor of impact on socioeconomic development. Therefore, when examining the relationships between socioeconomic development and migration, we must rely on the studies of Bilan (2017), Voznyak *et al.* (2021), and other researchers who explain the factors that are key in terms of decision-making on migration. It helps to understand the problems that lead to migration and substantiate the priorities and decisions of state policy on migration intensity and volume management, demonstrating the positive impact on processes of regions' socioeconomic development.

Migration – both from and to the country, both internal and international – has substantial positive consequences outlined by Boschma and Lindgren (2014), including the improvement of employment opportunities as the result of growing workforce mobility (Bosworth, 2006), the capacity of business expansion abroad or permanent business migration (Léon-Ledesma and Piracha, 2004; Kumar *et al.*, 2018), financial and social support for economically depressed families in the countries of migrants' origins (Singh *et al.*, 2010; Meyer and Shera, 2017), and remittances that improve the purchasing power and investment capacity of the population to secure the country's revitalization and development.

Therefore, migration processes are subject to public regulation with the aim to overcome the challenges and threats for regional and national securities, on the one hand, and strengthen the impact of positive aspects and their consequences, on the other hand. Thus, the consequences and problems of regulating migration processes are comprehensively studied in terms of the aspects of social protection of female migrants' employment (Ireland, 2018), smoothing the peak periods of emigration growth (Jaroszewicz and Kaźmierkiewicz, 2014), and meeting the economy's needs for an international workforce (Keijzer *et al.*, 2016).

The above matters have undergone scientific debates for several years now, especially regarding the counterweights of social and labor environment – migration intensification – aggravated by problems of the population's social vulnerability. High social vulnerability leads to the population's inability to meet its basic socioeconomic needs along with social rights and interests. This issue is a powerful push factor of migration (Massey *et al.*, 2010). Intensification of migration processes leads to social divisions, weakens the social resilience of families, and aggravates a range of social and household problems for both migrants (Aure *et al.*, 2018) and their family members that stay home (Voznyak *et al.*, 2021). Therefore, migration problems activate and make various aspects of social and labor vulnerability of the population more relevant (Bhagat, 2017).

The long-term systemic consequences of the negative impact of critical migration volumes and structurally imperfect migration are analyzed in Becker and Ferrara's 2019 studies on the destruction of families and depopulation of regions, but also in Mahmoud *et al.*'s 2010 research on the use of migration to undermine the principles of international, regional stability and security, man-made disasters, environmental crises, and environmental degradation.

Link Between Internal Migration and Labor Market

Migration is a key dimension in the discussion about the trend and potential of demographic and economic concentration in cities and their influence on socioeconomic development. Thus, the classic models of internal migration – especially rural-urban migration based on labor market differentials, meaning disparities in unemployment and income – remain limited in their ability to explain urban migration (Berg *et al.*, 1982; Atienza and Aroca, 2012; Vignoli, 2017), as they tend to disregard factors related to the area of residence (Pitkänen *et al.*, 2019; Hear, 2017), culture, education, living standards, and costs of living, which appear to motivate decisions to move from one city to another and can sometimes be dissociated from levels and trajectories of income and employment.

Recent scientific and applied developments on the assessment of migration impact on the socioeconomic development of different regions (Wills *et al.*, 2009; Rahman, 2013; Sadova *et al.*, 2020) still disallow one to fully directly analyze and calculate the causality of socioeconomic development of migration, differentiate the (direct and indirect) influence of migration on certain indicators of socioeconomic development, and identify time lags (periods, intervals) in which one could observe the strongest mutual relationships (both positive and negative) between migration and regional development.

Unfortunately, there are no studies and research results that would show close relationships and develop efficient mechanisms and tools of public development policy, e.g. for the improvement of the labor market and labor environment in the system of regulating internal migration processes regarding reducing the population's social and labor vulnerability. The origins of the discourse can be traced in Ryan (2018), Semiv *et al.* (2021), and Vasylytsiv *et al.* (2021). However, the changes in the characteristics of social and labor environment and the specifics of a labor market, employment conditions, and internal migration processes in a certain country call for further development of theoretical and methodological research on these problems, along with the empirical analysis of relationships on the labor market, internal migration processes, and social domain stabilization.

The above literature review informs our three hypotheses:

H1. Significant differentiation of regional migration in Ukraine result from the divergence of regions' socioeconomic development and central-peripheral interactions.

H2a. A high level of regional labor market attractiveness determines the intensification of regional immigration processes, while a low one – the intensification of emigration.

H2b. Differentiation of regional labor markets' attractiveness determines the nature of structural ratios in the distribution of a country's migration resources.

H3. There are stable causal relationships between migration, regional labor markets' attractiveness, and the effectiveness of regulations that allow ensuring rational structural changes in internal migration and its scale, stimulating labor market transformations, and encouraging employment in regions.

Data and Method

The study of internal migration in Ukraine was based on data about regional migration. The empirical indicators of regional migration in Ukraine were the numbers regarding arrivals, departures, and balance of internal migration, which demonstrated a change in the population due to changes in their place of registration. The State Statistics Service of Ukraine conducted several studies on regional migration, but there is no systematic monitoring of migration. The system of information and analytical support

for the research of the internal migration intensity in Ukraine for 2014–2020 are presented in Table 1.

Table 1. Scale of departures and arrivals, total population of Ukraine (regional vector), in thousands of persons

Regions	Departures			Arrivals			Total population		
	2014	2017	2020	2014	2017	2020	2014	2017	2020
Ukraine	499.8	413.9	408.9	498.3	410.1	406.8	45426.2	42584.5	41902.4
Vinnyska	24.8	6.9	13.9	25.1	11.6	16.3	1618.3	1590.4	1545.4
Volynska	13.8	8.6	10.6	13.3	9.4	10.7	1041.3	1041.0	1031.4
Dnipropetrovska	36.7	50.2	25.9	37.0	26.3	27.6	3292.4	3230.4	3176.6
Donetska	26.7	7.6	13.9	38.6	31.6	19.3	4343.9	4244.1	4131.8
Zhytomyrska	17.2	13.8	15.9	18.2	14.9	16.6	1262.5	1240.5	1208.2
Zakarpatska	6.3	5.5	5.1	6.5	5.6	5.5	1256.9	1258.8	1253.8
Zaporizka	17.4	7.2	12.6	18.9	10.3	14.6	1775.8	1739.5	1687.4
Ivano-Frankivska	14.2	14.4	12.3	13.3	13.1	11.7	1382.1	1379.9	1368.1
Kyivska	31.6	53.3	47.3	21.8	23.7	24.1	1725.5	1734.5	1781.0
Kirovohradska	13.8	10.4	9.9	15.0	12.5	12.4	987.6	965.8	933.1
Luhanska	10.0	2.6	5.4	19.3	21.8	8.8	2239.5	2195.3	2135.9
Lvivska	26.9	28.1	25.1	25.7	25.8	24.4	2538.4	2534.0	2512.1
Mykolayivska	13.2	7.9	9.1	13.4	9.9	10.6	1168.4	1150.1	1119.9
Odeska	27.9	22.9	26.4	24.9	19.7	22.9	2396.5	2386.5	2377.2
Poltavska	21.6	18.7	17.8	21.4	20.2	18.0	1458.2	1426.8	1387.0
Rivnenska	18.4	15.1	14.3	18.7	16.3	15.3	1158.8	1162.8	1153.0
Sumska	16.4	15.7	12.4	17.1	16.8	14.2	1133.0	1104.5	1068.2
Ternopil'ska	12.5	7.1	10.1	12.7	8.6	10.8	1073.3	1059.2	1038.7
Harkivska	35.5	47.1	33.0	32.7	32.7	30.9	2737.2	2701.2	2658.5
Hersonska	12.9	4.9	8.4	14.0	7.6	10.2	1072.5	1055.6	1027.9
Hmelnytska	19.9	7.7	15.8	20.2	10.5	15.9	1307.0	1285.3	1254.7
Cherkaska	16.8	15.7	14.6	17.1	16.3	14.9	1260.0	1231.2	1192.1
Chernivetska	10.0	5.2	5.7	9.2	5.3	6.4	908.5	908.1	901.6
Chernihivska	12.9	8.4	10.3	13.8	10.5	11.2	1066.8	1033.4	991.3
Kyiv	42.5	29.1	33.3	30.5	29.0	33.5	2868.7	2925.8	2967.4

Source: own elaboration based on data of internal migration of State Statistics Service of Ukraine.

Thus, Kyiv is the main center of human resources gravitation in the interregional migration of Ukraine. In 1995, net interregional migration numbered 4100 persons, in 2000 – 12,900 persons, while in 2007 – 24,800 persons. Net migration reduced under the impact of the financial crisis of 2007–2008, yet it has recovered since 2010. The positive net migration rate was 24,000 in 2012 (internal and international migration). The net migration declined to 14,400 persons in Kyiv during the 2014–2015 systemic crisis. Interestingly, in 2020, a negative net migration rate was observed in Ukraine (200 persons) as the consequence of the coronavirus infection spread leading to limited spatial mobility of the population.

In 2020, the Kyiv oblast (Kyiv region) had the highest positive net migration rate among all Ukrainian regions, amounting to over 23,000 persons, which is 13,200 more than in 2014. The number of migrants arriving from other regions of Ukraine exceeded the number of those leaving in Kharkiv, Odessa, Lviv, and Ivano-Frankivsk oblasts. After 2014, the industrial regions in the east of Ukraine lost their attractiveness, so the net migration rate was negative in 2020 in Donetsk and Luhansk oblasts, which amounted to 13.1 and 6.3 persons per 10,000 of the population, respectively. Let us note the significant growth of the population in 2017 in Kharkiv, Kyiv, and Dnipropetrovsk oblasts. The positive net migration rate here could indicate the increase in the regions' attractiveness, including regional labor markets. In 2018–2020, interregional migration increased in Kirovohrad, Mykolayiv, Rivne, Sumy, and Cherkasy oblasts.

A classic approach to calculating empirical indicators of internal migration follows the analysis of statistical information based on the calculation of scale, the intensity of immigration and emigration flows, total net migration coefficients, and coefficient participation of regions by the indicators of arrivals and departures intensities.

The intensity of internal emigration was calculated as the ratio of the number of departures from the region to the total population in the region (formula 1), and the intensity of internal immigration – as the ratio of the number of arrivals in the region to the total population in the region (formula 2):

$$DM_t^n = \frac{DEP_t^n}{NP_t^n} \quad (1) \quad \text{and} \quad AM_t^n = \frac{ARR_t^n}{NP_t^n} \quad (2);$$

in which DM_t^n was the intensity of internal emigration of the n^{th} region in the t time; DEP_t^n was the scale of departures of the n^{th} region in the t -period of time; NP_t^n was the amount of population in the n^{th} region in t -period of time; AM_t^n was the intensity of internal immigration to the n^{th} region in t -period of time; and ARR_t^n was the scale of arrivals of the n^{th} region in the t -period of time.

Total net internal migration was calculated as the difference between the departure and arrival intensity in the region, which demonstrated the regions' level of mobility, generated its ability to conduct a spatial comparative analysis, and identified dynamics of migration movement regardless of population changes so as to predict changes in these trends in the future (formula 3):

$$NM_t^n = \frac{DEP_t^n - ARR_t^n}{NP_t^n}, \quad (3);$$

in which NM_t^n was the total net internal migration coefficient of the n^{th} region in the t -period of time.

To identify the role of regions in the total internal migration (formulas 4–5), we calculated the coefficients of participation of regions by the indicator of arrivals and departure intensities:

$$PD_t^n = \frac{DEP_t^n}{DEP_t^g}, \quad (4) \quad PA_t^n = \frac{ARR_t^n}{ARR_t^g} \quad (5);$$

in which PD_t^n was the coefficient of participation of the n^{th} region in total internal emigration in the t -period of time; DEP_t^g was the scale of total internal emigration; PA_t^n was the coefficient of participation of the n^{th} region in total internal immigration; ARR_t^g was the scale of total internal immigration.

To perform the tasks, the article used a set of general scientific and special methods and techniques of scientific research, such as theoretical and logical generalization to identify the latest determinants of the actualization of state regulation of migration, structural-logical and semantic analysis to form a methodology for analyzing the monitoring of internal migration, grouping to identify migration risks and threats for regional labor market statistical analysis to analyze the current state, trends, and structural changes of internal migration processes, and rating analysis to assess the characteristics of the regional labor market as a determinant of migration attractiveness.

Based on the principles of data consistency, the universality of indicators, and the ability for comparative analysis according to the spatial-temporal criterion to create ratings of the attractiveness of regional labor markets in Ukraine (2014 and 2019), we formed an information-analytical model (formula 6) that consisted of 10 indicators (Table 2). The selection of the indicators was conducted by the expert method based on data from the Ukrainian Statistical Office:

$$ALM_t^n = f(a_1^n, \dots, a_j^n) \quad (6);$$

in which ALM_t^n was the information and analytical model of rating the attractiveness of the labor market of the n^{th} region in the t -period of time; a_j was an indicator of the attractiveness of the labor market of the n^{th} region in the t -period of time, and j was the number of indicators.

Table 2. Decomposition of attractiveness of regional labor markets

Indicators	Variables	Expression
Employment at 15–70 y.o.	X_1	Percentage of the corresponding age
Unemployment at 15–70 y.o.	X_2	
Employment level	X_3	Percentage of the average number of full-time employees
Dismissal level	X_4	
Level of economic activity at 15–70 y.o.	X_5	Percentage
Level of forced part-time employment*	X_6	
Share of employed in jobs with hazardous conditions	X_7	Percentage of the number of full-time employees
Average monthly wages	X_8	\$ per full-time employee
Unofficial employment	X_9	Percentage of the total number of employees
The ratio of labor remuneration to wage fund	X_{10}	

Note: * full-time employees who were in the specified conditions up to the average number of full-time employees; Annex A presents the data for the calculation of regional labor market attractiveness coefficients.

Source: own elaboration.

The rating of the attractiveness of labor markets in regions of Ukraine served as the basis for identifying the strength of the region's sensitivity to increasing immigration flows or escaping human resources. This approach revealed the level of attractiveness and repulsion for migration of the labor market and the employment sector of the region. The data were elaborated in the OnFront software. The regional labor market attractiveness coefficient rate fell in the $[1; \infty]$ range, in which 1 showed the highest attractiveness level. The coefficient above 1 demonstrates the lower attractiveness levels.

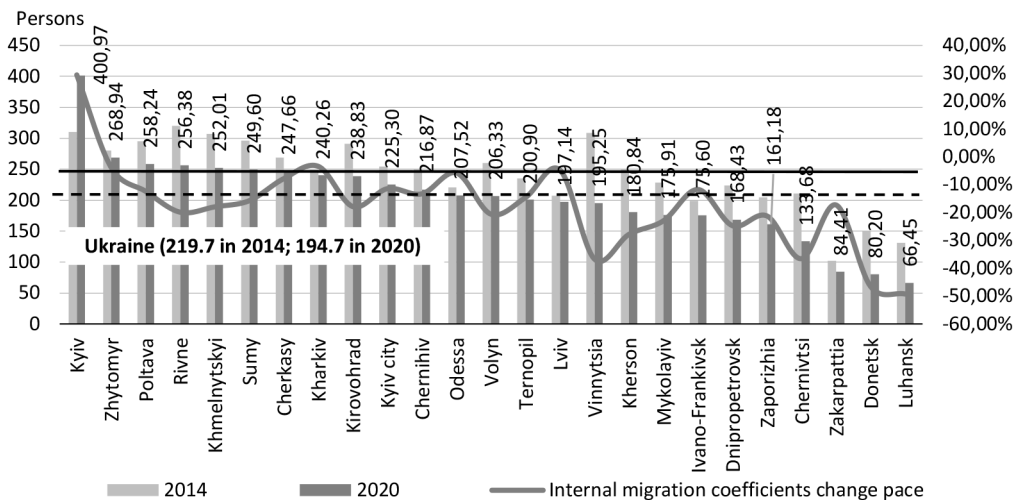
The balance regression model was used to evaluate the impact of the labor market condition on internal migration in Ukraine. The employment parameters $X_t = [\Delta \log X_t]$ showed the endogenous variables vector, in which all variables were used in the form of first differences of corresponding logarithms. The exogenous variables vector Y_t included the net migration coefficients of Ukrainian regions.

Results and Discussion

Interregional Migration in Ukraine: Spatial and Temporal Approaches

Internal migration in countries with a high level of socioeconomic development is a tool to balance regional labor markets and secure sustainable development of national and regional economies. For comparison, the internal migration rate in the USA is 13 movements per capita throughout life, the UK – seven (OECD, 2020), Ukraine – two to three movements. The internal migration coefficient was 19.4 per 1000 of the population (Figure 1; State Statistics Service of Ukraine, 2020), while in the USA – 27.3, the UK – 22.4, and France – 21.6 (Eurostat, 2020). In 2020, the Kyiv oblast was the leader among Ukrainian regions with an internal migration coefficient of 400.97 persons. The lowest migration activity level was observed in the Luhansk oblast (66.45 persons). Zhytomyr (268.94 persons), while Poltava (258.24), Rivne (256.38), and Khmelnytskyi (253.01) oblasts also showed high internal migration coefficients. Notably, the internal migration rate grew in 2014–2020 only in the Kyiv oblast (29.38%). An upward trend of internal migration activity appeared in each oblast of Ukraine, caused by both unstable economic conditions and sociopolitical events. Interestingly, the internal migration coefficient changes were negative and the highest among all regions of Ukraine in Donetsk and the Luhansk oblasts – 45.58% and 48.24%, respectively. The internal migration changes reduced in Chernivtsi and Vinnytsia oblasts by 36.55% and 36.72%.

Figure 1. Internal migration in Ukraine; regional breakdown for 2014 and 2020



Note: per 10,000 of the population; excluding the temporarily occupied territory of the AR Crimea and the part of temporarily occupied territories in Donetsk and Luhansk oblasts.

Source: own elaboration based on the data of Table 1 using formula 1.

The main causes of internal migration growth in Ukraine were low well-being levels, high levels of depression of some regions, deficit or high cost of purchase or rental of housing in industrial centers, and the lack of jobs and opportunities to access social services in the cities of registration of residence. What should also be considered as factors stimulating internal migration are the high level of public social expenditures, developed social infrastructure, and agglomerations' advantages, which is confirmed by total net migration coefficients in 2014–2020 (Table 3). Thus, the net migration rate (the difference between the arrival and departure intensity coefficients) was the highest in Kyiv and industrial regions, especially in 2014–2019.

Table 3. Total net migration coefficients in Ukraine; regional breakdown for 2014–2020

Regions	Years, persons							Deviation	
	2014	2015	2016	2017	2018	2019	2020	2019–2014	2019/2014, coef
Ukraine	0.33	1.16	0.65	0.91	0.83	0.78	0.50	0.45	2.38
Kyiv	41.68	41.33	36.75	0.11	32.32	43.47	-0.67	1.80	1.04
Vinnitsia	-2.03	1.42	-15.94	-29.12	-23.27	-20.06	-15.60	-18.03	9.87
Volyn	4.82	-0.22	-12.31	-7.65	-3.24	-5.87	-1.02	-10.69	-1.22
Dnipropetrovsk	-0.65	-3.59	-7.76	73.88	6.61	-7.66	-5.25	-7.01	11.84
Donetsk	-27.38	-21.97	-8.57	-56.39	-24.59	-18.82	-13.11	8.57	0.69
Zhytomyr	-7.97	-12.11	-0.47	-8.31	-13.53	-15.73	-6.51	-7.76	1.97
Zakarpattia	-1.06	-3.16	-4.71	-1.30	-0.56	-2.01	-3.01	-0.96	1.90
Zaporizhia	-8.41	-5.63	-10.05	-17.74	-13.79	-15.59	-11.55	-7.19	1.86
Ivano-Frankivsk	6.25	11.71	0.20	8.92	3.79	2.37	3.87	-3.89	0.38
Kyiv	56.71	59.92	62.77	170.77	144.70	145.28	130.40	88.57	2.56
Kirovohrad	-12.21	-9.10	-0.62	-21.72	-27.02	-36.35	-26.03	-24.14	2.98
Luhansk	-41.47	-26.17	-11.52	-87.61	-26.42	-22.81	-16.29	18.65	0.55
Lviv	4.65	4.10	18.74	9.23	6.93	4.56	3.05	-0.08	0.98
Mykolayiv	-1.87	-0.45	-12.86	-17.75	-22.61	-22.64	-13.94	-20.78	12.14
Odessa	12.29	-0.16	12.56	13.36	16.31	15.66	14.51	3.37	1.27
Poltava	1.89	2.06	-3.48	-10.45	-5.44	-3.16	-1.03	-5.06	-1.67
Rivne	-2.22	-6.61	-2.50	-10.98	-11.30	-12.92	-9.02	-10.70	5.83
Sumy	-6.24	-9.31	8.00	-10.36	-22.47	-26.05	-16.97	-19.81	4.17
Ternopil	-1.79	-1.27	-15.29	-13.98	-5.91	-9.84	-6.52	-8.05	5.50

Kharkiv	10.21	10.03	-6.73	53.06	7.85	8.91	8.05	-1.30	0.87
Kherson	-10.49	-3.94	-9.78	-25.86	-20.16	-19.39	-17.89	-8.90	1.85
Khmelnyskyi	-2.68	-3.10	-14.96	-21.81	-5.71	-6.95	-0.91	-4.27	2.60
Cherkasy	-2.69	-4.84	-17.31	-4.52	-19.50	-17.92	-3.00	-15.23	6.66
Chernivtsi	8.56	7.07	-5.67	-1.08	-1.50	-2.25	-7.80	-10.81	-0.26
Chernihiv	-7.84	-1.49	-9.91	-20.72	-18.55	-19.88	-9.73	-12.04	2.54

Note: per 10,000 of the population; excluding the temporarily occupied territory of the AR Crimea and the part of temporarily occupied territories in Donetsk and Luhansk oblasts.

Source: own elaboration based on the data of Table 1 using formula 3.

Migration activity declined sharply in 2020, yet we should not dwell on the socio-economic foundation of these processes, because 2020 was a period of limited migration. In particular, the rate was 43.4 persons per 10,000 of the population in Kyiv and 130.4 in Kyiv oblast, while the net migration rate was negative in Kirovohrad and Vinnytsia oblasts in 2019: 36.3 and 20.1 persons, respectively.

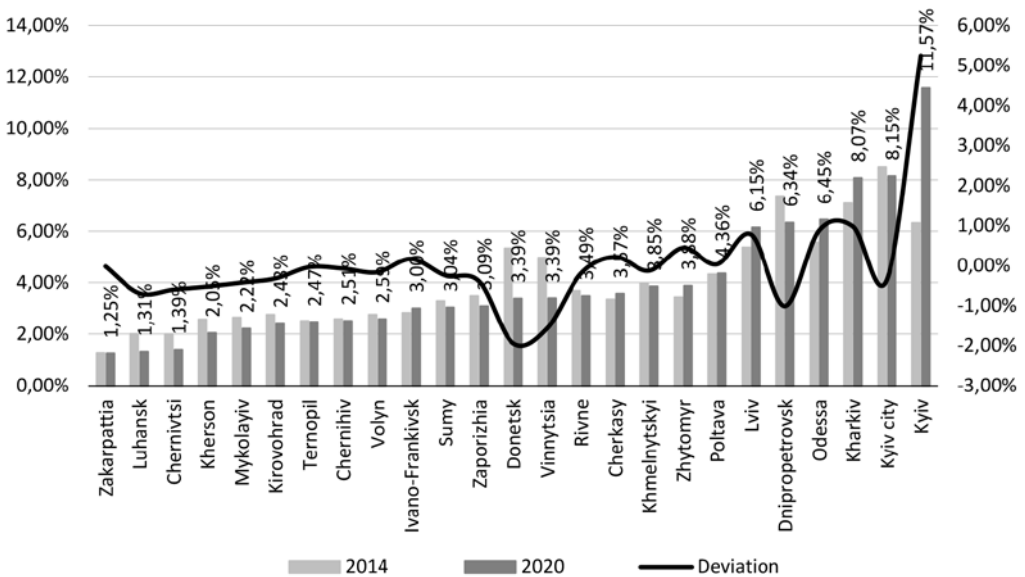
Notably, Ukrainian regions have a high intensity of repeat migration processes unrelated to the change in the place of residence, including migration from rural to urban areas and from rural areas to metropolitan areas. For comparison, 21.4% of the population from rural areas participated in the village-to-city migration vector in 1991, and in 2005 the share was 28.5% of the rural population or over 1 million persons (Skrypnychenko, 2004). The surveys of the economic activity of the population conducted by the State Statistics Service of Ukraine show the highest level of participation in repeat migration in Kyiv oblast, namely 30% of the population in the oblast worked in Kyiv while 49.2% in other settlements of the oblast in 2010 (Kupets, 2012).

We should mention the problem of implementation of the state migration management policy, which is related to the lack of record-keeping of the internal labor migration because internal migrants are registered at the place of residence, not a job. To evaluate the volumes of internal migration, studies most often employ indirect methods based on the data on employment, tax payment, or food consumption. For example, the results of the research on the economic activity of the population in 2010 show a high share of internal labor migrants (13.2%; Kupets, 2012). However, the research disallows determining repeat migration volumes, so internal labor migration is often considered in conjunction with repeat migration. Moreover, many people participate in internal labor migration, which is unrelated to daily and weekly returns to the place of permanent residence. The character of internal migration is seasonal and shift work, especially in the capital city and the largest industrial cities. According to the Data

of International Migration Organization, the number of internal labor migrants in Ukraine exceeded 1.6 million persons – or 9% – of the economically active population in 2014–2015 (OECD, 2016). Other sociological surveys show that 55% of internal labor migrants have permanent jobs. Interestingly, 20% of the surveyed labor migrants worked officially under a labor agreement, while others worked unofficially or through self-employment (Burov, 2018).

No comprehensive research on internal migration has been conducted recently. The monitoring of internal migration has been absent in the development of the Ukrainian migration policy. In 2014, the State Statistics Service of Ukraine changed the methodology of calculating the internal migration activity levels, making it impossible to make substantiated conclusions regarding the rankings (level of participation) of a region in the total intensity of migration processes in Ukraine. In 2014, the share of Kyiv in the total intensity of arrivals in Ukraine was the highest and amounted to 8.5% (Figure 2).

Figure 2. Participation of regions in internal migration in Ukraine by the indicator of arrivals intensity in 2014 and 2020



Note: excluding the temporarily occupied territory of the AR Crimea and the part of temporarily occupied territories in Donetsk and Luhansk oblasts.

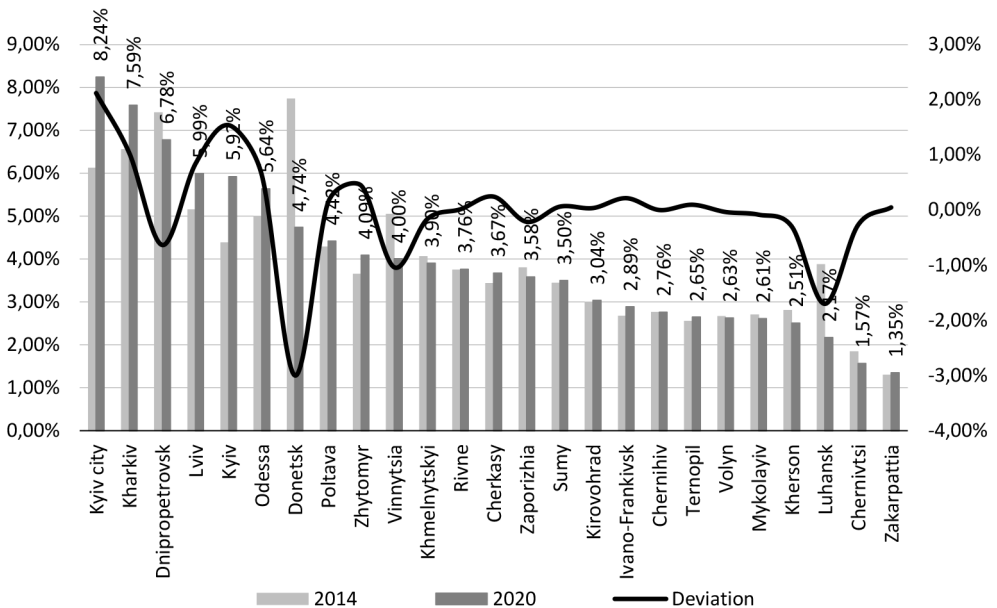
Source: own elaboration based on the data of Table 1 using formula 5.

In 2020, the largest share was observed in Kyiv oblast (11.57%), while the share of Kyiv was 8.15%. Zakarpattia and Luhansk oblasts had the lowest share of internal migration

in 2020: 1.25% and 1.31%, respectively. Kyiv, Kharkiv, Odessa, Dnipropetrovsk, and Lviv oblasts were the top regions by the share of arrivals in the total arrivals in Ukraine. Significant growth in arrivals share change in 2014–2020 was recorded for Kyiv (from 5 p.p. to 24 p.p.) and Kharkiv oblasts (from 0 p.p. 98 p.p.), while negative rates appeared in Donetsk (from 1 p.p. to 94 p.p.), Vinnytsia (from 1 p.p. to 57 p.p.), and Dnipropetrovsk (from 1 p.p. to 10 p.p.) oblasts.

The ranking of Ukrainian regions by the share of departures in the total number of departed shows that Kyiv (8.24%), Kharkiv (7.59%), Dnipropetrovsk (6.78%), Lviv (5.99%), and Kyiv (5.92%) oblasts are the leaders (Figure 3). Let us emphasize that such a situation results from internal education-related migration because Kyiv and Kharkiv oblasts are the largest centers-recipient of education-related migration in Ukraine. Luhansk, Chernivtsi, and Zakarpattia oblasts (2.17%, 1.57%, and 1.35%) are the regions-donors by the share of internal departure. Chernivtsi and Zakarpattia oblasts are also the largest donors of international migration.

Figure 3. Participation of regions in internal migration in Ukraine by the indicator of departures intensity in 2014 and 2020



Note: excluding the temporarily occupied territory of the AR Crimea and the part of temporarily occupied territories in Donetsk and Luhansk oblasts.

Source: own elaboration based on the data of Table 1 using formula 4.

The Attractiveness of Regional Labor Markets in Ukraine: Pull-Push Environment

Volumes of internal migration in Ukraine are determined by several economic factors, especially regional labor market imbalances and financial asymmetries of territorial development. The labor market is the major push-pull factor of internal migration. Its attractiveness simultaneously is the force pushing and pulling internal migrants. Ukrainian oblasts are ranked by the labor market attractiveness indicator to determine the prospective regions in terms of increasing internal immigration flows.

In 2014, Kyiv, Rivne, Kherson, Khmelnytskyi oblasts, and Kyiv city were the regions attracting internal migrants the most (labor market attractiveness coefficients equaled 1.0), while Chernivtsi, Volyn, Zhytomyr, Poltava, Sumy, Odessa, Kirovohrad, Ternopil, Cherkasy, Kharkiv, Lviv, and Chernihiv oblasts attracted migrants moderately (from 1.01 to 1.17). The attractiveness of labor markets for internal migration was low in Donetsk and Luhansk oblasts (Table 4). In 2019, Chernivtsi and Zhytomyr oblasts were the regions with the highest labor market attractiveness for internal migration. Meanwhile, the attractiveness of labor markets for internal migration declined in the Donetsk oblast from 2.11 to 5.53 and in the Luhansk oblast from 3.23 to 7.89. Interestingly, Mykolayiv, Zaporizhia, and Dnipropetrovsk oblasts were outsiders in the rankings of attractiveness for internal immigration in 2019.

In 2010, the highest attractiveness for internal migration was in Vinnytsia, Zhytomyr, Kyiv, Kirovohrad, Rivne, Kherson, Khmelnytskyi oblasts, and Kyiv city (labor markets attractiveness coefficients were 1.0). Moderate attractiveness level influenced the restraining of internal emigration from Sumy (1.02), Kharkiv (1.06), Chernihiv (1.04), Volyn (1.05), Odessa (1.06), Poltava (1.08), Cherkasy (1.13), and Dnipripetrovska (1.17) oblasts. Interestingly, in 2019, the situation did not change much, and Sumy and Chernivtsi oblasts entered the group of regions with the highest labor market attractiveness in terms of internal emigration of the population. In 2014–2019, the force of employment influence as a pull factor increased for the Ivano-Frankivsk oblast, which became one of the largest tourism centers in Ukraine.

The ranking of oblasts by gross migration per 10,000 of the population helps identify the most attractive regions of Ukraine in terms of migration. Thus, in 2014, the Vinnytsia oblast had the highest migration attractiveness level with 155.3 and 153.3 rates of arrival and departure intensity per 10,000 of the population (Figure 4). The group of regions with the highest migration attractiveness included Zhytomyr, Kyiv, Kirovohrad, Rivne, Kherson, Khmelnytskyi oblasts, and Kyiv city. The highest departure

and arrival intensity rates among the leading regions by migration attractiveness rate were in Zhytomyr (143.94 and 136.0 persons, respectively) and Vinnytsia oblasts (155.3 and 153.3 persons, respectively). Notably, Donetsk, Zakarpattia, and Luhansk oblasts had lower migration attractiveness rates of 1.63, 1.91, and 2.15, respectively. The arrival and departure intensity in the oblasts was also low compared to other regions of Ukraine. The lowest departure rate in 2014 was in the Zakarpattia oblast (51.6 persons), and the arrival rate – in the Luhansk oblast (44.7 persons).

Table 4. Ranking of Ukrainian oblasts by their labor markets attractiveness for internal emigration and immigration processes in 2014 and 2019

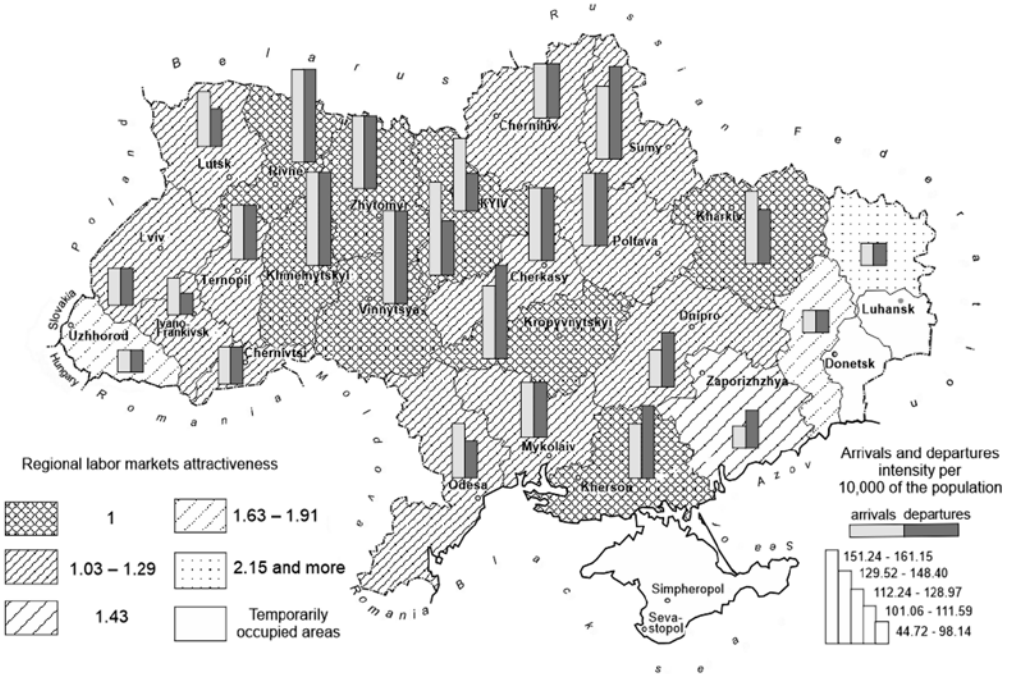
Internal immigration				Internal emigration			
2014		2019		2014		2019	
Oblasts	Coef.	Oblasts	Coef.	Oblasts	Coef.	Oblasts	Coef.
Kyiv	1	Kyiv city	1	Vinnytsia	1	Zhytomyr	1
Kyiv city	1	Kyiv	1	Zhytomyr	1	Kyiv	1
Rivne	1	Rivne	1	Kyiv	1	Kirovohrad	1
Kherson	1	Khmelnyskyi	1	Kirovohrad	1	Rivne	1
Khmelnyskyi	1	Chernivtsi	1	Rivne	1	Sumy	1
Vinnytsia	1	Zhytomyr	1	Kherson	1	Kherson	1
Chernivtsi	1.01	Zakarpattia	1.13	Khmelnyskyi	1	Khmelnyskyi	1
Volyn	1.04	Chernihiv	1.19	Kyiv city	1	Chernivtsi	1
Zhytomyr	1.04	Kirovohrad	1.26	Sumy	1.02	Kyiv city	1
Poltava	1.05	Odessa	1.3	Chernihiv	1.04	Poltava	1.02
Sumy	1.05	Vinnytsia	1.32	Volyn	1.05	Chernihiv	1.03
Odessa	1.06	Poltava	1.4	Odessa	1.06	Ternopil	1.06
Kirovohrad	1.07	Kherson	1.59	Kharkiv	1.06	Kharkiv	1.06
Ternopil	1.12	Volyn	1.6	Poltava	1.08	Cherkasy	1.07
Cherkasy	1.14	Ternopil	1.6	Ternopil	1.11	Volyn	1.09
Kharkiv	1.16	Sumy	1.64	Chernivtsi	1.11	Odessa	1.15
Lviv	1.17	Cherkasy	1.69	Cherkasy	1.13	Zakarpattia	1.16
Chernihiv	1.17	Kharkiv	1.78	Dnipropetrovsk	1.17	Vinnytsia	1.18
Ivano-Frankivsk	1.24	Lviv	1.84	Lviv	1.21	Lviv	1.2
Dnipropetrovsk	1.38	Ivano-Frankivsk	1.92	Mykolayiv	1.22	Ivano-Frankivsk	1.4

Mykolayiv	1.41	Mykolayiv	2.17	Zaporizhia	1.3	Mykolayiv	1.41
Zaporizhia	1.6	Zaporizhia	2.72	Donetsk	1.33	Dnipropetrovsk	1.55
Zakarpattia	1.92	Dnipropetrovsk	2.74	Ivano-Frankivsk	1.35	Zaporizhia	1.64
Donetsk	2.11	Donetsk	5.53	Luhansk	1.65	Donetsk	2.42
Luhansk	3.23	Luhansk	7.89	Zakarpattia	1.91	Luhansk	3.13

Note: shaded oblasts show the highest attractiveness of regional labor markets for internal migration; calculated based on the OnFront software package; Coef. – regional labor market attractiveness coefficient.

Source: own elaboration based on the data of Annex A, using formula 6 and OnFront.

Figure 4. Migration attractiveness of Ukrainian regions: internal migration activity in terms of the labor market and employment development in 2014

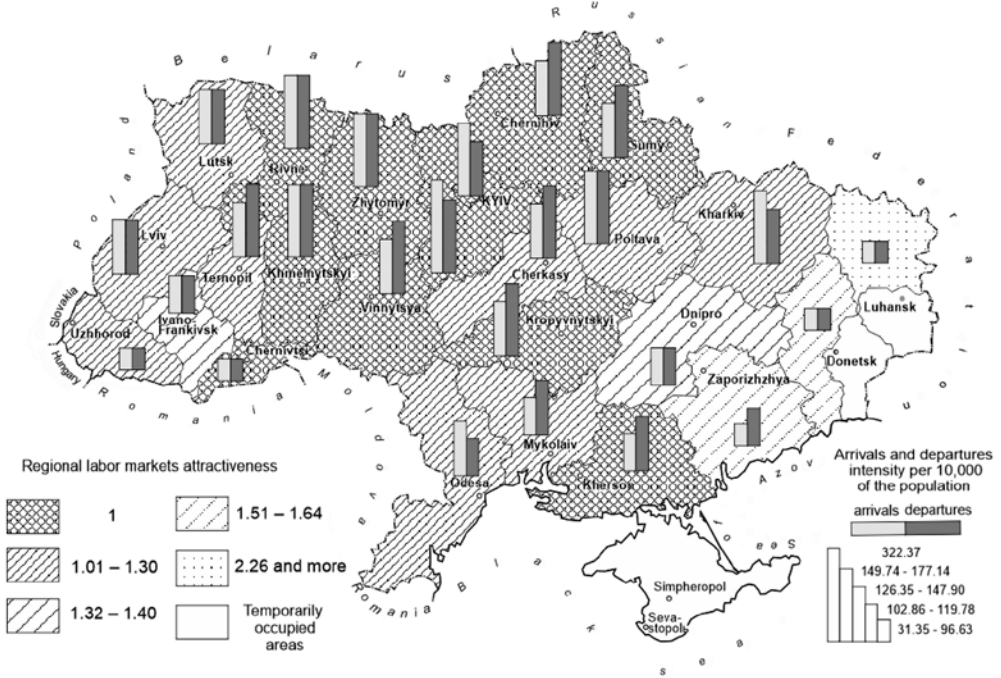


Note: excluding the temporarily occupied territory of the AR Crimea and the part of temporarily occupied territories in Donetsk and Luhansk oblasts.

Source: own elaboration based on date Table 1 and Table 4.

In 2019, Vinnytsia, Zhytomyr, Kyiv, Kirovohrad, Rivne, Sumy, Kherson, Khmelnytskyi, Chernivtsi, Chernihiv oblasts, and Kyiv city entered the group of Ukrainian regions with the highest migration attractiveness. Notably, the highest arrivals and departures intensity rates among the regions were in Kyiv (177.1 and 322.4 persons per 10,000 of the population) and Zhytomyr oblasts (176.9 and 161.2 persons; Figure 5).

Figure 5. Migration attractiveness of Ukrainian regions: internal migration activity of the population in terms of the labor market and employment development in 2019



Note: excluding the temporarily occupied territory of the AR Crimea and the part of temporarily occupied territories in Donetsk and Luhansk oblasts.

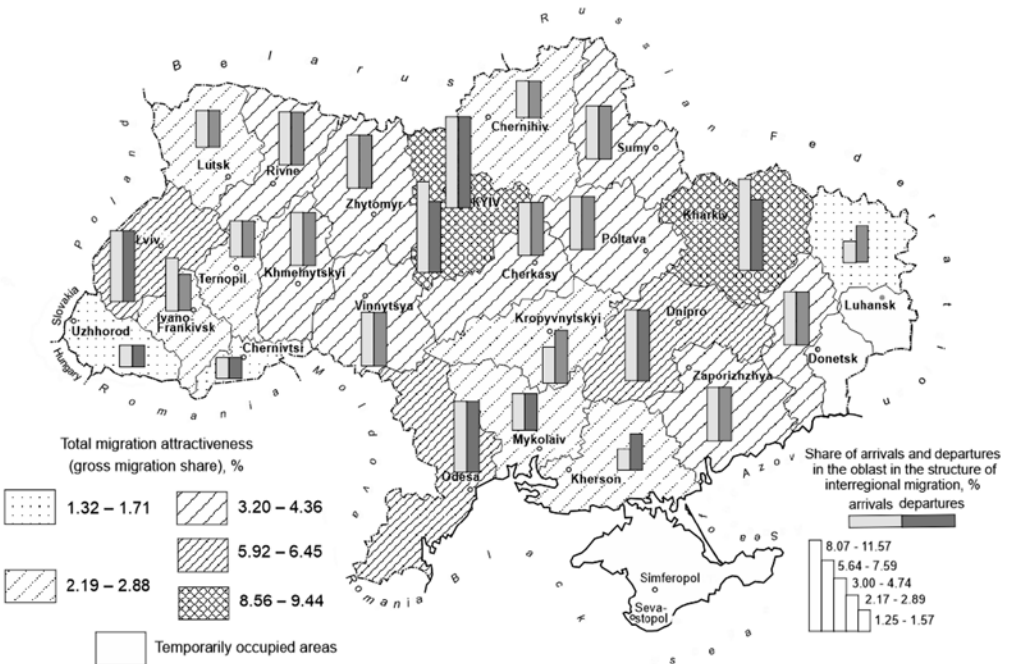
Source: own elaboration based on data Table 1 and Table 4.

In 2014–2019, Donetsk and Luhansk oblasts were the least attractive by migration activity and the labor market and employment development. The intensity of departures from the Luhansk oblast was 126.35 persons per 10,000 of the population, and arrivals – 169.8 persons. It is worth mentioning that departures and arrivals rates in Zaporizhzhia oblast, which was among the outsiders by migration attractiveness, are much lower and amount to 108.0 and 92.4 persons, respectively. The lowest level of internal migration intensity in 2019 was in the Zakarpattia oblast, namely, the departure coefficient was 54.3 and the arrivals coefficient – 52.3.

The highest share of internal migration in the total volume of internal migration processes in Ukraine in 2020 was observed in Kyiv (9.44%), Kharkiv (8.66%), and Kyiv oblasts (8.56%; Figure 6). The fast pace of labor market development, human resources capitalization, educational-scientific domains’ competitiveness, and developed infrastructure were the main factors pulling internal migrants to these regions. Luhansk, Chernivtsi, and Zakarpattia oblasts place last in the rankings of Ukrainian regions

by the share of gross migration in the total volume of internal migration (1.71%, 1.5%, and 1.32%, respectively).

Figure 6. Regional structure of internal migration of Ukrainian population: shares of arrivals, departures, and gross migration in 2020



Note: excluding the temporarily occupied territory of the AR Crimea and the part of temporarily occupied territories in Donetsk and Luhansk oblasts.

Source: own elaboration based on data Figures 2–3 and Table 1.

Relationship Between Labor Market Attractiveness and Internal Migration Intensity

The results of the balance correlation analysis prove the hypothesis that the regional labor market attractiveness correlates with the interregional migration activity of the population (Table 5). Thus, the net internal migration rate in Ukraine in 2014 and 2019 had the highest level of a direct relationship with the level of economic activity of the population aged 15–70 (correlation coefficients equal to 0.856 and 0.822, respectively). There appeared a visible direct relationship between internal migration and such labor market condition indicators as employment level (0.614) and average monthly nominal wages (0.655) in 2014. Interestingly, there also appeared a visible relationship in Ukrainian regions between internal migration and employment at 15–70 (0.744) in 2019.

Table 5. Results of the analysis of the relationship between net interregional migration rate and labor market condition indicators in Ukrainian regions in 2014 and 2019

Indicators	2019				2014			
	r	R ²	t-test	p-level	r	R ²	t-test	p-level
1. Employment at 15–70	0.744	0.554	3.208	0.039	0.539	0.291	3.071	0.005
2. Unemployment at 15–70	-0.530	0.280	-2.994	0.006	-0.655	0.429	-4.157	0.000
3. Employment level	0.750	0.563	3.417	0.024	0.614	0.377	3.181	0.040
4. Dismissal level	0.404	0.163	2.120	0.045	0.554	0.307	2.258	0.078
5. Economic activity of the population aged 15–70	0.856	0.733	4.098	0.000	0.822	0.676	4.632	0.001
6. Forced part-time employment	-0.661	0.437	-2.296	0.028	-0.589	0.347	-3.496	0.002
7. Share of employed in jobs with hazardous conditions	-0.066	0.004	-0.317	0.754	-0.442	0.195	-2.364	0.027
8. Average monthly nominal wages	0.743	0.552	2.370	0.007	0.655	0.429	2.819	0.008
10. Number of unofficially employed	-0.535	0.286	-2.158	0.025	-0.480	0.230	-2.385	0.070
11. Ratio of labor remuneration to wage fund	-0.143	0.021	-0.694	0.495	-0.540	0.291	-3.073	0.005

Note: moderate relationship on the Chaddock scale is highlighted in italics; visible relationship in bold; strong relationship in italics and bold; r – correlation coefficient; R² – coefficient of determination; t-test – Student's t-test; p-level – probability of error.

Source: own elaboration based on data Annex A and Table 1 using Statistica 7.

The reverse relationship between the parameters of employment conditions and internal migration proved that some labor market development parameters did not contribute to the growing migration attractiveness of Ukrainian regions. Thus in 2019, interregional migration had a reverse relationship with forced part-time employment level (-0.661) and unemployment (-0.530), as well as the number of unofficially employed (-0.535). The same trend was present in 2014.

Empirical estimations showed that the impact of unemployment on the net internal migration rate in 2014 was negative, the same as aggravating hazardous labor conditions and growing wage arrears (formula 7):

$$\Delta InMigr_r = (65.862^*) + \frac{-121.107}{(60.634^{**})} \Delta Unempl_r - \frac{19.140}{(7.913^{**})} \Delta Condh_r - \frac{6.424}{(5.439^{**})} \Delta Salz_r, \quad (7);$$

$$R^2 = 0.651 \quad DW = 1.72 \quad p = 0.007$$

in which $Unempl_r$ was the unemployment vector in r -regions, $Condh_r$ was the share of employed in jobs with hazardous conditions vector in r -regions, $Salz_r$ was the ratio of labor remuneration to wage fund vector in r -regions, and $\Delta InMigr_r$ was the net migration rate vector in r -regions.

There was a reverse relationship between labor market indicators and internal migration at 5% statistical significance, which showed a substantial force of push factors. Interestingly, growing volumes of internal migration were the factors of reduced unemployment in Ukrainian regions. It may have indicated that unemployment and employment in 2014 were of complementary nature to migration processes, and in such a way, they mapped migration corridors with the labor-surplus regions.

Meanwhile, in 2019, the regional labor market in Ukraine was the pullfactor of internal migration, which could have caused the transformation of international migration vectors into internal ones (formula 8):

$$\Delta InMigr_r = (289.33^{**}) + \frac{-543.193}{(51.00^{**})} \Delta Recept_r + \frac{141.210}{(126.49^*)} \Delta EAP_r - \frac{167.06}{(89.57^{**})} \Delta InfEM_r, \quad (8);$$

$$R^2 = 0.692 \quad DW = 2.20 \quad p = 0.003$$

in which $Recept_r$ was the employment vector in r -regions, EAP_r was the economic activity of the population aged 15–70 vector in r -regions, and $InfEM_r$ was the informal employment vector in r -regions.

The estimated balance regression model for internal migration of the population in 2019 demonstrated the direct relationship between internal migration processes intensity, employment levels, and the population's economic activity. Growing volumes of informal employment ambiguously reduce the volumes of interregional migration because informal employment acquires the features of a virtual one, so its development can foster business migration and various forms of migration of the population.

Internal migration activity of the population in Ukraine was of urbanistic nature because the development of rural-urban area migration vectors dominated the country in the studied period. The Kyiv oblast and Kyiv city turned out to be the most attractive for life and jobs as the main centers of human resources gravitation, as well as

Kharkiv, Dnipropetrovsk, Odessa, and Lviv oblasts. The developed rankings of Ukrainian regions' attractiveness with the system of the labor market and employment development parameters allowed for the detection of the most attractive regions in the focus of internal emigration and immigration processes. The highest share of internal migration activity in the total volume of internal migration in Ukraine in 2019 was observed in Kyiv (9.44%), Kharkiv (8.66%), and Kyiv oblasts (8.56%). The attractive regional labor market, high IT market development, and growing innovative-technological capacity were the main factors of gravitation to these regions in the studied period. Luhansk, Chernivtsi, and Zakarpattia oblasts have the lowest positions in the rankings of Ukrainian regions by the share of gross migration in the total volume of internal migration.

The econometric balance modeling proved that uncontrollable internal migration processes impacted the decline in the demographic and social security of regions the most. This resulted in the depopulation of villages, the increase in the share of the retirement-age population, the regress in social and transport infrastructure, growing unemployment, and growing pressures on the pension fund and national budget.

Conclusions

The above study confirmed our research hypotheses about significant differentiations of regional migration in Ukraine caused by the divergence of regions' socioeconomic development and central-peripheral interactions. A positive balance of internal migration for 2014–2020 years was observed only in six regions of the country, while the rest was negative; the level of internal migration in the Kyiv oblast on average exceeded the average state value by about 80%, while in the Luhansk oblast it was about 70% lower; more than 30% of the population was actively involved in pendulum labor migration; among the 25 analyzed oblasts, the intensity of population arrival exceeded the average value of only six of them, and the departure of the population – of ten. Differentiations in scales and types of internal migration in Ukraine have a clear link with the parameters of a region's socioeconomic development (for example, significant immigration and internal migration are typical for the high level of socioeconomic development oblasts, and emigration is typical for an average level of development ones).

The second hypothesis regarding a high level of attractiveness of the regional labor market affected the determinant of the intensification of internal immigration, and low – emigration was checked. The high level of attractiveness of the regional labor market activates immigration, and vice versa, which is confirmed by the formed rating

of the attractiveness of regions based on a system of indicators of attractiveness of the employment sphere and the labor market of the regions of Ukraine. Certain oblasts with high and above-average levels of socioeconomic development are characterized by both immigration and emigration active.

The third hypothesis about a stable causal link between migration and the attractiveness of regional labor markets was established. The strength of the relationship between the attractiveness parameters of regional labor markets and the intensity of internal migration is significant (in 2019 only 3 factors had a weak connection), and the direction of one characterized the influence of the indicator (stimulate/destimulate) on the resulting change. This gives grounds for the conclusion that the regulation of key parameters of the functioning of the labor market and the sphere of employment will lead to changes in the scale and structural characteristics of migration. The obtained coefficients of the balance regression model made it possible to state that the key factors that most affect the migration processes in the region are the unemployment rate, the creation of new jobs, economic activity, and informal employment.

The directions of further research are to determine the empirical correlations of the impact of the attractiveness of regional labor markets in Ukraine vs abroad, as well as to improve the system of information and analytical support for studying the attractiveness of labor markets as determinants of migration potential management by indicators of social development of the region, housing and communal infrastructure, mental, cultural, and other factors. In the context of ongoing military conflict, further research on the strength of attracting internal migrants to those regions with a low level of socioeconomic development and the attractiveness of the labor market is of great importance.

Policy Recommendations

Considering the obtained results, we first have identified the high level of correlation between economic development, attractive labor market, and migration, and second – the determinants of migration in the structure of labor market and employment parameters, which has led us to the following key recommendations:

- 1) *for developing regions that need to increase human and labor resources*: the implementation of intensified immigration policy by the measures below:
 - combination of intellectual and human resource extension with structural reforms such as neoindustrialization and industry 4.0 development, expand-

- ing the scale of the digital economy, deepening smart specialization in housing and communal services, elaborating cities' and regions' infrastructure, strengthening social and household systems;
- decreasing shadow economy by improving business motivation toward legal employment, introducing systems of financial and economic monitoring of income and employment, developing non-cash payments infrastructure, preventing/increasing the risks and losses of both business entities and employees in feasible and shadow activities;
 - effective (investment) use of migration capital by promoting the use of migrant funds for business development, providing financial, organizational, and other support for doing business in priority economic activities, social entrepreneurship, and microcredit business projects of migrant workers and in rural areas, the attraction of migrant funds in the stock market (municipal bonds);
- 2) *for regions with a lower level of socioeconomic development that lose human resources*: the implementation of policies preserving human potential by the measures below:
- creation of new jobs by the development and implementation of national and regional strategies for the creation of high-paying jobs as tools to boost employment of highly skilled personnel, minimization of unofficial employment, and the reduction of the precariat;
 - elimination of imbalances in supply and demand in the labor market by the elimination of demand and supply imbalances based on national and regional surveys of employers and graduates of higher and vocational education institutions, the development of a system of preventive measures for employment management in rural areas, the improvement of the institutional framework of an inclusive labor market;
 - stimulating the development of small private businesses by the expansion of preferential and microcredit programs, the development of small business infrastructure, the stimulation of internal demand, and the improvement of the accessibility of new small businesses to resources and markets;
- 3) *for regions with a high level of internal migration and which have problems of depression and depopulation of rural and remote areas* – the implementation of a balancing spatial development policy with the measures below:
- intensification of local development agencies' activities to attract financial assets and create new places of employment in regional communities;
 - opening of industrial parks and transfer of production capacities of enterprises of the real sector of the economy from regional centers to districts;
 - development of rural infrastructure;

- budget and grant support for youth initiatives in districts, small towns, and rural areas.

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Annex A

The system of information and analytical support for the research of the attractiveness of regional labor markets in 2014 and 2019

2014										
Regions	Indicators									
	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀
Vinnitsia	56.3	10.5	25.3	28.9	62.9	11.1	19	236.40	37.6	1.4
Volyn	54.9	9.9	22.7	24.7	60.9	7.9	20	228.91	25.2	2.1
Dnipropetrovsk	60.2	8	23.7	30.5	65.5	11.6	36.1	306.31	18.4	3
Donetsk	54.2	11	18.3	37.2	60.9	16.4	46.9	324.56	15	41.6
Zhytomyr	56.1	11.5	22.1	26.3	63.4	8.7	20.8	232.44	23.5	1.7
Zakarpattia	56.4	9.2	17.6	20	62.2	8.5	17.6	230.85	49.9	0.7
Zaporizhia	58.2	8.4	22.8	28.9	63.6	17.9	34.2	288.73	22.9	3.7
Ivano-Frankivsk	53.9	8.1	18.2	20.9	58.6	10.7	19.3	241.87	52.4	1.5
Kyiv	56.9	8	26.5	33.5	61.8	7.5	23.1	293.52	15.4	8.6
Kirovohrad	54.2	11.2	24.4	28.2	61	12	19.7	234.63	22.2	5.3
Luhansk	52	11.4	20	34.9	58.7	14.4	39	284.10	20.8	67
Lviv	55.3	8.6	17	21.8	60.5	12.4	22.3	249.10	19.4	4.5
Mykolayiv	57.3	9.1	24.3	29.3	63	9.3	20.1	281.32	24.5	4.7
Odessa	56.7	6.7	26.1	32.1	60.8	8.6	20.1	263.24	30.2	1.3
Poltava	55.7	11.5	22.4	27.7	62.9	13.1	26.6	267.44	21.5	2
Rivne	57.2	10.6	19.5	23.7	64.1	7.5	28.1	255.16	48.6	1.3
Sumy	56.6	9.5	21.6	25.8	62.5	15	25.2	242.04	24.2	9.5

Ternopil	52.9	11.3	20.8	24.8	59.6	8	19.5	212.59	34.2	1.1
Kharkiv	59	7.8	21.6	28	63.9	11.8	21.9	264.41	15.8	5.3
Kherson	56.4	9.9	26.5	32.5	62.6	11	11.7	220.16	43.8	2.8
Khmelnyskyi	54.7	9.4	22.2	25.5	60.3	10.8	22.1	242.12	19.8	1.1
Cherkasy	56.3	10.2	26.7	31.1	62.8	10.4	29.7	238.00	28.5	3
Chernivtsi	55.5	9	23.7	26.8	61	8.9	18.4	216.88	51	0.8
Chernihiv	56.8	11.2	23.5	28.4	63.9	8.7	18.7	226.30	21.9	3
Kyiv	62.6	6.7	26.9	37.8	67.1	5.9	17.8	452.27	14.8	1.1
2019										
Vinnitsia	58.0	9.4	30.3	35.0	64.0	1.4	25.9	359.8	37.6	0.5
Volyn	50.9	10.6	25.5	34.5	56.9	0.8	23.3	335.2	25.2	1.7
Dnipropetrovsk	59.5	7.7	28.9	33.2	64.4	1.5	40.7	416.0	18.4	3.9
Donetsk	50.9	13.6	22.6	27.8	58.9	3.2	47.0	453.3	15.0	11.9
Zhytomyr	58.5	9.6	27.2	30.7	64.7	1.4	21.2	330.0	23.5	0.6
Zakarpattia	55.4	9.1	22.1	27.8	60.9	0.9	7.7	356.0	49.9	0.2
Zaporizhia	58.1	9.5	26.3	31.6	64.1	7.6	37.3	405.5	22.9	2.3
Ivano-Frankivsk	56.6	7.2	23.0	27.3	61.0	1.6	26.2	341.1	52.4	2.0
Kyiv	59.3	5.9	33.1	37.9	63.1	0.9	26.2	425.7	15.4	3.1
Kirovohrad	55.6	11.0	29.9	33.5	62.5	1.7	24.9	323.5	22.2	0.7
Luhansk	58.8	13.7	25.4	31.5	68.1	3.6	35.3	337.8	20.8	46.5
Lviv	57.8	6.5	25.4	28.9	61.9	1.5	27.7	358.7	19.4	2.7
Mykolayiv	59.1	9.3	27.8	31.6	65.1	1.3	22.8	386.0	24.5	1.7
Odessa	58.3	5.9	33.4	37.0	62.0	0.8	24.9	357.7	30.2	1.0
Poltava	56.6	10.6	28.5	34.1	63.3	3.5	32.5	381.0	21.5	1.6
Rivne	58.4	8.3	21.5	25.2	63.7	0.7	34.0	346.9	48.6	0.2
Sumy	59.8	7.7	24.8	30.3	64.8	2.2	26.2	331.9	34.2	17.8
Ternopil	53.8	10.0	24.2	28.2	59.8	2.6	20.7	320.2	34.2	2.0
Kharkiv	62.1	5.0	27.1	31.5	65.4	2.9	25.0	351.4	15.8	6.4
Kherson	58.9	9.6	27.3	32.6	65.2	1.7	15.3	316.8	43.8	1.6
Khmelnyskyi	57.0	8.0	26.8	31.1	61.9	3.2	30.4	335.5	19.8	0.2
Cherkasy	59.3	8.3	31.4	36.9	64.7	2.2	26.9	342.0	28.5	2.2
Chernivtsi	59.0	6.9	26.1	32.4	63.4	1.2	14.8	312.1	51.0	0.0
Chernihiv	58.9	10.2	26.0	33.1	65.6	1.4	18.4	317.5	21.9	0.8
Kyiv	63.1	5.8	32.6	35.5	67.0	0.3	23.6	610.4	14.8	0.9

Source: own elaboration based on data from the State Statistics Service of Ukraine.