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CONSERVATION OF RURAL HUMAN RESOURCES IN UKRAINE: MODELLING THE RELATIONSHIP BETWEEN MIGRATION AND ECONOMIC DEVELOPMENT

Purpose. *The article aims to identify the relationship between migration (in the context of two channels – (1) human resource outflows and (2) remittance inflow) in rural areas and the economic development; justification of measures of preserving rural human resources in rural areas in Ukraine.*

Methodology / approach. *The methodological tools of the study are the construction of lag econometric models that allow identifying the influence of migration flows on key parameters of economic development, as well as the calculation of elasticity coefficients.*

Results. *It is determined that high international migration in Ukraine, especially from territories with a lower quality of life, remote from regional centers, leads to increase human resource outflow in rural areas, which accelerates the rate of their socio-economic degradation and extinction, respectively, does not contribute to balanced spatial development. The positive impact of migration on economic development has been identified, in particular, migration contributes to improving the financial well-being of households, is an instrument for accumulating investment capital and savings, developing small businesses, and enhancing financial inclusion. It is proved that to preserve the human resources of rural areas in Ukraine, it is necessary to implement a proactive policy aimed at balancing the labour market of communities, simplifying the principles of conducting and reducing the risks of small business, increasing the young re-emigration, improving investment capital, increasing the competitiveness of the educational sphere at the local level.*

Originality / scientific novelty. *A new scientific and methodological approach to assessing the dependence of the parameters of development of rural areas on migration processes due to two channels – human resources and remittance has been developed, complementary analysis of which makes it possible to identify the complex impact of migration on the socio-economic development of territories, optimal and critical volumes of migration according to various structural characteristics, migration gaps in the development of the economic system and social spheres of rural areas depending on the level of migration activity and the effectiveness of using the potential of remittance.*

Practical value / implications. *The practical significance of the research results lies in the development of tools for forecasting and planning the state policy of preserving human resources of rural areas in Ukraine, depending on migration aspirations and the purposefulness of remittance.*

Key words: *rural areas, human resources, migration, linkages, economic development, remittance, lags, modelling.*

Introduction and review of literature. International migration is an ambiguous process that has both positive and negative consequences and acts as an optimum for the development of donor countries and recipient countries of human resources. Minimization of negative consequences, risks, and threats of migration as well as the use of migration potential to accelerate the pace of economic growth and strengthen national security depends on the effectiveness of methods' migration regulation. The effectiveness of migration management mechanisms depends on the information and analytical support of migration policy the timely identification of the character and direction of the impact of human resources outflow and remittance inflows to the indicators of economic and social development, as well as the specifics of the impact of migration on economic growth in different time lags.

Considering the volume and stability of remittance to the economy of Ukraine, as well as their countercyclical nature in conditions of economic shocks, the development of the migration capital market in Ukraine depends on the effectiveness of the implementation of special instruments for regulating transfers. It is monitoring remittance, developing electronic retail payment systems, reducing transaction costs for money transfers, ensuring wide access of migrants to the financial system, stimulating the effective use of remittance. Thus, monitoring, including forecasting of migrant remittance receipts, will allow forming an information and analytical database on the volumes, corridors and channels of remittance, their nature (for example, cyclicity), as well as the causality of interrelations of migrants' cash receipts and levels of poverty, social inequality, economic growth of territories. At the same time, digital transformations in the system of payment transactions require the development of new electronic platforms and the formation of new measures of remittance, for example, to payment cards, mobile phone bills or online accounts.

The deepening digitalization of the economy and the widespread use of digitalization processes in the financial system, the diffusion of innovations in the banking sector and business are drivers of the development of the migration capital market, which complementarily requires appropriate amendments to the regulations on labor migration management, in particular the development of financial inclusion among migrants. It should be emphasized that the practice of developing virtual migration transfer platforms is widespread in those countries that donate human resources (for example, M-Pesa – mobile money transfer technology in Kenya, Zain Zap, Banglalink – international online money transfer platform within migration corridors UK – Kenya, Bangladesh – India).

Numerous studies in the field of migration research, especially at the beginning of 21st century, provided the formation of a significant theoretical and methodological basis for the laws of causes, factors of activation, consequences of the influence of migration on both economic and social development. In particular, in terms of human resources outflow, the subject of analysis as often as possible (in addition to traditional changes in the labour-resource provision of the economy) is the impact on economic growth and human development (Akanbi, 2017), the pace of macroeconomic indicators (Andersson & Siegel, 2021), mobility and labour productivity (Levytska et al., 2022;

Semiv et al., 2021), changes in the qualification of the workforce and the growth of entrepreneurial capital (Batista, et al., 2017), the formation of civil society and the elimination of corruption, barriers to business (Baudassé et al., 2018), improved the general institutional environment (Beine & Sekkat, 2013; Zghidi et al., 2018).

Remittances make a significant contribution to the socio-economic development of the donor country. In the studies on this issue, a methodology for analyzing the scale and structure of remittances has been developed, conclusions have been drawn for policy regarding their stimulation, control, transparency, and direction in the investment direction. In the economic literature, the impact of migration on socio-economic development is most often assessed through the potential of remittances with the study of the consequences of their impact on poverty and inequality (Acosta et al., 2008), smoothing out development differentiation and disparities in territorial and socio-class aspects (Alpaslan, 2021), intensification of private-public factors to strengthen the competitiveness of the national economy (Cruz Zuniga, 2011), overcoming obstacles to increasing business activity (Dastidar, 2017), investment in private business (Voznyak et al., 2022).

Remittances have a direct impact on improving the financial and material condition of households in the donor country, but also lead to inflationary effects, provided that a high proportion of remittances are spent on consumption (Jawaid & Raza, 2014), and the impact of migration on social development and human capital can be measured by indicators of the volume and share of the cost of social reproduction of migrants (Konte, 2018). At the same time, other researchers argue for the feasibility of considering the impact of remittances on household incomes and investments (Adams & Cuecuecha, 2010), income, expenditure and savings (Bang et al., 2016; Přívara & Trnovský, 2021), differentiations in income and quality of life (Shahbaz et al., 2014), accumulation and distribution of wealth, including in less economically developed areas (Garip, 2014; Voznyak et al., 2019), instability of household consumption in developing countries (Mondal & Khanam, 2018). High values of these indicators at the same time demonstrate a significant dependence of the national economy on the inflow of remittances.

Investigating the processes and character of the impact of migration on economic development, the focus is mostly on the consequences manifested in the form of internal and international investment processes (Baldé, 2011), foreign direct investment, which serves as factors for enhancing economic growth and ensure the increase in national income, including value added (Brown et al., 2013), GDP dynamics (Cooray, 2012) and its long-term stability, strengthening the country's financial system in general (Kumar et al., 2018) and improving the capabilities of its monetary sphere in particular (Issahaku et al., 2016). At the same time, the influence of migration processes on narrower aspects of economic development (Lupak et al., 2022), including those related to innovation and technological activity, especially in less technological economies (Hübler, 2016), no less relevant is the connection of research activities with production, the development of small business, the socialization of economic relations, the de-shadowing of the economy, especially small

and medium-sized businesses (Sheehan & Riosmena, 2013). According to the research results, when modelling the relationship between the parameters of migration and economic growth, it is particularly from the point of view of regulating the development of the domestic market, import substitution, etc., to consider changes in trade openness (Coulibaly et al., 2018), foreign trade, including in terms of foreign economic and food security (Ogunniyi et al., 2021), stabilization of the processes of functioning of the internal market (Clemens et al., 2014), intensification of foreign trade relations (Hassan et al., 2016; Ruxho & Ladias, 2022). A thorough generalization of the results of these and other studies gives grounds for including in the system for assessing the impact of migration on the economic growth of such main indicators as GDP and value-added, foreign, and capital direct investments, the number of small business entities, the volume of internal trade and foreign trade, innovation, and technological activity of enterprises.

In forming a methodology for modelling the impact of migration on social development, as shown by the achievements of researchers on migration problems, it is important to focus on such parameters as employment and unemployment, economic activity, wage, purchasing power of households, and inflationary processes. The strength of migration's influence on the social system can be significant and indirect, and the nature of the impact can be both direct (favourable) and reverse (unfavourable). Migration as a negative phenomenon affects the labour potential, creates threats, and violates the stability of the intellectual and personnel security of the country (Voznyak et al., 2021). At the same time, as a positive phenomenon, it contributes to the growth of household incomes, and the establishment of a balance of the labour market, as there is a fall in unemployment, as well as a decrease in poverty and an increase in the solvency due to remittance intensifying.

Further development of methodological and applied principles for analyzing the link between migration and the social and labour spheres is based on the results of studies characterizing the impact, firstly, of remittances on the labour's demand and supply, human capital (Azizi, 2018; Vasyltsiv et al., 2022), shifts in the levels and structure of poverty and inequality (Voznyak et al., 2023), intellectual personnel outflow and, secondly, the human resources outflow for changes in the structure of intellectual and human resources and economic activity (Chauvet et al., 2013; Ilyash, 2021), employment and income of non-immigrants (Hausmann & Nedelkoska, 2018), in the exchange of experience and knowledge, as well as the formation of business skills and as a result in the dynamics of parameters of inter-regional socio-economic development.

The formation of systemic management decisions regarding the regulation of migration to ensure economic growth and structurally balanced development of the socio-economic system requires a more detailed study, using econometric analysis methods. Migration is a social and economic phenomenon that affects the level of official employment of working-age people, disposable income, capital investments and gross value added, the level of conservation of human resources, etc. Remittances as financial determinants of migration processes determine the quality and standards

of living. Intensive migration flows, which are a combination of migration of human resources, goods, services, remittances, investments, business, and intellectual property, have a causal relationship with the demographic situation, the labour market, capital and credit, intellectual property, and entrepreneurship. At the same time, migration processes have an ambiguous impact on socio-economic development, including on the well-being of households, and the economic growth of communities.

The scientific discourse presents various methods of analyzing the impact of migration on the parameters of the progress of the national economy, social reproduction, and social stability, which differ both in the forms and types of migration and in the countries of destination or origin. However, the methodology for analyzing the consequences of the human resources outflow, and the growth of international remittances for economic growth needs further improvement, considering changes in the dynamic social and economic environment, innovative progress, and transformations of the priority of meeting the people's needs.

Therefore, it actualizes the study "migration – remittances – economic growth" considering the multi-weight and nonlinear influence of the migration factor on the parameters of development of the social sphere and the economic system.

Research hypothesis: The social and economic development of Ukraine in general and rural economic progress in particular have a complementary link with the migration processes due to two channels – (1) human resources outflow makes it impossible to revive rural areas, (2) remittance is the measures of economic growth and increase of investment potential of territories.

The purpose of the article is identification of the linkages between migration (in the context of two channels – (1) human resource outflows and (2) remittance inflow) in rural areas and the economic development; justification of measures of preserving rural human resources in rural areas in Ukraine.

Methodology. The empirical indicators of migration in Ukraine are the number of arrivals, departures, and balances of international migration, which demonstrate a demographic change because of differences in the place of registration. In Ukraine, there is no statistical accounting of internal migration "village-city", special sample surveys of the population on pendulum and stationary migration within the migration vector "rural-urban areas" are not conducted. The introduction of such studies into practice on an ongoing basis (within the framework of national and regional surveys) will contribute to the creation of an information base on internal labour migration, and socio-demographic characteristics of migration flows, which will effectively form and implement migration management policies and develop mechanisms for balancing regional labour markets. Such surveys can serve as an informational and analytical basis for the formation and development of a system of regional monitoring of labour migration processes in Ukraine. In particular, the available statistical information on the number of departures and arrivals by type of settlements does not allow a comprehensive analysis of the structural and dynamic characteristics of the migration corridor "rural-urban territory", therefore, forms a methodological gap in the process of identifying the impact on the security of the national economy.

The scale of migration flows "rural areas-urban areas" can be calculated using the equation (1):

$$Migr_t^{r-u} = MigrInf_t - MigrOutF_t - \sum FMigr_t, \qquad (1)$$

where $Migr_t^{r-u}$ is the volume of migration flow "rural areas-urban areas" in the t-period of time; $MigrInf_t$ is the total number of arrivals in urban areas in the *t*-period of time; $MigrOutF_t$ is the total number of departures from rural areas in the *t*-period of time; $FMigr_t$ is the total number of those who went abroad from rural and urban areas in the *t*-period of time.

The proposed equation allows calculating the volumes of stationary migration from rural to urban areas in Ukraine in dynamics, in intraregional and interregional contexts.

The remittances inflow intensity is calculated as a ratio of the value of remittances through formal and informal channels to the number of people in the country (equation 2):

$$TRANSF_t = \frac{\sum Transf_t^i}{NP_t^{ua}}, \qquad (2)$$

where $TRANSF_t$ is remittances inflow intensity in the *t* period; $Transf_t^i$ is the value of remittances by *i* transfer channels in the *t* period.

The construction of an empirical indicator of external migration from rural areas involves a variable weighting of the share of the rural population in the total population (equation 3):

$$Migr_t^r = \sqrt{\frac{QY_t^r}{QG_t^g}} \cdot M_t^g, \qquad (3)$$

where $Migr_t^r$ is the volume of migration from rural areas in the t-time interval; QY_t^r is the number of rural population in the t-time interval; QG_t^g is the total number of available population in the *t*-time interval; M_t^g is the volume of international migration in the t-time interval.

To identify the impact of the migration factor on the economic growth, the indicators of the development of the social sphere and the economic system preliminarily logarithmization was carried out. It's allowed to interpret the results of creating regression models as a percentage. Thus, the impact of migration on the variables of social and economic development with the consideration of the international migration intensity in the previous periods can be demonstrated based on the *Autoregressive Distributed Lag* (4)–(5):

$$SED_t^j = a + b_1 MIGR_{t-p} + u_t, \qquad (4)$$

$$SED_t^j = a + b_1 TRANSF_{t-p} + u_t, \qquad (5)$$

where SED_t^j is the *j-th* of social and economic development indicators in the *t*-period; *p* is the lag period; $MIGR_t$ is international migration intensity in the *t* period; $TRANSF_t$ is volumes of remittances in the *t* period.

The impact of international migration on the consumer price index and retail trade

of the host country can be explained based on the *Sinusoidal Model* (6)–(7):

$$CPI_t = a + bcos(cMIGR_t + d), \qquad (6)$$
$$UNITS_t = a + bcos(cMIGR_t + d), \qquad (7)$$

where CPI_t is consumer price index in the t period; $UNITS_t$ is the volume of small business entities in the t period.

The impact of remittances on some indicators of economic development of the donor country can be explained based on the *Sinusoidal Model* (8)–(9):

$$FPI_t = a + bcos(cTRANSF_t + d), \qquad (8)$$
$$RETAIL_t = a + bcos(cMIGR_t + d), \qquad (9)$$

where FPI_t is the level of the capital investment in the human resources' host country in the t period; $RETAIL_t$ is the volumes of retail trade in t period.

The impact of remittances on the gross value added of the host country can be explained based on the *Rational Model* (10):

$$GVD_t = \frac{a + bTRANSF_t}{1 + cTRANSF_t + dTRANSF_t^2}, \qquad (10)$$

where GVD_t is gross value added in the t period.

To test the model for statistical significance (statistical hypothesis), the coefficients of determination (R^2) and Durbin Watson (DW) are calculated. The obtained results are within acceptable limits.

Results and discussion. The current socio-economic situation in Ukraine and the attractive policy of attracting immigrants by EU countries in the context of an ageing population and a decrease in the volume of labour, including the strengthening of problems of demographic reproduction, contribute to the intensification of international labour, educational, academic, stationary migration, youth migration, especially from rural and border areas of Ukraine. International migration in Ukraine is a driver for structuring the economic system, transforming cultural values, and redistributing human capital, as well as personal values, changing the reproductive behaviour of the population and increasing disproportions in the sex and age structure of the inhabitants of the territories. Current trends in international migration are threats to weaken the national and economic security of Ukraine. There is a negative impact of migration on the development of labour potential, production and marketing, ensuring intellectual and personnel security, the competitiveness of scientific, educational and innovation and technological activities of the country.

Urbanization processes are one of the main causes of migration in Ukraine; are associated with an increase in the concentration of wealth in large cities and urban centres, while the divergence of "village-city" in income, wages and employment opportunities increased with a certain cyclical nature. Financial and socio-economic deprivation in rural areas, low level of social security, development of informal employment, and formation of precariat with low wages are the main push factors in the formation and development of the migration vector "rural area (village, urban-type settlement)-urban area". Such a migration corridor is characterized by the most active population in the age qualification (17–60 years), whose main aspirations are

guaranteed stable high-paying employment, education and advanced training, the desire to be a consumer of developed infrastructure and the system of social services.

In form and terms, the village-city migration vectors lose signs of seasonal or pendulum, they acquire signs of irreversible stationary movements to urban areas. Thus, the development of the migration vector "urban area-administrative centre, capital" is caused by the large capacity and variety of vacancies in the labour markets of large cities, as well as their attractiveness based on high wages and professional development opportunities for internal migrants. These Migration vectors reflect global urbanization trends. It should be emphasized that the developed transport infrastructure contributes to the development of pendulum migration, and its lack of – stationary development.

The share of migration flows from rural areas in the total volume of migration processes for 2003–2021 was not less than 37 %. In 2013, there was a "peak" period of migration within the "village-city" (about 309 thousand persons) (Figure 1). Stationary migration to the city was the smallest in 2017, due to the deepening socio-economic crisis in Ukraine, as well as in 2020 – the spread of the Covid-19 pandemic. It is noteworthy that in 2020–2021. Under quarantine restrictions, temporary migration corridors "urban area-countryside" were formed.
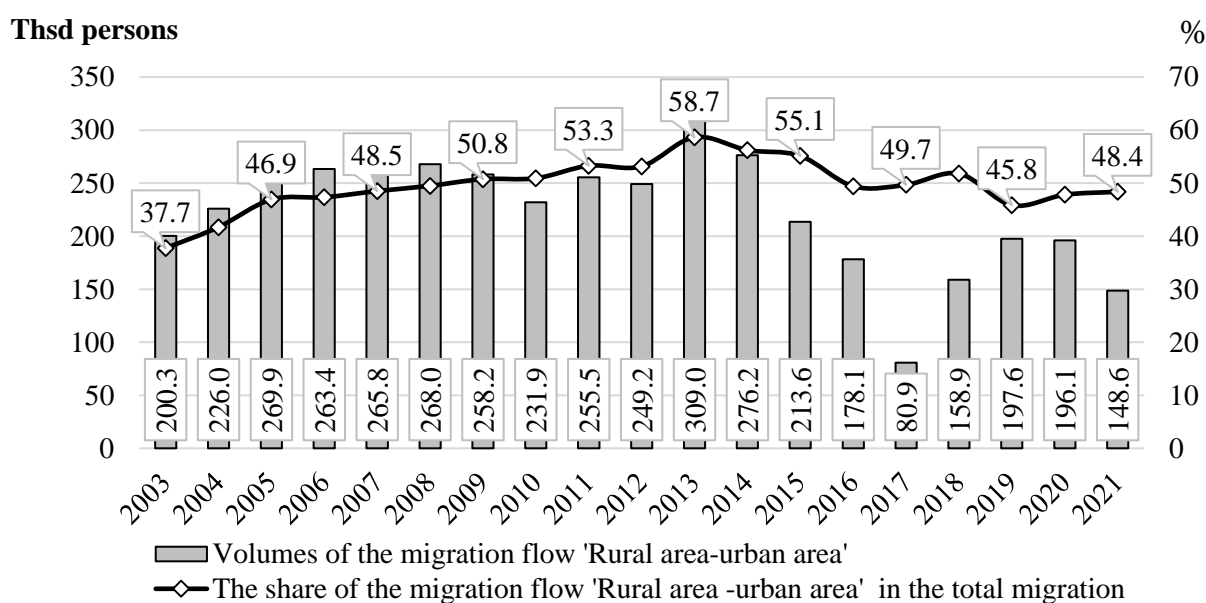
Figure 1. The scale of migration flow "rural-urban areas" in Ukraine, 2003–2021

Note. 2014–2021 – excluding the temporarily occupied territory of the Autonomous Republic of Crimea and part of the temporarily occupied territories in Donetsk and Luhansk regions.

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

The dynamics of general migration processes from urban areas prevail in the ratio of 7:3 to migration processes from rural areas. Thus, the number of departures from urban areas in 2021 amounted to more than 286 thousand persons, and from rural – 139 thousand persons. Migration growth in urban areas indicates the attractiveness of the territory for migrants since only in 2016 the balance of migration flows was negative and amounted to -8.04 thousand persons. Instead, the balance of migration in rural areas during 2005–2020 remained negative (except for 2016). At the same time, 116.4 people left rural Ukraine in 2021 per 10 thousand people available population

abroad (Figure 2), which is 57.5 people more than in 2016. The largest migration from rural areas of Ukraine is observed from border regions, namely Lviv, Ivano-Frankivsk and Zakarpattia, Mykolaiv, Odessa (Table 1).
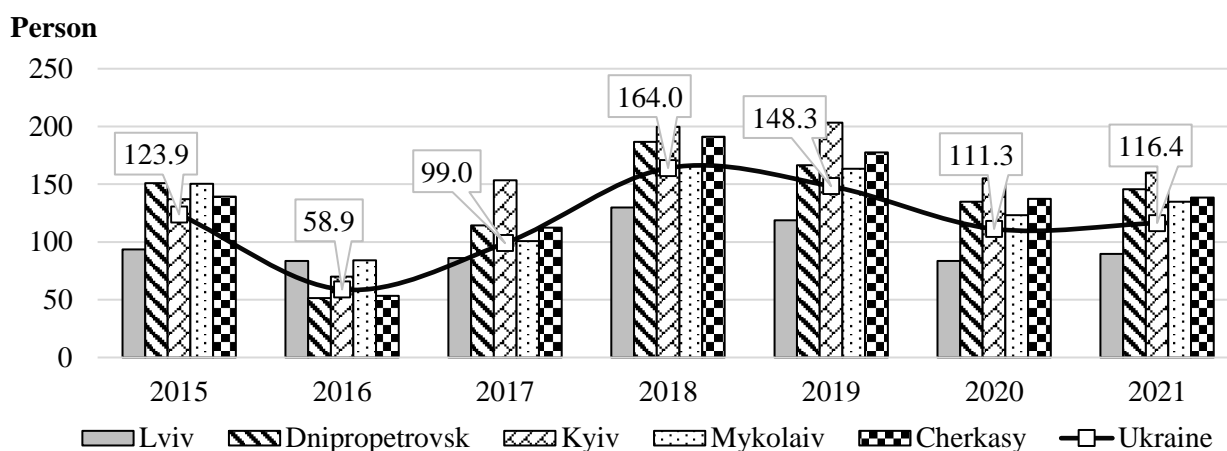
Figure 2. The intensity of rural international migration of Ukraine, 2015–2021

Note. Per 10 thousand people of the existing rural population.
Source: based on data from the State Statistics Service of Ukraine.

Table 1

Total coefficient of rural migration in Ukraine: regional aspect

Regions	Period						
	2015	2016	2017	2018	2019	2020	2021
Vinnytsia	143.8	42.2	71.0	149.8	148.5	106.5	114.1
Volyn	134	45.3	76.0	146.5	142.4	100.8	99.7
Dnipropetrovsk	150.9	51.5	114.3	186.7	166.5	134.8	145.8
Donetsk	154.7	94.8	119.9	188.4	184.9	147.7	155.8
Zhytomyr	43.2	21.3	37.0	52.0	47.7	35.8	38.0
Zakarpattia	131.4	34.8	74.0	159.8	147.3	121.4	115.5
Zaporizhzhia	95.7	53.6	84.6	125.8	96.7	75.3	78.6
Ivano-Frankivsk	137.2	69.9	153.4	199.6	203.4	155.0	160.2
Kyiv	170.7	89.8	151.8	205.6	201.5	157.9	147
Kirovohrad	93.7	83.5	86.2	129.9	118.9	83.6	89.6
Lviv	150.4	84.1	100.9	165.6	163.5	123.2	134.8
Luhansk	87.7	57.5	91.9	138.2	134.6	102.8	110.9
Mykolaiv	159.2	92.8	149.5	236.8	199.1	146.6	154.1
Odessa	130.1	50.8	116.1	171.7	150.3	110.4	112.5
Poltava	185.2	138.1	174.0	251.0	211.0	158.4	167.4
Rivne	104.7	36.0	70.9	196.9	140.3	95.0	102.4
Sumy	136.6	63.4	181.1	215.4	188.9	157.1	173.6
Ternopil	114.4	35.7	74.1	138.9	141.6	102.2	102.8
Kharkiv	159.8	45.4	76.1	227.8	185.4	130.7	136.3
Kherson	139.3	53.4	112.4	191.0	177.6	137.3	138.4
Khmelnytskyi	81.9	26.5	44.2	90.5	85.7	56.5	59.9
Cherkasy	163.3	73.3	106.6	196.1	172.6	134.3	146.4

Note. Per 10 thousand people of the existing rural population; Donetsk and Luhansk regions are removed from the list due to lack of data.
Source: based on data from the State Statistics Service of Ukraine.

It should be noted that the volume of international migration from rural areas in these regions for 2016–2021 doubled. The full-scale war and socio-economic crisis have led to the depopulation of villages, and, consequently, their "extinction", as well as overloading of social infrastructure in large cities, which causes increased pressure on the local budget. Migration of youth from rural areas is the reason for the decline in the birth rate in this area, the devaluation of school education, the lack of staffing for the development of the agricultural sector and the agro-industrial complex.

Impact of rural migration on economic progress. The major priorities of economic development of rural areas in Ukraine include structural reforms, e.g. infrastructure development, development of the land market, modernization and technological reequipment of industrial enterprises, development of a network of innovative enterprises and intellectual property market, as well as fall in the impact of social and economic problems on the resilience of systems. The existing mechanism of structural reforms support and thus the ensuring socio-economic development in Ukraine is permanent and forced. It has been framed and adjusted based on the concept of public regulation of the national economy. At the current development stage in conditions of globalization, it is kind of a progress limiting tool. Therefore, a new governmental mechanism should comply with modern spatial development and mobility trends it should follow the international migration trends and the impact of social and monetary remittances, which are the integral elements of the country's sustainable development. Empirical estimations show that the impact of migration on the condition of the labour market and employment in the short run is quite favourable, including unemployment (equation 11). However, there is a reverse impact of human resources outflow on unemployment in the second time lag at 5 % statistical significance.

$$UNEMPL_t = \underset{(0.309^{**})}{0.750} - \underset{(0.099^{*})}{0.017MIGR_t} + \underset{(0.109^{**})}{0.307MIGR_{t-1}} - \underset{(0.093^{**})}{0.257MIGR_{t-2}}, \qquad (11)$$
$$R^2 = 0.798 \quad DW = 1.92.$$

Compared to human capital outflow, remittances do not impact the workforce significantly in several time lags simultaneously (equations 12–14). Remittances boost unemployment by 0.31 % because they can be the destimulators of the search for jobs for family members of labour migrants.

$$UNEMPL_t = \underset{(0.289^{***})}{0.701} - \underset{(0.203^{*})}{0.310TRANSF_t} + \underset{(0.298^{***})}{0.898UNEMPL_{t-1}}, \qquad (12)$$
$$R^2 = 0.686 \quad DW = 2.07.$$

It is essential that migration and remittances have an inert impact on the volume of economically active population because they determine the dynamics of workforce volumes in the previous period at 0.61 % and 0.88 %, respectively. Therefore, there are no grounds to argue that migration processes have a direct impact on the economic activity rate.

$$EAR_t = \underset{(0.413^{*})}{0.695} - \underset{(0.004^{*})}{0.012MIGR_t} + \underset{(0.232^{**})}{0.612EAR_{t-1}}, \qquad (13)$$
$$R^2 = 0.681 \quad DW = 1.92.$$

$$EAR_t = \frac{0.388}{(0.548^*)} + \frac{0.019 TRANSF_t}{(0.023^*)} + \frac{0.882 EAR_{t-1}}{(0.289^{**})}, \quad (14)$$
$$R^2 = 0.638 \quad DW = 2.44.$$

Empirical estimations demonstrate that the increase in nominal wages (equations 15–16) can be expected from growing volumes of international migration and remittances because the labour market will face the lack of workforce supply, while its consequences can be minimized due to labour remuneration increase.

$$WAGE_t = \frac{1.237}{(0.703^*)} + \frac{0.072 MIGR_t}{(0.086^*)} + \frac{0.700 WAGE_{t-1}}{(0.840^*)}, \quad (15)$$
$$R^2 = 0.617 \quad DW = 2.17.$$

$$WAGE_t = \frac{0.061}{(0.677^*)} + \frac{0.474 TRANSF_t}{(0.272^{**})} + \frac{0.640 WAGE_{t-1}}{(0.198^{***})}, \quad (16)$$
$$R^2 = 0.742 \quad DW = 2.47.$$

Migration has an indirect impact on the consumer price index that is described by a sinusoidal model (equation 17). The dependence shows the cyclical relationship between migration and inflation processes because the human resources outflow multiplicatively impacts the price growth. Interestingly, the impact of remittances on the consumer price index is insignificant.

$$CPI_t = \frac{2.047}{(0.011^*)} + \frac{0.039 cos}{(0.0180^*)} \left(\frac{11.592 MIGR_t}{(0.732^*)} - \frac{0.038}{(0.735^*)} \right), \quad (17)$$
$$R^2 = 0.821 \quad AICC = -98.233.$$

Migration in Ukraine favourably impacts financial wellbeing of households and remains to be an efficient mechanism to increase the savings, which is confirmed by the results of the lag modelling (Table 2).

Table 2

Relationship between migration and quality of life in rural areas in Ukraine; income and food expenditures, 2005–2021

Indicators	Econometric models	Impact	Elasticity coefficient
Income	$INCOME_t = \frac{1.572}{(0.851^{**})} + \frac{0.031 MIGR_t}{(0.079^*)} + \frac{0.537 INCOME_{t-1}}{(0.255^{**})}$ $R^2 = 0.692 \quad DW = 2.06$	0.830	1.97
	$INCOME_t = \frac{1.152}{(0.879^*)} + \frac{0.577 TRANSF_{t-1}}{(0.306^*)}$ $R^2 = 0.778 \quad DW = 1.89$	0.872	3.21
Food expenditures	$EXPENS_t = \frac{0.576}{(0.751^*)} - \frac{0.016 MIGR_t}{(0.010^*)} + \frac{0.653 EXPENS_{t-1}}{(0.265^{**})}$ $R^2 = 0.757 \quad DW = 1.57$	0.868	-2.70
	$EXPENS_t = \frac{0.020}{(0.306^*)} - \frac{0.073 TRANSF_t}{(0.013^{***})} - \frac{0.108 TRANSF_{t-1}}{(0.013^{***})} + \frac{0.102 TRANSF_{t-2}}{(0.025^{***})} + \frac{0.071 TRANSF_{t-7}}{(0.013^{***})}$ $R^2 = 0.992 \quad DW = 1.57$	0.996	-7.85

Source: authors' complication.

The intensification of migration processes in Ukraine determines the growth of disposable income through outflow of human resources and remittances, which is confirmed by the coefficient of determination (69.2 % and 77.8 % accordingly). The growing of human resource outflow and international remittances inflow by 1 % increases disposable income by 0.031 % and 0.58 %, respectively.

The human resources outflow increases foreign direct investment in Ukraine in a four-year time lag (coefficient of determination is 92.9 %). Meanwhile, the impact of remittances on foreign direct investment is unfavourable because remittances as investment capital eliminate the significance of the foreign investment for the development of the national economy, which often depends on migration. The inert dependence of direct investment on the dynamics of investment activity in the previous period and simultaneous inflow of remittances is quite interesting (equation 18–19).

$$FDI_t = \frac{5.314}{(0.548^{**})} - \frac{0.915 MIGR_{t-1}}{(0.389^{**})} + \frac{0.578 MIGR_{t-5}}{(0.155^{**})} + \frac{0.558 MIGR_{t-3}}{(0.115^{*})} + \frac{0.197 MIGR_{t-4}}{(0.096^{*})}, \quad (18)$$
$$R^5 = 0.929 \qquad DW = 2.45.$$

$$FDI_t = \frac{1.551}{(0.574^{***})} - \frac{0.155 TRANSF_t}{(0.147^{*})} + \frac{0.667 FDI_{t-1}}{(0.057^{***})}, \quad (19)$$
$$R^5 = 0.956 \qquad DW = 1.53.$$

Labour migrants are among the key participants of the market of capital as they direct their funds at the purchase of the real estate, securities, construction, capital repairs, and deposits. Naturally, empirical estimations confirm the favourable relationship between migration processes and capital investment in Ukraine at 68.0 % for migration and 82.5 % − for remittance (equations 20–21). It is worth mentioning that the impact on investment activity is of cyclical nature considering the volumes of foreign direct investment and remittances.

$$FPI_t = \frac{1.312}{(0.666^{**})} + \frac{0.116 MIGR_t}{(0.310^{*})} + \frac{0.686 MIGR_{t-1}}{(0.338^{**})} + \frac{0.655 MIGR_{t-2}}{(0.266^{**})}, \quad (20)$$
$$R^2 = 0.680 \qquad DW = 1.95.$$

$$FPI_t = \frac{2.606}{(0.023^{*})} + \frac{0.141 cos}{(0.033^{*})} \left(\frac{33.309 TRANSF_t}{(3.241^{*})} - \frac{16.666}{(5.541^{*})} \right), \quad (21)$$
$$R^2 = 0.825 \qquad AICC = -60.610.$$

The estimated regression model for the country's GDP shows a significant direct impact of remittances and the reverse impact of human resources outflow on the country's economic development with a one-year lag (equations 22–23). The development of the economic system in conditions of international migration intensification seems to be inert and its rate in the current year is determined by the previous dynamics by 90 %.

$$GDP_t = \frac{1.674}{(0.963^{*})} - \frac{0.412 MIGR_{t-1}}{(0.218^{**})} + \frac{0.392 MIGR_{t-2}}{(0.166^{**})} + \frac{0.616 GDP_{t-1}}{(0.279^{*})}, \quad (22)$$
$$R^2 = 0.706 \qquad DW = 1.87.$$

$$GDP_t = \frac{0.999}{(0.908^*)} + \frac{0.368 TRANSF_t}{(0.236^*)} + \frac{0.627 TRANSF_{t-1}}{(0.220^{**})}, \qquad (23)$$
$$R^2 = 0.684 \quad DW = 1.62.$$

It is worth mentioning the impact of migration processes on the innovative system of the country that is verified by statistical calculations, e.g. migration fosters innovation and technology transfer by 68.7 % and remittances – by 96.2 % (equations 24–25). By acquiring new knowledge, experience, and qualification, labour and educational migrants boost the spread of social transfers. Their implementation in the social system increases the efficiency of innovative activity and thus contributes to the increase of innovative-technological competitiveness of the country. Remittances such as investment in innovations, R&D, science, and education generate the value added in hi-tech industries and increase the level of research commercialization and technology transfer.

$$INRATE_t = \frac{0.889}{(0.393^{**})} + \frac{0.095 MIGR_t}{(0.077^*)} + \frac{0.270 INRATE_{t-1}}{(0.311^*)}, \qquad (24)$$
$$R^2 = 0.687 \quad DW = 2.01.$$

$$INRATE_t = \frac{0.967}{(0.176^{**})} + \frac{0.763 TRANSF_t}{(0.066^{***})} + \frac{0.257 TRANSF_{t-1}}{(0.102^{**})} + \frac{0.386 TRANSF_{t-2}}{(0.062^{***})} +$$
$$+ \frac{0.179 TRANSF_{t-3}}{(0.081^{**})} - \frac{0.315 TRANSF_{t-7}}{(0.069^{**})} \qquad (25)$$
$$R^2 = 0.962 \quad DW = 2.02.$$

The reverse impact of migration at the level of 0.422 % on value added is observed in a one-year time lag (equation 26). The sigmoidal impact on value added is detected for remittances (equation 27). Since monetary remittances are an unstable and unsystematic investment in the country's economy, they cannot secure the consistent economic effect for the Ukrainian industry.

$$GVA_t = \frac{1.518}{(0.952^*)} - \frac{0.422 MIGR_{t-1}}{(0.241^*)} - \frac{0.392 MIGR_{t-2}}{(0.183^{**})} + \frac{0.519 GVA_{t-1}}{(0.285^*)}, \qquad (26)$$
$$R^2 = 0.535 \quad DW = 2.15.$$

$$GVA_t = \frac{\frac{3.645}{(1.326^*)} - \frac{1.865 TRANSF_t}{(0.669^*)}}{1 - \frac{0.519 TRANSF_t}{(0.266^*)} - \frac{0.016 TRANSF_t^2}{(0.135^*)}}, \qquad (27)$$
$$R^2 = 0.754 \quad AICC = -65.967.$$

Modelling the dependence of the number of small business entities on migration shows the sinusoidal nature with significant impact (0.969 by the Chaddock scale). Meanwhile, the impact of remittances on the number of small business entities is not detected. Interestingly, the volumes of retail turnover will probably increase by 0.38 % at the growing remittances but they will decline by 0.42 % at the intensification of human resources migration (Table 3).

The impact of migration processes on foreign trade is open to interpretation as

there is a favourable impact of migration with the two-year time lag but unfavourable one with the four-year lag. Meanwhile, the impact of remittances on foreign trade in Ukraine is favourable at 10 % statistical significance in the current dynamics and 5 % for one-year-run lag.

Table 3

Relationship between rural migration and economic development parameters, Ukraine, 2005–2021

Areas	Econometric models	Impact	Elasticity coefficient
Small business	$UNITS_t = \dfrac{-0.911}{(0.094^*)} + \dfrac{0.447cos}{(0.124^*)} \left(\dfrac{71.919MIGR_t}{(11.317^*)} - \dfrac{61.261}{(21.222^*)} \right)$ $R^2 = 0.774 \quad AICC = -33.604$	0.969	+1.36
Retail trade	$RETAIL_t = \dfrac{1.904}{(0.702^{**})} - \dfrac{1.409MIGR_t}{(0.796^{**})} - \dfrac{0.776MIGR_{t-2}}{(0.211^{**})}$ $R^2 = 0.922 \quad DW = 2.11$	0.907	-0.42
	$RETAIL_t = \dfrac{2.729}{(0.033^*)} + \dfrac{0.070cos}{(0.049^*)} \left(\dfrac{21.740TRANSF_t}{(9.092^*)} - \dfrac{16.791}{(13.777^*)} \right)$ $R^2 = 0.621 \quad AICC = -79.073$	0.649	+0.38
Foreign trade	$FEA_t = \dfrac{0.799}{(1.771)} + \dfrac{0.676MIGR_{t-2}}{(0.219^{**})} - \dfrac{0.341MIGR_{t-4}}{(0.222^*)}$ $R^2 = 0.920 \quad DW = 1.92$	0.906	+0.45
	$FEA_t = \dfrac{1.679}{(0.999^{**})} + \dfrac{0.199TRANSF_t}{(0.276^*)} + \dfrac{0.402FEA_{t-1}}{(0.219^{**})}$ $R^2 = 0.770 \quad DW = 1.97$	0.966	+0.10

Source: authors' complication.

The research on migration and its impact on social and economic development from the perspective of the country-donor of human resources and recipient of remittances mostly relies on the methods of indicative economic analysis and econometric modelling of the link between migration and economic growth (Vasyltsiv et al., 2022; Lupak et al., 2022; Ilyash et al., 2021). The research results confirm the causality between migration and social and economic development – the structural balancing of the labour market (equalization of supply and demand) (Levytska et al., 2022; Semiv et al., 2021; Clemens et al., 2014), improvement of households' material and financial situation, development of the domestic consumer market (Batista et al., 2017; Baldé, 2011; Garip, 2014) increase in the investment capacity of economic sectors through capital investments in the form of remittances (Issahaku et al., 2016; Konte, 2018; Přívara & Trnovský, 2021; Ruxho & Ladias, 2022). The results of the assessment of the causality between migration and the socio-economic development of Ukraine made it possible to identify a Granger-causality relationship in four lags. In the short-term, the lag of international migration and unemployment is closely related, in turn the causal relationship was determined between remittances and such indicators as average monthly nominal wage, the consumer price index, and the share of total household spending on food. In other lags there is a causal relationship between migration and disposable income, remittances and total expenditure, as well as the

consumer price index. The connection between remittances with capital investments, the number of small enterprises and the share of those business entities that carry out innovative activities has been identified. Remittances are beneficial for the capital market and economic growth in Ukraine as a whole.

Measures of conservation of rural human resources in Ukraine. Migration in Ukraine is an existential challenge in preserving the human resources of the country, especially in its less economically developed – rural areas. Therefore, a more proactive state policy of regulation (with an emphasis on curbing losses and returning Ukrainians) of international migration processes should be implemented. At the same time, it is important to pay attention to the fact that Ukraine has been characterized by a critical increase in migration activity of young people and intellectual capital, which leads to an "outflow" of young people, an increase in the scale of intellectual migration, a weakening of the personnel stability of the country's territories. As for rural areas, these trends are mainly due to adverse socio-economic factors. Accordingly, state policy should be focused on reducing the level of positive migration aspirations of young people, ensuring employment and decent wages, and reducing the scale of educational migration processes for stationary migration.

The system of preventive instruments of state policy of migration management for the sake of preserving human resources of rural areas of the country provides for the implementation of the following organizational and economic instruments: improvement of employment (support and development of the system of social dialogue and partnership, development of the intermediary sector in the labour market, creation of conditions for legalization of sectoral labour markets of districts and rural areas with high-level informal employment, etc.), development of the micro and small business sector (creation of advisory centres for the creation of business units, implementation of programs to improve the availability of financial and credit resources for business entities, creation of venture funds, development of inclusive, social and academic entrepreneurship, increasing the level of the knowledge intensity of industry, etc.), increasing the level of readiness of migrants from rural areas for re-emigration (improving resource support for diaspora relations development programs, financing grant programs to support projects related to the quality of life, work, etc.), improving the investment climate (implementation of programs for the development of infrastructure for servicing migration capital, creation of special bank deposit programs for labour migrants, development of the migration bond market, etc.), increasing the competitiveness of the educational sphere (creation of Supervisory Boards at educational institutions as an advisory body, introduction of monitoring of the quality of education, formation of regional orders for training specialists in educational institutions, etc.).

High unemployment, low living standards, limited high-paying jobs with decent working conditions, as well as a tense socio-economic situation are the main current factors-stimulators of the growth of emigration of professions, the transformation of seasonal labour emigration from Ukraine to long-term, educational emigration – to stationery. At the same time, the increase in the level of attractiveness of the

educational environment of the EU countries, which are actively fighting for foreign students, only aggravates the problems of the "outflow" of talented youth from rural areas of Ukraine, highly qualified personnel, emigration of young scientists, which leads to an increase in human losses, increased demographic, intellectual and social risks.

It should be noted that the key tools for regulating migration to preserve human resources in rural areas of Ukraine are institutional and organizational (introduction of a migration policy programming system, improvement of the organizational system for regulating migration processes, monitoring of labour and educational migration of young people, intensification of activities for the preparation and implementation of joint interstate educational, research and business projects), economic (stimulating the economic activity of young people, reforming the wage system, balancing the labour market, creating high-paying jobs, technological modernization of the rural economy).

To strengthen the effectiveness of the state policy of migration management and preservation of human resources in rural areas in Ukraine, it is necessary to coordinate the strategic priorities of state regulation of migration processes by the conditions of a changing economic environment, in particular, to form mechanisms for proactive management of migration flows in the projection of development infrastructure in the field of migration, improving the efficiency of the system of institutional means of regulating migration flows.

Considering that specific measures that will contribute to the inhibition of migration losses and the preservation of the human potential of rural settlements in Ukraine should be planned and implemented at the community level and taking into account the relevant specifics of their social and economic development, the level of depression, geo-economic location, investment attractiveness and capacity of the domestic market, the quality of life etc., it is critically necessary to consider the capabilities of some territory. At the same time, it is necessary to focus on the use of those factors that are decisive in making decisions by the population of rural settlements regarding the implementation of their migration intentions, namely, the availability of a place of work, employment, opportunities to get a quality education, as well as to direct their savings to profitable and attractive (in terms of return) projects of local growth.

That is why the most promising directions of the state (and, local) policy of conservation of human resources in rural areas of Ukraine are:

- firstly, the creation of new jobs and ensuring an adequate level of employment for the local population, which will eliminate the problem of lack of employment and sources of income for residents;

- secondly, the creation of sufficient conditions for self-employment and the opening of one's own business for local residents, which will allow the population of rural areas to realize themselves, realize their own entrepreneurial and professional potential, create jobs for other residents of the community and strengthen their participation, and, consequently, belonging, in the functioning and development of the territory;

- thirdly, strengthening educational inclusion for residents of rural settlements, which is focused on solving the problems of obtaining a quality education, and in conjunction with further employment in the speciality in the community at enterprises of local business of production and agriculture;

- fourthly, the direction of migration capital to the implementation of local economic development projects, as a way to, on the one hand, the effective use of savings and already formed migration capital of the local population, and, on the other hand, strengthening their role and contribution to the further progress of the community, and, thus, greater assimilation of oneself with one's land, which serves as perhaps the best factor in abandoning migration settings;
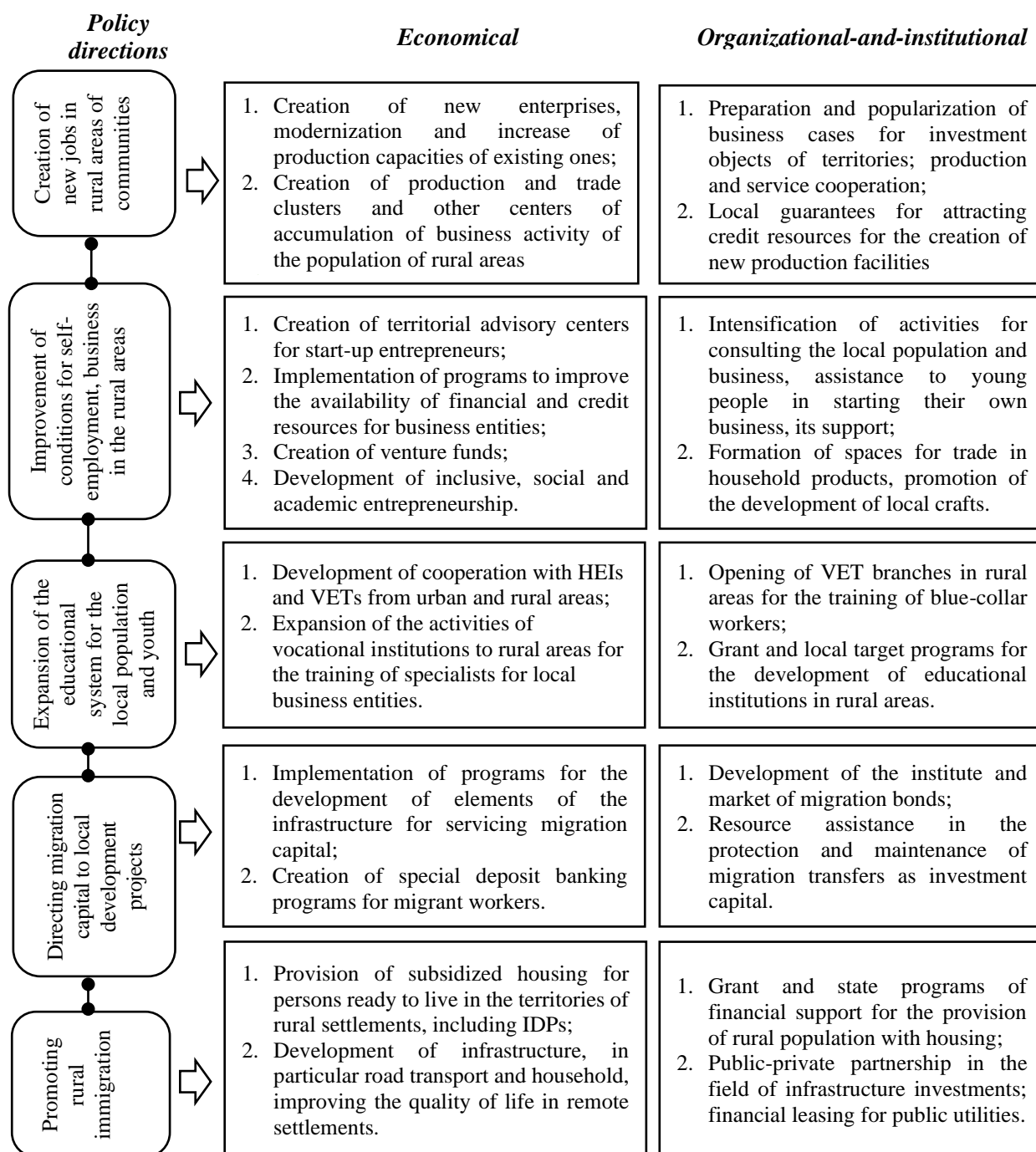
- fifth, promoting the replacement of a part of the migrating with immigration to Ukrainian rural areas.

The implementation of the identified priorities requires, on the one hand, the introduction of high-quality and effective tools and measures of an economic nature, however, and their support, on the other hand, with sufficient organizational and institutional tools operated by local communities, in particular in terms of regulating the quality of life and the socio-economic development of rural areas, remote settlements (Figure 3).

The deepening of the digitalization of the economy and the widespread use of digitalization processes in the financial system, the diffusion of innovations into the banking sector and the business sector are drivers of the development of the migration capital market, which complementarily requires the introduction of appropriate amendments to the regulations on the management of labour migration, in particular the development of financial inclusion among migrants. The policy on the development of the migration capital market in Ukraine should be formed in such main spheres as the management of remittance in the projection of the development of formal remittances, stimulating the effective use of migrant remittances and targeting transfers to the real sector of the economy. The priority vectors of progress of the migration capital market in Ukraine are increasing the investment capacity of migration capital, ensuring the target orientation of remittances to the small and medium-sized business sector, ensuring market stability (security of remittances) and developing financial inclusion.

Increasing the investment capacity of migration capital can be achieved through the creation of a favourable economic environment, the development of competitive advantages of the internal banking sector as a financial intermediary in the migration capital market and the development of programs for the use of special bank deposits. The tools to achieve the investment goal are the development of programs to stimulate the attraction of remittances to strategic sectors of the economy, improve infrastructure in the sphere of digital financial services, increase the attraction of digital money transfers, provide high-interest rates on migrant deposit accounts, and permits to open bank accounts in foreign currency.

Policy directions	Economical	Organizational-and-institutional
Creation of new jobs in rural areas of communities	1. Creation of new enterprises, modernization and increase of production capacities of existing ones; 2. Creation of production and trade clusters and other centers of accumulation of business activity of the population of rural areas	1. Preparation and popularization of business cases for investment objects of territories; production and service cooperation; 2. Local guarantees for attracting credit resources for the creation of new production facilities
Improvement of conditions for self-employment, business in the rural areas	1. Creation of territorial advisory centers for start-up entrepreneurs; 2. Implementation of programs to improve the availability of financial and credit resources for business entities; 3. Creation of venture funds; 4. Development of inclusive, social and academic entrepreneurship.	1. Intensification of activities for consulting the local population and business, assistance to young people in starting their own business, its support; 2. Formation of spaces for trade in household products, promotion of the development of local crafts.
Expansion of the educational system for the local population and youth	1. Development of cooperation with HEIs and VETs from urban and rural areas; 2. Expansion of the activities of vocational institutions to rural areas for the training of specialists for local business entities.	1. Opening of VET branches in rural areas for the training of blue-collar workers; 2. Grant and local target programs for the development of educational institutions in rural areas.
Directing migration capital to local development projects	1. Implementation of programs for the development of elements of the infrastructure for servicing migration capital; 2. Creation of special deposit banking programs for migrant workers.	1. Development of the institute and market of migration bonds; 2. Resource assistance in the protection and maintenance of migration transfers as investment capital.
Promoting rural immigration	1. Provision of subsidized housing for persons ready to live in the territories of rural settlements, including IDPs; 2. Development of infrastructure, in particular road transport and household, improving the quality of life in remote settlements.	1. Grant and state programs of financial support for the provision of rural population with housing; 2. Public-private partnership in the field of infrastructure investments; financial leasing for public utilities.

Figure 3. Measures of policy of conservation of rural human resources in Ukraine

Source: authors' development.

Conclusions. To ensure the target orientation of remittances to the small and medium-sized business sector, it is necessary to ensure a high level of sustainability in the business environment, including innovation, technological and industrial security, digital transformation of strategic sectors of the economy and development of innovative infrastructure, convergence of the socio-economic environment of Ukraine and the main recipient countries of migration capital and harmonization of information and analytical support of state policy regulation of remittances of Ukraine and the EU,

reform the customs system of the state.

The results of the econometric assessment of the impact of migration and remittance on the economic growth of Ukraine made it possible to confirm the thesis that there is a causality nexus, including sigmoidal, relationships between the research variables. The international migration intensity has a significant impact on the unemployment rate, reducing it, and remittances influence the average monthly nominal wage, the consumer price index, and the share of total household expenditure on food. Remittances have a direct significant positive impact on the financial and material condition and incomes of households and affect the process of optimizing the structure of consumer spending. The connection of remittance with capital investments, the number of small units and the share of those business entities that carry out innovative activities are indirect. Remittances contribute to the development of the capital market, the growth of competitiveness of business and the economy of Ukraine as a whole.

To achieve high rates of economic growth through the effective implementation of migration potential, in particular the targeted use of remittances, it is determined that the policy on the development of the migration capital market in Ukraine should be formed in such main areas as the management of remittances in the projection of the development of formal money transfer channels, scaling up remittances, stimulating the effective use of migrant remittances and target direction of transfers to the real sector of the economy. The priority vectors of the progress of the migration capital market in Ukraine are increasing the investment capacity of migration capital, ensuring the target orientation of remittances to the small and medium-sized business sector, ensuring market stability, and developing financial inclusion.

The proposed methodological approach to assessing the impact of migration from rural areas on the economic progress of the territory has certain methodological limitations, in particular, regarding (1) the formation of a valid, comparative and universal information and analytical base for research due to the lack of monitoring of remittance and individual indicators of rural development; (2) modelling the impact of migration on economic progress only in the macro-section, which, unlike the regional one, makes it impossible to cluster territories according to the impact of migration flows on key parameters of economic revival.

Dynamic modelling of the impact of migration flows in the context of rural-urban areas on the potential of economic revival to identify scenarios, optimal and boundary limits of indicators of economic revival can be further areas of research. The prospect of such research will improve methodological approaches to analyzing the economic potential of rural areas, and the implementation of effective mechanisms for preserving human resources as an existential factor economic recovery of the country in the postwar period.

References

1. Acosta, P., Calderón, C., Fajnzylber, P., & Lopez, H. (2008). What is the impact of international remittances on poverty and inequality in Latin America? *World Development,* 36(1), 89–114. https://doi.org/10.1016/j.worlddev.2007.02.016.

2. Adams, R. H., & Cuecuecha, A. (2010). Remittances, household expenditure and investment in Guatemala. *World Development,* 38(11), 1626–1641. https://doi.org/10.1016/j.worlddev.2010.03.003.

3. Akanbi, O. A. (2017). Impact of migration on economic growth and human development: case of Sub-Saharan African countries. *International Journal of Social Economics,* 44(5), 683–695. https://doi.org/10.1108/IJSE-07-2015-0190.

4. Alpaslan, B., Kayaoglu, A., Meckl, J., Naval, J., Vanore, M., & Ziesemer, T. (2021). Economic effects of remittances on migrants' country of origin. In K. Kourtit, B. Newbold, P. Nijkamp, M. Partridge (Eds.). *The Economic Geography of Cross-Border Migration. Footprints of Regional Science* (pp. 449–483). Springer, Cham. https://doi.org/10.1007/978-3-030-48291-6_20.

5. Andersson, L., & Siegel, M. (2020). The impact of migration on development in developing countries: a review of the empirical literature. In G. Rayp, I. Ruyssen, K. Marchand (Eds.). *Regional Integration and Migration Governance in the Global South* (pp. 131–150). United Nations University Series on Regionalism, vol. 20. Springer, Cham. https://doi.org/10.1007/978-3-030-43942-2_6.

6. Azizi, S. (2018). The impacts of workers' remittances on human capital and labor supply in developing countries. *Economic Modelling,* 75, 377–396. https://doi.org/10.1016/j.econmod.2018.07.011.

7. Baldé, Y. (2011). The impact of remittances and foreign aid on savings/investment in Sub-Saharan Africa. *African Development Review,* 23(2), 247–262. https://doi.org/10.1111/j.1467-8268.2011.00284.x.

8. Bang, J. T., Mitra, A., & Wunnava, P. V. (2016). Do remittances improve income inequality? An instrumental variable quantile analysis of the Kenyan case. *Economic Modelling,* 58, 394–402. https://doi.org/10.1016/j.econmod.2016.04.004.

9. Batista, C., McIndoe-Calder, T., & Vicente, P. C. (2017). Return migration, self-selection and entrepreneurship. *Oxford Bulletin of Economics and Statistics,* 79(5), 797–821. https://doi.org/10.1111/obes.12176.

10. Baudassé, T., Bazillier, R., & Issifou, I. (2018). Migration and institutions: exit and voice (from abroad)? *Journal of Economic Surveys,* 32(3), 727–766. https://doi.org/10.1111/joes.12212.

11. Beine, M., & Sekkat, K. (2013). Skilled migration and the transfer of institutional norms. *IZA Journal of Migration,* 2(1), 9. https://doi.org/10.1186/2193-9039-2-9.

12. Brown, R. P., Carmignani, F., & Fayad, G. (2013). Migrants' remittances and financial development: macro-and micro-level evidence of a perverse relationship. *The World Economy,* 36(5), 636–660. https://doi.org/10.1111/twec.12016.

13. Chauvet, L., Gubert, F., & Mesplé-Somps, S. (2013). Aid, remittances, medical brain drain and child mortality: evidence using inter and intra-country data.

The Journal of Development Studies, 49(6), 801–818. https://doi.org/10.1080/00220388.2012.742508.

14. Clemens, M. A., Özden, Ç., & Rapoport, H. (2014). Migration and development research is moving far beyond remittances. *World Development,* 64, 121–124. https://doi.org/10.1016/j.worlddev.2014.05.018.

15. Cooray, A. (2012). The impact of migrant remittances on economic growth: evidence from South Asia. *Review of International Economics,* 20(5), 985–998. https://doi.org/10.1111/roie.12008.

16. Coulibaly, D., Gnimassoun, B., & Mignon, V. (2018). Growth-enhancing effect of openness to trade and migrations: what is the effective transmission channel for Africa? *Journal of African Economies,* 27(4), 369–404. https://doi.org/10.1093/jae/ejx044.

17. Cruz Zuniga, M. C. (2011). On the path to economic growth, do remittances help? Evidence from panel VARs. *The Developing Economies,* 49(2), 171–202. Available at: https://ideas.repec.org/a/bla/deveco/v49y2011i2p171-202.html.

18. Dastidar, S. G. (2017). Impact of remittances on economic growth in developing countries. *Global Economy Journal*, 17(2), 20160066. https://doi.org/10.1515/gej-2016-0066.

19. Garip, F. (2014). The impact of migration and remittances on wealth accumulation and distribution in rural Thailand. *Demography,* 51(2), 673–698. https://doi.org/10.1007/s13524-013-0260-y.

20. Hassan, G. M., Chowdhury, M., & Bhuyan, M. (2016). Growth effects of remittances in Bangladesh: is there a U-shaped relationship? *International Migration,* 54(5), 105–121. https://doi.org/10.1111/imig.12242.

21. Hausmann, R., & Nedelkoska, L. (2018). Welcome home in a crisis: effects of return migration on the non-migrants' wages and employment. *European Economic Review,* 101, 101–132. https://doi.org/10.1016/j.euroecorev.2017.10.003.

22. Hübler, M. (2016). Does migration support technology diffusion in developing countries? *World Development,* 83, 148–162. https://doi.org/10.1016/j.worlddev.2016.01.024.

23. Ilyash, O., Lupak, R., Vasyltsiv, T., Trofymenko, O., & Dzhadan, I. (2021). Modelling of the dependencies of industrial development on marketing efficiency, innovation and technological activity indicators. *Ekonomika,* 100(1), 94–116. https://doi.org/10.15388/Ekon.2021.1.6.

24. Issahaku, H., Harvey, S. K., & Abor, J. Y. (2016). Does development finance pose an additional risk to monetary policy? *Review of Development Finance,* 6(1), 91–104. https://doi.org/10.1016/j.rdf.2016.06.001.

25. Jawaid, S., & Raza, S. (2014). Effects of workers' remittances and its volatility on economic growth in South Asia. *International Migration*, 54(2), 50–68. https://doi.org/10.1111/imig.12151.

26. Konte, M. (2018). Do remittances not promote growth? A finite mixture-of-regressions approach. *Empirical Economics,* 54, 747–782. https://doi.org/10.1007/s00181-016-1224-z.

27. Kumar, R. R., Stauvermann, P. J., Patel, A., & Prasad, S. (2018). The effect of remittances on economic growth in Kyrgyzstan and Macedonia: accounting for financial development. *International Migration,* 56(1), 95–126. https://doi.org/10.1111/imig.12372.

28. Levytska, O., Mulska, O., Shushkova, Y., Ivaniuk, U., Vasyltsiv, T., Krupin, V., & Ivanova, L. (2022). Modelling the impact of emigration upon social and economic development of the Carpathian region of Ukraine. *Bulletin of Geography. Socio-economic Series,* 57(57), 141–154. http://doi.org/10.12775/bgss-2022-0028.

29. Lupak, R., Mizyuk, B., Zaychenko, V., Kunytska-Iliash, M., & Vasyltsiv, T. (2022). Migration processes and socio-economic development: interactions and regulatory policy. *Agricultural and Resource Economics*, 8(1), 70–88. https://doi.org/10.51599/are.2022.08.01.04.

30. Mondal, R. K., & Khanam, R. (2018). The impacts of international migrants' remittances on household consumption volatility in developing countries, *Economic Analysis and Policy*, 59, 171–187. https://doi.org/10.1016/j.eap.2018.07.001.

31. Ogunniyi, A., Mavrotas, G., Olagunju, K., Fadare, O., & Adedoyin, R. (2021). Governance quality, remittances and their implications for food and nutrition security in Sub-Saharan Africa. *World Development*, 127, 104752. https://doi.org/10.1016/j.worlddev.2019.104752.

32. Přívara, A., & Trnovský, K. (2021). The impact of remittances on household savings in the Baltics. *Investment Management and Financial Innovations*, 18(1), 335–345. https://doi.org/10.21511/imfi.18(1).2021.27.

33. Ruxho, F., & Ladias, C. A. (2022). Increasing funding for the regional industry of Kosovo and the impact on economic growth. *Regional Science Inquiry*, 14(1), 117–126.

34. Sheehan, C. M., & Riosmena, F. (2013). Migration, business formation, and the informal economy in urban Mexico. *Social Science Research*, 42(4), 1092–1108. https://doi.org/10.1016/j.ssresearch.2013.01.006.

35. Semiv, S., Berezivskiy, Y., Baranyak, I., Mulska, O., & Ivaniuk, U. (2021). Priorities and tools of regulation of international migration in the Carpathian region of Ukraine. *Agricultural and Resource Economics*, 7(2), 160–181. https://doi.org/10.51599/are.2021.07.02.09.

36. Shahbaz, M., Rehman, I. U., & Mahdzan, N. S. A. (2014). Linkages between income inequality, international remittances and economic growth in Pakistan. *Quality & Quantity,* 48(3), 1511–1535. https://doi.org/10.1007/s11135-013-9850-4.

37. Vasyltsiv, T., Mulska, O., Osinska, O., & Makhonyuk, O. (2022). Social and economic development of Ukraine: modelling the migration factor impact. *Economics and Business Review*, 8(3), 27–58. https://doi.org/10.18559/ebr.2022.3.

38. Voznyak, H., Mulska, O., Druhov, O., Patytska, K., & Tymechko, I. (2023). Internal migration during the war in Ukraine: recent challenges and problems. *Problems and Perspectives in Management*, 21(1), 312–325. https://doi.org/10.21511/ppm.21(1).2023.27.

39. Voznyak, H., Kloba, T., Kloba, S., & Kloba, L. (2019). Model of assessment

of financial imbalances in regions of Ukraine. *Investment Management and Financial Innovations*, 16(1), 365–377. https://doi.org/10.21511/imfi.16(1).2019.28.

40. Zghidi, N., Sghaier, I. M., & Abida, Z. (2018). Remittances, institutions, and economic growth in North African countries. *Journal of the Knowledge Economy,* 9(3), 804–821. https://doi.org/10.1007/s13132-016-0377-5.

Citation: