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SOCIO-ECONOMIC RECOVERY OF UKRAINE IN THE CONTEXT OF THE MIGRATION CRISIS: RESOURCE POTENTIAL FORESIGHT

ABSTRACT

The article aims to provide a foresight (forecast until 2035) of Ukraine's socio-economic recovery in terms of the impact of migration losses on the resource potential. The socio-economic recovery potential of the country is structured as a system (financial and industrial capacity, demographic and workforce resources, intellectual and technological potential, and entrepreneurial strength). The foresight of Ukraine's socio-economic recovery potential based on the scenario approach includes three models of intention development: trend (the level of youth migration abroad remains at the pre-war level), optimistic (the rate of youth out-migration decreases with a simultaneous increase in re-emigration), and pessimistic (the rate of youth out-migration remains high). The practical content of the study lies in the scenario modelling of Ukraine's socio-economic recovery in the projection of migration losses, which will allow for the development of a methodology for analysing the impact of migration on the resource potential of socio-economic stability and development in the face of shocks.

Keywords: economic recovery, migration losses, prognosis, scenario, youth, finance, labour, demographic situation, entrepreneurship, innovation

JEL Classification: C53, O15, O20

INTRODUCTION

Amid the ongoing war, Ukraine has suffered severe losses across financial, industrial, investment, and innovation sectors, as well as in human resources. These setbacks are not only critical for maintaining the countries and regions' economic resilience in the present but also for rebuilding and strengthening the socio-economic potential of their territories once the conflict ends. Before the war, Ukraine lacked a systematic approach to tracking migration processes and assessing their impact on regional socio-economic development. During the war, both internal and external migration remained largely unmonitored, apart from sporadic studies conducted by international organisations, domestic institutions, and academic researchers. As a result, understanding the causal relationships between migration challenges and the broader consequences of the migration crisis on the economic system is essential. This knowledge is crucial for shaping strategic recovery programs, designing transformation models for regional economies, and enhancing the country's overall socio-economic resilience.

The potential for economic recovery is inextricably linked to the availability and quality of the labour force, as well as the development and utilisation of human capital. Human capital – comprising knowledge, skills, experience, education, and both physical and mental well-being – serves as the backbone of national and local economies. Reducing unemployment, strengthening labour market competitiveness, facilitating return migration, and mitigating emigration, especially among young people, are fundamental pillars of an effective territorial recovery strategy. Additionally, fostering human capital development plays a vital role in sustaining innovation, promoting entrepreneurship, and driving long-term economic growth.

Despite the criticality of the challenges and threats to Ukraine's economic security in the context of the war and the related intensification of large-scale external and internal movements of young people, the implementation of state social, youth, economic, and

other policies should be aimed at achieving the necessary structural correlations, overcoming macroeconomic divergences (compared to more efficient models), improving the institutional framework, ensuring high quality of execution of functions and tasks, achieving national economic interests in the allocation and use of the country's intellectual and labour resource capital, and institutionalizing safeguards against imbalances. The leading policy vectors for regulating migration losses in the projection of preserving the potential for socio-economic recovery are (1) structural, (2) regulatory, (3) infrastructural, and (4) security-related. Whereas, from the perspective of the subjects of regulation, the state policy in the field of minimizing challenges and threats to the country's socio-economic development in the context of intensified migration processes of young people should focus on overcoming challenges, risks, and threats to the functioning of the labour market and their impact on the resilience and stability of the country's socio-economic system.

Against this backdrop, the entire spectrum of economic tools and management mechanisms is juxtaposed with several key challenges: (1) the impact of full-scale war, (2) the post-war reconstruction of national and regional economies, (3) the persistence of systemic barriers hindering labour market functionality, and (4) the deepening of structural labour market asymmetries. At the same time, these economic mechanisms must also account for the unique dynamics and influence of migration processes on regional socio-economic systems. This approach stands out for its timeliness, comprehensive framework, and adaptability in addressing the existential challenges to Ukraine's stability, territorial integrity, and security.

LITERATURE REVIEW

The problem of socio-economic recovery becomes relevant the more the country enters into a state of crisis, the deeper it is, and the longer it lasts. This is mostly why the crisis is often the subject of scientific research and discourse, especially in light of identifying its causes, factors, and effects on the deterioration of the quality of life and in the form of economic depression, as well as justifying effective mechanisms for its mitigation and even elimination. Quite another thing is the state of full-scale war, when the crisis has its causes not only internal but to a great extent external, both direct and hybrid. That is why, in terms of understanding the etymology of the socio-economic crisis, it is important to thoroughly study the existing results of scientific research in this area, primarily related to the deterioration of the foundations of recovery due to losses in the areas of intellectual (Bilan et al., 2020), human (Uddin et al., 2021), and production (Bin-Nashwan et al., 2022) potential, social capital (Riabinina, 2021), strategic enterprises (Ushakov et al., 2019), assets, and resources at different levels of management (Shubalyi & Gordiichuk, 2022).

In the case of the aftermath of the two World Wars, as well as the full-scale russian-Ukrainian war, there is a strong and justified belief that the main loss of the defending country is its people, both those who died, were wounded, and those who left the country in the form of external migrants, including refugees. This is the biggest problem, the main problem of all the other problems of destabilisation and even of the decline of the country and its territories. The reasons for this are the impossibility of functioning of the socio-economic system on the basis of sustainable development (Antipova et al., 2020) due to depopulation, deep humanitarian, economic (loss of labour potential), and financial (narrowing of public funds and the domestic market and limitation of income of enterprises and organizations) consequences (Astrov et al. 2022), the impact of migration on the destruction of families and family relations (Grytsenko et al., 2024), the "extinction" of entire territories and settlements (Levytska, 2022), the weakening of the middle class and, as a result, a decrease in the entrepreneurial activity of society (Mazur et al., 2024), an increase in the social vulnerability of the population and, consequently, budgetary and financial expenditures of the state , a loss of potential that questions even Ukraine's European integration intentions (Wolczuk, 2021), especially internally displaced persons into host communities Voznyak et al., 2024).

When making high-quality and effective decisions in the field of state policy to counteract migration losses and preserve the most important thing – the country's human potential – it is necessary to understand how the intensification of migration and changes in its structure affect losses in other components of the resource potential of the country's socio-economic system. These issues are addressed by Bagatska et al. (2024) (the impact of migration on the leaching of the country's entrepreneurial capital), Cel et al. (2022) (the impact of migration on the labour market and, through it, on the human resource potential of businesses), Dempere et al. (2023) (the impact of migration on research and innovation), Heyets et al. (2022) (the impact of migration on socio-demographic resilience and stability), Vasyltsiv et al. (2021) (the impact of migration on know-how and technology flight and brain drain), and Zhigir (2019) (the impact of migration on the quality of the public administration system).

Understanding the breadth of the spectrum of the identified problems and their critically negative consequences for the resilience of the country's socio-economic system has led to the actualization and intensification of research in the field of migration security, especially in terms of its further extension to the socio-economic crisis in general (Dunford, 2023) and destabilization of the country's economic system (Kompa, 2013), its social sphere (Prohorovs, 2022), financial and banking

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sectors (Rushchyshyn et al., 2021), energy and biotechnology (Solarte-Toro & Cardona Alzate, 2021), and innovation system (Syrtseva et al., 2022).

It is important to use the means of economic and mathematical modelling to understand the consequences (both actual and potentially hypothetical in the event of further intensification and increase in the volume of external and internal forced migration) and the scenarios of further developments, which is critically important in the light of the development of high-quality, timely, and effective management decisions to curb migration losses and preserve the full range of necessary resources for the country to overcome the socio-economic crisis and ensure rapid recovery. In particular, they are used for the purposes of modelling the links in the system "migration ↔ socio-economic consequences" (Dmytrów, 2018; Vasyltsiv et al., 2022), empirical studies of the volume and structure of the necessary resources for the national economy, financial and economic performance of enterprise sector (Boiko et al., 2024), forecasting the resilience of the socio-economic system (Marshall & Shulsky, 2018), modelling the impact of socio-economic determinants on the quality of life (Mulska et al., 2022), and forecasting the effects of international transfers on the intensification of entrepreneurship in the country (Twerefou et al., 2020).

Undoubtedly, the results of these and other studies formed the basis for managerial decisions (in Ukraine and other countries) regarding the regulation of migration processes, preservation of human potential, and ensuring migration and national security in general. The studies of Batóg (2019) (the mechanisms of proactive economic development policy as a basis for further improvement of the quality of life in the country), Goodwin et al. (2023) (humanitarian tools for achieving the resilience of society and, accordingly, the country and its territories), Gorodnichenko et al. (2022) (general principles and postulates of preserving the social system and restoring the economic complex), Irtyshcheva et al. (2022) (means of the state investment policy for the development of resources for the restoration of strategic enterprises and sectors of the economy), Kravchenko et al. (2023); Pidorycheva (2022) (application of positive practices and experience of other countries that ensured high-quality post-war reconstruction), Martynovych et al. (2023) (identification of principles and factors for maintaining the trajectory of sustainable development), Voznyak et al. (2022) (linking social and economic policy tools for resilience and reconstruction of the country) are characterized by a high level of practical significance.

However, the great war in Ukraine continues, and it is causing more and more negative consequences for the resource potential, the economy, and the quality of life in Ukraine. This necessitates new research, obtaining exclusive results, and developing unique solutions in terms of public management of the country's socio-economic recovery, especially in the situation of the growing migration crisis.

AIMS AND OBJECTIVES

The article aims to provide a foresight (forecast until 2035) of Ukraine's socio-economic recovery in terms of the impact of migration losses on resource potential.

Modelling of systemic links between labour, financial, production, innovation, and entrepreneurial potentials and youth migration is the subject of the study. This study is based on the results of (and is a continuation of) the authors' previous research on the development of a methodology for the causality of migration processes and economic development of Ukraine in the context of macroeconomic shocks.

The objectives of the study include:

- development of a methodological approach to the comprehensive study of the relationship between the components of the resource potential of socio-economic recovery (labour, capital, innovation, entrepreneurship) and youth migration;
- development of an information and analytical base for forecasting the country's socio-economic recovery;
- scenario modelling of the parameters of socio-economic recovery under changing migration trends;
- identification of economic development triggers in the context of migration challenges.

METHODS

The socio-economic recovery potential of the country is structured as a system, comprising: financial and industrial capacity (capital component), demographic and workforce resources (labour component), intellectual and technological potential (innovation component), and entrepreneurial strength (entrepreneurship component).

Forecasting the potential for socio-economic recovery can be presented as a model in which the change in the values of the key components of resource provision is forecasted on the basis of initial data using the method of System Dynamics (Formula 1).

$$RPSERi = LRi + KPi + INPi + EPi \quad (1)$$

where RPSERi is the resource potential of socio-economic recovery in the i period; LRi is the labour resource in the i period; KPi is the capital resource in the i period; INPi is the innovative potential in the i period; EPi is the entrepreneurial potential in the i period.

The algorithm for modelling the resource potential of the socio-economic recovery of Ukraine involves three consecutive stages of research:

1. Identification of dependencies and patterns between the intensity of emigration of young people aged 15-34 from Ukraine abroad and the components of the resource potential of socio-economic recovery (based on data for 2005-2023).
2. Construction of economic and mathematical models and calculation of elasticity indicators.
3. Forecasting the growth rate of potential emigration of young people and the rate of change in the components of the resource base for socio-economic recovery in the short term (2025-2026), medium term (2030), and long term (2035).

The foresight was built on the basis of a scenario approach, which envisages three options for the development of the situation: trend (the level of youth migration abroad remains at the pre-war level), optimistic (the rate of youth out-migration decreases with a simultaneous increase in re-emigration of young people who were forced to leave the territory as a result of the military aggression of the russian federation), and pessimistic (the trends of mass departure of the young population observed in 2022-2023 continue).

In order to determine the patterns between the level of emigration of young people from Ukraine abroad and the components of the resource potential of socio-economic recovery, single-factor econometric models were built using the method of least squares (2-10), which allowed to calculate and differentiate the impact of the dominant factor (the growth rate of the number of young people who left Ukraine for permanent residence abroad at the age of 15-34) on the growth rate of the components of the resource potential of Ukraine's socio-economic recovery.

$$GRRP = 1{,}536 - 7{,}08 * GRMY \quad (2)$$

$$GRLR = -1{,}561 - 1{,}94 * GRMY \quad (3)$$

$$GRDP = -3{,}47 - 1{,}06 * GRMY \quad (4)$$

$$GRWP = -5{,}23 - 0{,}85 * GRMY \quad (5)$$

$$GRKP = -4{,}69 - 0{,}34 * GRMY \quad (6)$$

$$GRFP = -2{,}4 - 0{,}153 * GRMY \quad (7)$$

$$GRIP = -3{,}2 - 0{,}52 * GRMY \quad (8)$$

$$GRINP = -18{,}9 *\cdot GRMY^{-0.51} \quad (9)$$

$$GREP = -5{,}382 - 1{,}2 * GRMY \quad (10)$$

where GRRP is the growth rate of the resource potential of Ukraine's socio-economic recovery; GRMY is the growth rate of the number of young people who left Ukraine for permanent residence abroad at the age of 15-34, per 10,000 people; GRLR is the growth rate of the labour resource component of the resource potential of Ukraine's socio-economic recovery; GRDP is the growth rate of the demographic potential of Ukraine's socio-economic recovery; GRWP is the growth rate of labour potential of Ukraine's socio-economic recovery; GRKP is the growth rate of the capital resource component; GRFP is the growth rate of the financial potential of Ukraine's socio-economic recovery; GRIP is the growth rate of the production potential of Ukraine's socio-economic recovery; GRINP is the growth rate of the innovative potential of Ukraine's socio-economic recovery; GREP is the growth rate of the entrepreneurial potential of Ukraine's socio-economic recovery.

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RESULTS

Elasticity coefficients were calculated to determine the degree of significance and influence of the variable factor on the variation of the resulting indicators. They confirm the hypothesis that there is a close inverse relationship between the growth rate of out-migration of young people and the availability of the resource potential necessary to ensure the socio-economic recovery of Ukraine. In particular, with a 1% increase in the growth rate of the number of young people who have left Ukraine for permanent residence abroad per 10,000 people (GRMY) and unchanged values of other factors, the growth rate of the resource potential for Ukraine's socio-economic recovery (GRRP) is expected to decrease by 0.91%.

Meanwhile, if the emigration activity of young people decreases by 1%, the resource potential of socio-economic recovery will improve as the growth rate of the labour resource (GRLR) will increase by 0.56%, including 0.41% and 0.26% due to the increase in the demographic (GRDP) and labour (GRWP) potentials, respectively. Similarly, with a 1% decrease in the level of youth out-migration, financial (GRFP) and production (GRIP) potential should be expected to grow by 0.15% and 0.52%, as well as innovative (GRINP) and entrepreneurial (GREP) potential by 0.74% and 1.2%, respectively.

Based on the developed economic and mathematical models (2-10), a change in the values of various vector migration flows involving young people for the period 2024-2035 is estimated using a scenario approach with the construction of optimistic, trend, and pessimistic development options.

In particular, the optimistic forecast scenario envisages a rapid end to the war with the russian federation (by the end of 2025), including the liberation of the temporarily occupied territories and the signing of a peace treaty that will guarantee the security and territorial integrity of Ukraine. Further rapprochement between Ukraine and the EU in the perspective of post-war recovery will facilitate the inflow of significant investments and recovery and modernisation of the national economy, which will ultimately improve socio-economic standards and quality of life and, accordingly, motivate young Ukrainians who left the country during the period of full-scale invasion to return. Therefore, under this scenario, the annual growth rate of the factor variable will acquire negative values and show a tendency to increase significantly as the socio-economic and security situation improves (Table 1).

Table 1. Scenario forecasting of the growth rate of Ukraine's resource potential: A scenario approach, 2025-2035.

Actual data, %				Forecast calculations, %			
2006	**2017**	**2020**	**2023**	**2025**	**2026**	**2030**	**2035**
Growth rate of the out-migration of the population aged 18-34, per 10,000 people							
-14.0	7.1	-14.8	-94.3				
Optimistic				3.0	0.0	-2.5	-5.0
Trend				4.0	4.0	3.0	1.5
Pessimistic				4.5	4.5	6.5	8.0
Growth rate of the labour resource							
14.6	3.0	-33.1	-23.3				
Optimistic				-7.3	-1.6	3.3	8.1
Trend				-9.3	-9.3	-7.4	-4.5
Pessimistic				-10.3	-10.3	-14.2	-17.1
Growth rate of the capital resource							
29.0	31.9	5.7	10.8				
Optimistic				-5.7	-4.7	-3.8	-3.0
Trend				-6.1	-6.1	-5.7	-5.2
Pessimistic				-6.2	-6.2	-6.9	-7.4
Growth rate of the innovative potential							
10.1	-11.1	4.8	-25.8				
Optimistic				-5.6	-5.4	-5.7	-6.9
Trend				-11.3	-11.3	-12.6	-16.3
Pessimistic				-14.1	-15.2	-19.8	-25.6
Growth rate of the entrepreneurial potential							
-4.3	25.1	5.6	4.4				
Optimistic				-9.0	-5.4	-2.4	0.6
Trend				-10.2	-10.2	-9.0	-7.2
Pessimistic				-10.8	-10.8	-13.2	-15.0
Growth rate of the resource potential							
7.9	7.2	-6.3	-6.8				
Optimistic				-19.7	1.5	19.2	36.9
Trend				-26.8	-26.8	-19.7	-9.1
Pessimistic				-30.3	-30.3	-44.5	-55.1

The most likely scenario is the trend one, since this approach is based on the average trends observed in Ukraine until 2021, i.e., it does not consider the large-scale out-migration of the population aged 15-34 in 2022-2023. Given that a significant proportion of young people have already left the country because of the deteriorating security situation, in this scenario we assume that the number of young people leaving the country will decrease in the following periods. According to the trend scenario, the growth of the youth out-migration rate will remain at 4% annually in 2024-2025 and gradually decline to 1.5% per year in 2035.

The forecast values of the resource potential of Ukraine's socio-economic recovery, which are presented in the pessimistic scenario of events up to 2035, assume that the security situation will continue to remain satisfactory in the oblasts remote from the combat zone and critical in the frontline areas. In this case, the outflow of human resources in the 15-34 age group will continue, and the growth of the out-migration rate will stabilize at 8% per year, ultimately leading to a significant reduction in the level of resource base for socio-economic recovery and making it virtually impossible to normalize socio-economic processes in the short and medium term.

The full-scale war in Ukraine has led to significant migration losses, particularly among the young population, both within the country and abroad. The forced displacement of people has become a serious social problem with far-reaching implications for national security and economic recovery in Ukraine. Given the scale of these processes, especially among young people, the number of internally displaced persons and emigrants has reached critical levels. This deepens the demographic crisis and jeopardises the effective restoration of labour resources and social infrastructure after the war. Migration losses, in particular in the form of youth emigration, significantly reduce access to highly skilled labour, which is an important factor for stable economic development. Young people, who are often the main source of innovation and creativity in various fields, are actively leaving abroad, depriving the country of important intellectual potential. Such a loss not only reduces the labour force but also deprives Ukraine of chances for long-term economic development.

In general, the results of forecasting the growth rate of the resource potential of Ukraine's socio-economic recovery for 2024-2035 show (Figure 1) that if the current trends continue, the level of resource potential availability in the nearest future in 2024-2025 is likely to decrease by another quarter compared to 2023, but in the medium term it will show an upward trend towards a decrease in negative growth rates to the level of 9.1%. In the most critical case, in case the security situation deteriorates, we should expect a rapid increase in negative growth rates of resource potential up to 50% annually in 2035, but in case the war ends quickly, we should expect the situation to improve, as the level of resource potential will grow and may reach 36.9% in 2035.

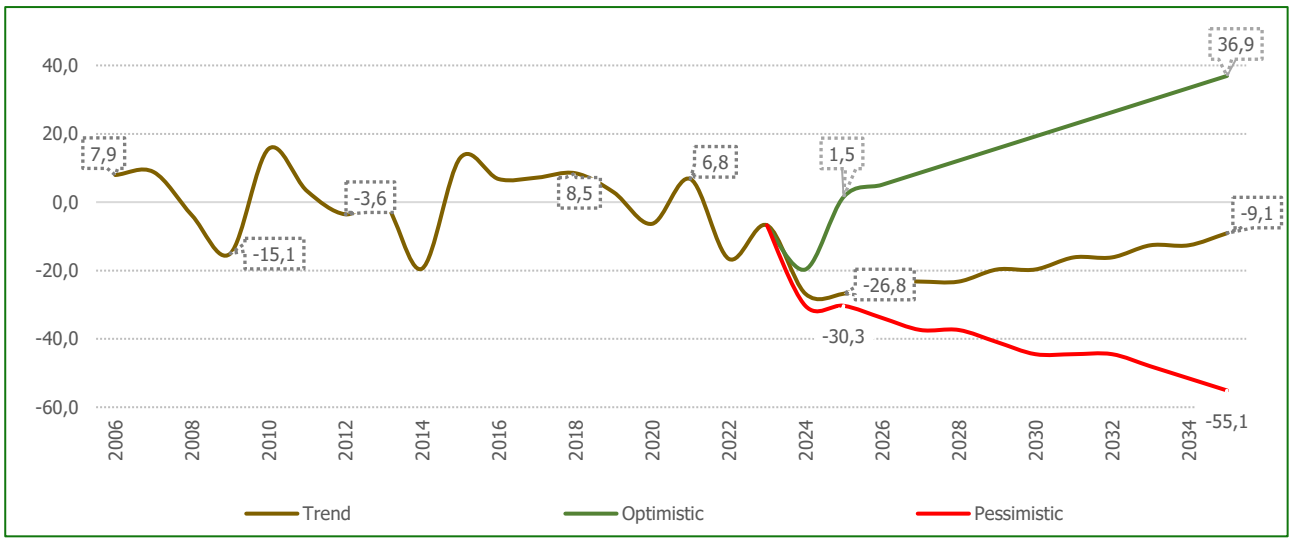

Figure 1. Foresight of the resource potential of Ukraine's socio-economic recovery: A scenario approach, 2025-2035, %.

The demographic and labour component of the resource potential of socio-economic recovery remains the most sensitive to the critical scale of youth migration (Table 2). The emigration of young people, as the most creative stratum of the population and potentially highly qualified personnel, first, deforms the gender and age structure of the population, levels the role of the family institution in ensuring demographic reproduction processes, and increases the "devaluation" of the country's intellectual and human resources potential. The results of the modelling clearly demonstrate the depth and irreversibility of the growth of losses of labour and demographic potential, which, according to the trend scenario, will range from 5% to 6% as of 2035, will reach a threateningly critical growth rate of up to 12% in 2035 in the pessimistic

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scenario, or, if young people return from abroad, will allow a certain stabilization but not a significant improvement of the demographic situation in Ukraine.

Table 2. Forecast model of growth rate of labour resource potential of Ukraine's socio-economic recovery, 2025-2035, %.

Period	Demographic potential			Labour potential			Labour resource component		
	Optimistic	Trend	Pessimis-tic	Optimistic	Trend	Pessimis-tic	Optimistic	Trend	Pessimis-tic
2025	-3.47	-7.71	-8.24	-5.23	-8.63	-9.05	-1.56	-9.32	-10.29
2026	-2.94	-7.18	-8.77	-4.80	-8.20	-9.48	-0.59	-8.35	-11.26
2027	-2.41	-7.18	-9.3	-4.38	-8.20	-9.90	0.38	-8.35	-12.23
2028	-1.88	-7.18	-9.3	-3.95	-8.20	-9.92	1.35	-8.35	-12.23
2029	-1.35	-6.65	-9.83	-3.53	-7.78	-10.33	2.32	-7.38	-13.20
2030	-0.82	-6.65	-10.36	-3.10	-7.78	-10.75	3.29	-7.38	-14.17
2031	-0.29	-6.12	-10.36	-2.68	-7.35	-10.79	4.26	-6.41	-14.17
2032	0.24	-6.12	-10.36	-2.25	-7.35	-10.82	5.23	-6.41	-14.17
2033	0.77	-5.59	-10.89	-1.83	-6.93	-11.18	6.20	-5.44	-15.14
2034	1.3	-5.59	-11.42	-1.40	-6.93	-11.60	7.17	-5.44	-16.11
2035	1.83	-5.06	-11.95	-0.98	-6.50	-12.03	8.14	-4.47	-17.08

Mass emigration also has a devastating impact on social and cultural ties within the country. Young people who leave do not always plan to return, as economic, political, or social conditions in Ukraine often do not encourage them to return. This creates a gap in the labour potential, making it difficult to rebuild key sectors of the economy and infrastructure. Another important aspect is the "devaluation" of intellectual and labour resources. The loss of qualified specialists, entrepreneurs, and innovators leads to a decrease in investment opportunities and a slowdown in technological progress in Ukraine. As a result, the country faces problems in restoring infrastructure, developing new technologies, and rebuilding industrial sectors.

Financial capital is a cornerstone of economic development and recovery from macroeconomic shocks. Its strategic allocation within investment and production frameworks enhances economic stability by fostering business growth, improving the investment climate, and strengthening overall market resilience. A well-structured financial system is vital for small and medium-sized enterprises, providing access to credit, investment funds, and other financial tools essential for scaling operations, creating jobs, driving innovation, and sustaining long-term economic progress.

As a result of the occupation of part of Ukrainian territory and the systematic shelling of the production facilities of industrial enterprises, which in the pre-war period accounted for a significant share of the country's GDP, the financial and production potential of Ukraine's socio-economic recovery also deteriorated in 2022, as can be clearly seen in Table 3.

Table 3. Forecast model of growth rate of financial and production potential, 2025-2035, %.

Period	Financial potential			Production potential			Capital resource potential		
	Optimistic	Trend	Pessimis-tic	Optimistic	Trend	Pessimis-tic	Optimistic	Trend	Pessimis-tic
2025	-2.4	-3.012	-3.08	-3.20	-5.28	-5.54	-4.69	-6.05	-6.22
2026	-2.3235	-2.93	-3.16	-2.94	-5.02	-5.8	-4.52	-5.88	-6.39
2027	-2.247	-2.93	-3.245	-2.68	-5.02	-6.06	-4.35	-5.88	-6.56
2028	-2.1705	-2.93	-3.241	-2.42	-5.02	-6.06	-4.18	-5.88	-6.56
2029	-2.094	-2.85	-3.31	-2.16	-4.76	-6.32	-4.01	-5.71	-6.73
2030	-2.0175	-2.85	-3.39	-1.9	-4.76	-6.58	-3.84	-5.71	-6.90
2031	-1.941	-2.78	-3.34	-1.64	-4.5	-6.58	-3.67	-5.54	-6.90
2032	-1.8645	-2.78	-3.39	-1.38	-4.5	-6.58	-3.50	-5.54	-6.90
2033	-1.788	-2.71	-3.47	-1.12	-4.24	-6.84	-3.33	-5.37	-7.07
2034	-1.7115	-2.71	-3.54	-0.86	-4.24	-7.1	-3.16	-5.37	-7.24
2035	-1.635	-2.62	-3.62	-0.6	-3.98	-7.36	-2.99	-5.20	-7.41

Access to new financial resources empowers small and medium-sized enterprises to scale their production, expand export

potential, and tap into new market segments, driving long-term strategic growth. Simultaneously, the integration of modern financial instruments – such as insurance, hedging, and crisis management tools – helps businesses mitigate the impact of socio-economic and political instability on their productivity and profitability. This, in turn, minimises investment and operational risks across the region, promoting economic resilience and sustained growth. The relocation of enterprises and the transfer and reduction of production capacities have reduced labour productivity and the investment attractiveness of businesses in Ukraine. Despite the fact that in 2023, after a critical drop in GDP by 40% in 2022, the situation somewhat stabilised, the values of key indicators of productive capacity, which include industrial and agricultural output, exports of goods and services, and capital investment, remain quite low. The re-emigration of young people, together with the qualification and professional skills acquired abroad, can revitalise the processes of socio-economic recovery of Ukraine and facilitate the inflow of large-scale investment funds that will strengthen the financial and production component of the resource potential in the reconstruction of the state.

However, if the current trends of young people leaving the country laid out in the pessimistic scenario continue, the production and financial potential will continue to decline, and by 2035 the annual negative growth rates are likely to reach 3.6% and 7.4%, respectively.

Ukraine's post-war recovery should focus on both the modernisation of traditional sectors of the national economy and the development of innovative ones with a high level of technological sophistication and social utility. Young people as drivers of progress have the most creative thinking and innovative knowledge and thus are able to launch the processes of rehabilitation of degraded socio-economic systems in a short period of time under favourable circumstances and ensure the transformation of the industry structure in accordance with the needs of post-industrial society through the development and implementation of innovative business ideas and start-ups. Therefore, the post-war reconstruction of Ukraine should be aimed at a radical change in the sectoral structure of the economy, which involves the transition from an agrarian and raw material type to an industrial and innovative one through the creation of a modern, high-tech, and digitalized industry and the growth of the role of the service sector in the formation of gross added value.

At this stage of Ukraine’s economic development, innovation has emerged as a crucial element for the recovery of the economic system following shocks, including socio-political, military, and other disruptions. Innovation is fundamental to ensuring the resilience of the socio-economic system and fostering the growth of a knowledge-driven economy, built on intellectual resources, information technologies, and scientific and technological advancements. This economy should prioritise the production of high-tech goods and services, which are essential for maintaining global competitiveness.

The results of mathematical calculations show the presence of a close inverse relationship between the growth of migration mobility of young people, their departure abroad, and the level of innovation development in Ukraine (Figure 2). However, the level of maximum loss of innovative potential is not observed immediately, but with a lag of 3-5 years. This indicates that the loss of innovative potential in 2022 (even if the demographic situation improves and young people return from abroad soon) will be noticeable throughout the forecast period. Thus, under any scenario, the negative growth rate of innovative potential will increase (especially under the trend and pessimistic scenarios – up to 16% and 25%, respectively), while under the optimistic scenario, it will stabilise in the range of 5-7%.

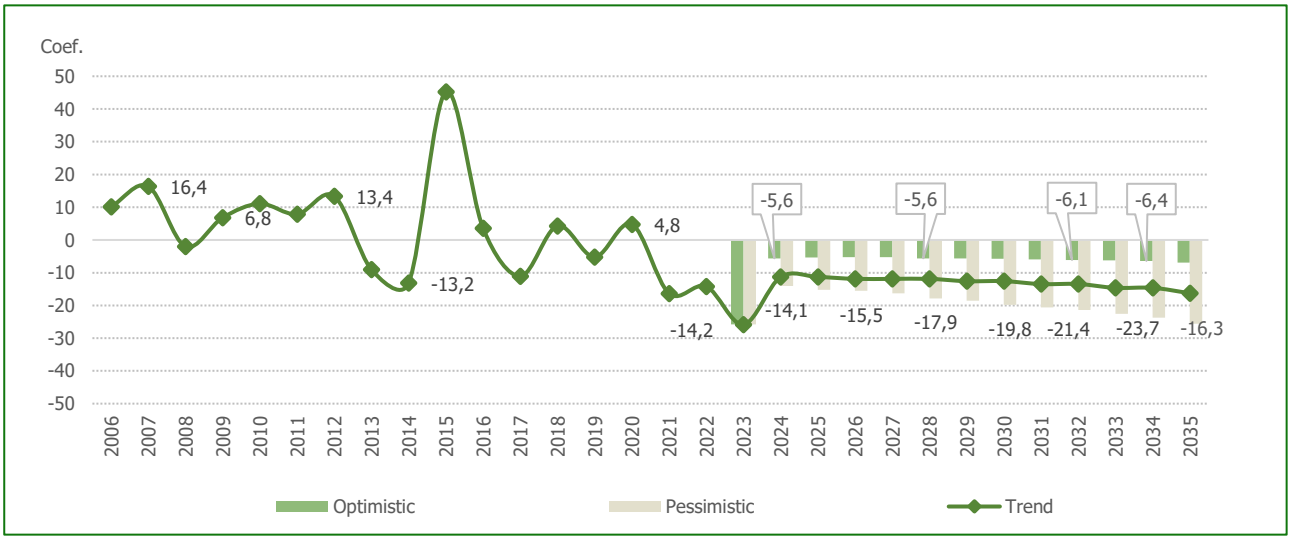

Figure 2. Foresight of the growth rate of the innovation resource component of Ukraine’s socio-economic recovery, 2024-2035, %.

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Innovative shifts are the basis for introducing radical changes in the technological mode and transforming the economic system. They create opportunities for building an innovation-oriented economy, where new technologies are actively introduced into all spheres of public life. These changes create a system that ensures continuous development through intellectual potential, scientific and technical achievements, and technological innovations. These shifts have a strong potential for socio-economic recovery, ensuring resilience and further development of society. Innovations play the role of an existential trigger of progress, contributing not only to economic growth but also to improving the quality of life, creating new opportunities for people, developing new industries, and shaping global competitive advantages for the country.

In the context of the socio-economic, political, and military upheavals that arose because of russia's full-scale war against Ukraine, the country faced a number of serious challenges and risks. These factors not only significantly slowed down the development of the national economy but also caused a deep socio-economic decline in many regions, some of which are on the verge of a catastrophic crisis. This has jeopardised the economic security, resilience, and further growth of these territories. In the face of such large-scale difficulties, the maintenance and development of the entrepreneurial sector is of particular importance. Entrepreneurship is not only the basis for creating new jobs and providing employment but also one of the main drivers of economic stability in the country.

Effective use of entrepreneurial potential can ensure the capitalisation of other key components of the country's resource potential, such as financial capital (including investments), labour resources, and innovative potential. Entrepreneurship development will help improve the business environment, attract investment, and increase production capacity. In the short term, strengthening the entrepreneurial potential in Ukraine will be the foundation for economic recovery after the war. It will not only ensure stable growth of the national economy but will also help the regions that have suffered the greatest losses to return to sustainable socio-economic development, restore their production capacity, and ensure long-term resilience in the future.

Innovative potential in terms of ensuring the socio-economic recovery of Ukraine is built in the context of the growth of business (entrepreneurial) activity of the working population in general and youth in particular. Since migration processes usually involve economically active people aged 15-34, who seek to gain new experience and knowledge, improve their professional skills, and find a decent job or implement their own business project by moving to a new place of residence, large-scale out-migration of young people reduces the level of the country's entrepreneurial potential (Figure 3).

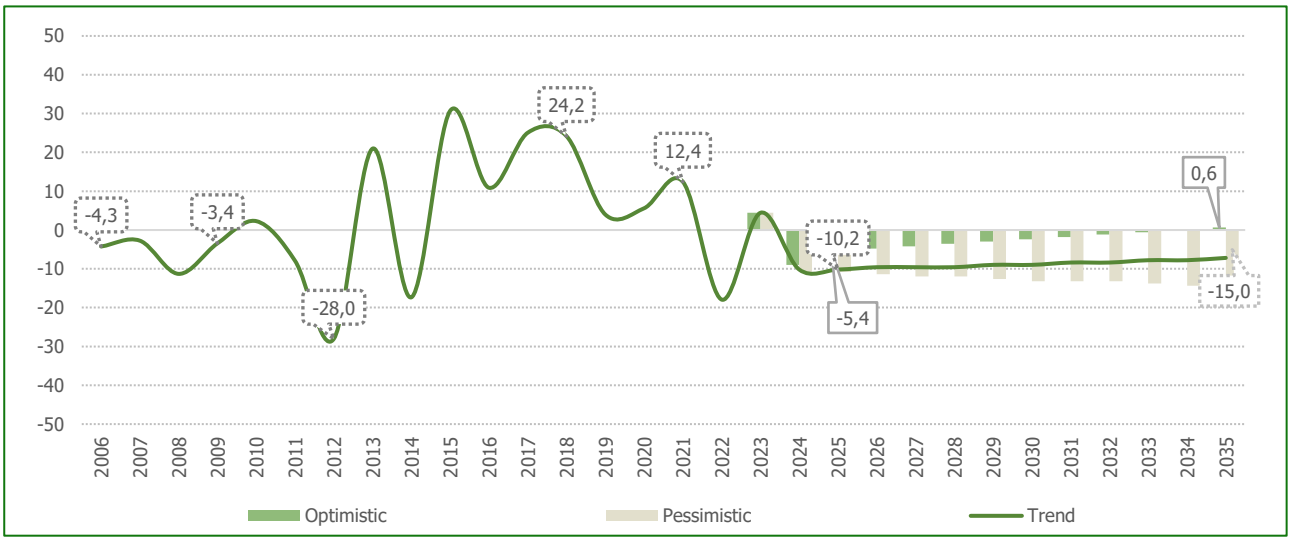

Figure 3. Foresight of the growth rate of the entrepreneurship resource component of Ukraine's socio-economic recovery, 2024-2035, %. *(Source: based on the authors' calculations)*

The results of the econometric analysis confirm the hypothesis that there is a moderate inverse relationship between the growth of the determinants of entrepreneurial activity and the emigration of young people abroad. Thus, if the war ends by the end of 2025 and the migration situation stabilises, the entrepreneurial potential will continue to decline slowly in the short term and will probably start to grow slightly only in the long term at the end of the forecast period around 2035. Accordingly, if the current trends continue or the security situation worsens and the intensity of youth out-migration increases, we should expect an increase in destabilising trends that will ultimately lead to a decrease in entrepreneurial potential. Thus, according to the pessimistic scenario, the growth rate of entrepreneurial potential will decrease annually by 10% in 2024-2025 and gradually increase the negative growth to 15% in 2035.

The economic and mathematical modelling of resource base for the socio-economic recovery of Ukraine clearly shows that the intensity of migration processes involving young people and the vector of their movement can become a basic factor in establishing and ensuring the demographic and socio-economic security of Ukraine in the event of increased re-emigration and immigration flows or its violation in the event of further depletion of human resources.

DISCUSSION

The results of the study are not without objective methodological limitations and debatable points, which include, first, the ambiguity of how sensitive the components of the socio-economic recovery potential of the national economy to changes in youth migration trends are, since the recording of youth migration involves the monitoring of persons who have deregistered rather than emigrated abroad for a long period; second, taking into account other structural characteristics of youth migration may change the econometric models or show a weak connection with the components of the resource potential. It is also worth mentioning the impact of other determinants of influence on the preservation and development of the resource potential of territories, such as investment processes, the institutional capacity of the state, or international factors.

Forecasting the resource potential of the country's socio-economic recovery is a complex task. Due to the delicate structural design, the results of the calculation are conditional. At the same time, it is important to determine the existing dependencies of the intensity of external emigration of young people from Ukraine, which we consider as a determining factor that affects the transformation of resource base of the processes of Ukraine's socio-economic development, and the one that will most likely determine the pace and possibilities of socio-economic reconstruction and recovery of Ukraine in the post-war period if the existing patterns are maintained.

CONCLUSIONS

The study confirms the hypothesis that there is a close relationship between migration losses and the potential for socio-economic recovery in Ukraine. This is evidenced by the results of an econometric study, which verified the existence of a causal and systemic relationship between the state, dynamics, and structural characteristics of migration and the components of the resource potential of socio-economic development in the short and long term.

The forecast of the resource potential of Ukraine's socio-economic recovery is based on a scenario approach with the construction of three models of intention development: trend (the level of youth migration abroad remains at the pre-war level), optimistic (the rate of youth out-migration decreases with a simultaneous increase in re-emigration of young people who were forced to leave the territory as a result of the military aggression of the russian federation), and pessimistic (the trends of mass departure of the young population observed in 2022-2023 continue). The article finds that if the migration losses of young people are reduced by 1 % (optimistic scenario), the resource potential of socio-economic recovery will increase, in particular, the labour resource by 0.56 % (an increase in demographic and labour potentials should be expected by 0.41 % and 0.26 %, respectively), the capital resource by 0.69 % (financial and production potentials by 0.15 % and 0.52 %, respectively), and the innovative and entrepreneurial potentials by 0.74 % and 1.2 %, respectively. According to the trend scenario, migration losses of young people will remain at the level of 4% annually in 2024-2025 and gradually decline to an average annual rate of 1.5% (by 2035); according to the pessimistic scenario, migration losses will increase to 8% annually by 2035, which will make it virtually impossible to preserve the country's potential for socio-economic recovery.

When further improving the methodology for analysing the impact of structural and dynamic characteristics of migration on changes in the components of the resource potential of Ukraine's socio-economic recovery, it is important to expand the research to the community level to include social sector data and identify the impact on social inequality, vulnerability, and weakening of social resilience.

ADDITIONAL INFORMATION

AUTHOR CONTRIBUTIONS

All authors have contributed equally.

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CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest.

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СОЦІАЛЬНО-ЕКОНОМІЧНЕ ВІДНОВЛЕННЯ УКРАЇНИ В УМОВАХ МІГРАЦІЙНОЇ КРИЗИ: ФОРСАЙТ РЕСУРСНОГО ПОТЕНЦІАЛУ

Метою дослідження є побудова форсайту (прогнозу до 2035 р.) соціально-економічного відновлення України в проєкції впливу міграційних втрат на ресурсний потенціал. Потенціал соціально-економічного відновлення країни представлений у вигляді шестикомпонентної системи, що включає фінансовий і виробничий потенціал (компонент «Капітал»), демографічний і трудовий потенціал (компонент «Праця»), інтелектуально-інноваційний потенціал (компонент «Інновації») та підприємницький потенціал (компонент «Підприємництво»). Форсайт потенціалу соціально-економічного відновлення України на основі сценарного підходу включає три моделі розвитку інтенцій: тенденційну (збереження рівня міграції молоді за кордон на довоєнному рівні), оптимістичну (зниження темпів виїзду молоді з одночасним зростанням реміграції) і песимістичну (збереження високих темпів виїзду молодого населення). Прикладний зміст дослідження полягає в сценарному моделюванні соціально-економічного відновлення України в проєкції міграційних втрат, що дозволить розробити методику аналізу впливу міграції на ресурсний потенціал соціально-економічної стабільності та розвитку в умовах шоків.

Ключові слова: економічне відновлення, міграційні втрати, прогноз, сценарій, молодь, фінанси, праця, демографічна ситуація, підприємництво, інновації

JEL Класифікація: C53, O15, O20