



**ISSUE
№59**



**EUROPEAN OPEN
SCIENCE SPACE**

COLLECTION OF SCIENTIFIC PAPERS



**2ND INTERNATIONAL
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**SCIENTIFIC PROGRESS:
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OCTOBER 27-29, 2025, BRAGA, PORTUGAL





**EUROPEAN OPEN
SCIENCE SPACE**

Proceedings of the **2nd** International Scientific
and Practical Conference

**"Scientific Progress: Theories, Applications
and Global Impact"**

October 27-29, 2025

Braga, Portugal

Collection of Scientific Papers

Braga, 2025



UDC 01.1

Collection of Scientific Papers with the Proceedings of the 2nd International Scientific and Practical Conference «Scientific Progress: Theories, Applications and Global Impact» (October 27-29, 2025. Braga, Portugal). European Open Science Space, 2025. 286 p.

ISBN 979-8-89704-969-1 (series)

DOI 10.70286/EOSS-27.10.2025



The conference is included in the Academic Research Index ReserchBib International catalog of scientific conferences.



The conference is registered in the database of scientific and technical events of UkrISTEI to be held on the territory of Ukraine (Certificate №560 dated 16.06.2025).



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ISBN 979-8-89704-969-1 (series)



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INTERNATIONAL MOBILITY AND REDISTRIBUTION OF HUMAN CAPITAL: CURRENT TRENDS AND CHALLENGES FOR UKRAINE

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Abstract. The article provides an analytical overview of current scientific research on the issue of global competition for human capital and the international mobility of highly skilled professionals. The main theoretical approaches to understanding human potential are analyzed – human capital, institutional-structural, competence-ecosystem, and socio-cultural-opportunistic. Various models of managing international talent migration are summarized, and key policy directions for retaining, developing, and returning human capital are identified. The study outlines strategic priorities of national human capital policy, including institutional strengthening, the development of innovative ecosystems, support for diaspora networks, stimulation of professional mobility, and integration into the global knowledge exchange system. The article emphasizes that effective management of international mobility should be based on balancing openness to global circulation of talents with the protection of national development resources.

Keywords: human capital, international mobility, migration policy, global competition, human potential recovery, talents.

In the modern context of globalization, human capital has become the main resource of national competitiveness. Knowledge, skills, innovative potential, and human creativity are increasingly regarded as key drivers of economic growth and social stability. Therefore, the struggle to attract, retain, and develop highly skilled workers has turned into a global competition among states, regions, and corporations. In this context, international migration is not only a demographic or social phenomenon but also a powerful mechanism for the redistribution of human capital on a global scale.

Global competition for human capital is intensifying due to demographic aging in developed countries, technological transformations in the labor market, and changes in forms of employment. Highly developed countries are actively improving their migration policies, introducing programs to attract talented specialists, researchers, and entrepreneurs. At the same time, donor countries of human capital – particularly those of Central and Eastern Europe – face large-scale losses of intellectual potential, which weakens their innovative and economic development.

For Ukraine, the problem of preserving and restoring human capital has become particularly acute due to the consequences of war, large-scale labor and educational migration, and the challenges of post-war recovery. The loss of professionals, scientists, and young people with high educational potential poses serious risks to the country's economic security and long-term modernization. In this context, there is an urgent need to revise migration policy, adapt it to the new realities of the international labor market, and integrate it into the global system of talent mobility.

The purpose of this article is to conduct an analytical review of contemporary scientific research published in the Scopus database concerning global competition for human capital, to identify key trends, concepts, and strategic approaches to the development of an effective national migration policy. The paper summarizes theoretical approaches, compares practices across countries, and defines key policy directions that ensure the preservation, development, and return of human potential.

In the modern conditions of global mobility, digital transformation, and demographic challenges, the problem of preserving, developing, and returning human potential acquires strategic importance for most states. Human capital is increasingly perceived not only as a set of knowledge and skills determining labor productivity but also as a complex socio-economic, cultural, and political resource, the effective management of which defines a country's long-term competitiveness.

From a theoretical standpoint, several approaches to understanding the dynamics of human potential can be identified. The classical human capital approach views human capital as an individual's stock of knowledge, skills, and competencies that enhance productivity. Investments in education, healthcare, and professional training are seen as the main channels of its formation, while migration acts as a mechanism for redistributing these resources across regions (Becker, 1993). Over time, this paradigm has been complemented by the "brain drain – brain gain – brain circulation" model, which emphasizes not only losses but also potential benefits of mobility. The return of professionals from abroad brings back accumulated knowledge and experience (return), while circular migration (circularity) fosters technology transfer, the expansion of research networks, and the strengthening of diaspora ties (Docquier & Rapoport, 2012).

The institutional-structural approach shifts the focus from individual characteristics to the quality of national institutions — the labor market, education system, research infrastructure, and legal stability. Institutional weakness provokes "capital leakage", whereas institutional strengthening creates conditions for retaining

and attracting talents (ILO, 2024). Meanwhile, the competence-ecosystem approach conceptualizes human potential as an element of a broader innovation ecosystem, where key factors include interaction among universities, enterprises, and startups. In this logic, regional competitiveness is determined not only by education levels but also by opportunities for practical application of skills and access to financial and technological resources (OECD, 2024).

Modern frameworks also recognize mobility as a strategic factor that can be managed through well-designed policies. The concept of managed mobility interprets the movement of specialists not as a threat but as a resource that, under proper management, facilitates knowledge exchange, partnership creation, and innovation transfer. Complementing this is the socio-cultural and opportunistic approach, which acknowledges that migration decisions depend not only on economic incentives but also on quality of life, cultural attractiveness, and a sense of security. Therefore, an effective policy of human potential preservation must integrate social and cultural dimensions.

A comparative analysis of international practices shows that countries apply diverse strategies depending on their position within the global migration system. Talent-receiving countries such as the USA, Canada, Australia, and Singapore actively use special visa regimes for highly skilled migrants, simplified paths to permanent residence, grant programs for researchers, and R&D investment incentives. Their strengths include labor market flexibility, high wages, developed innovation infrastructure, and international educational appeal. However, such countries also face challenges of social fragmentation and intensified competition among global centers for talent (OECD, 2024).

Human capital donor countries (Central and Eastern Europe, Global South) experience the opposite situation. They attempt to mitigate the consequences of brain drain through diaspora programs, return initiatives, startup support, and tax incentives for re-emigrants. Yet, the effectiveness of these policies is limited by institutional instability, low wages, and underdeveloped research infrastructure (Grabowska, Jastrzebowska, 2023). Intermediate-policy countries, such as Germany and France, combine talent attraction programs (e.g., EU Blue Card) with integration tools – language courses, diploma recognition, and startup support. A distinctive feature of these systems is the partnership between universities, industry, and state institutions (de Lange, 2018).

Based on the synthesis of international experience, several key directions of political decision-making can be defined. Retention policies should include enhancing the competitiveness of working conditions, developing high value-added jobs, improving social infrastructure (housing, healthcare, education), and promoting regional professional mobility. Development policies encompass investment in higher education, lifelong learning, scientific research, startup support, and fostering interdisciplinarity and soft skills. Return and attraction policies should involve targeted programs for re-emigrants and diasporas, financial grants for startups and R&D, creation of remote collaboration platforms, and simplified immigration procedures for talents.

An essential component of these policies is institutional support – interagency coordination of human capital strategies, mobility monitoring systems, development of databases on professional trajectories, and private sector involvement through public-private partnerships. All these measures should be guided by ethical considerations, balancing talent attraction with social cohesion and equality of opportunity.

At the same time, several risks and trade-offs exist. Excessive "talent trading" may deepen global inequalities as developed centers absorb resources from peripheral countries. Short-term incentives – such as tax benefits or simplified visas – may produce quick but unstable effects without systemic reforms. Return policies must be comprehensive: financial support without proper infrastructure and employment opportunities cannot ensure sustainable results. Therefore, a long-term strategy must integrate economic, social, and cultural aspects.

In conclusion, an effective policy of preserving, developing, and returning human potential must be comprehensive, balancing the retention of domestic resources with openness to international knowledge circulation. Its foundation lies in institutional stability, investment in innovation ecosystems, support for diaspora networks, the development of lifelong learning systems, and ensuring the social quality of life. In the modern world, mobility is no longer a threat – it has become a strategic resource that can be managed through inclusive policies of cooperation between the state, business, and society.

References

1. Becker, G. S. (1994). Human capital: A theoretical and empirical analysis, with special reference to education (3rd ed.). University of Chicago Press. URL : <https://www.nber.org/books-and-chapters/human-capital-theoretical-and-empirical-analysis-special-reference-education-third-edition>
2. Docquier, F., & Rapoport, H. (2012). Globalization, brain drain, and development. *Journal of Economic Literature*, 50(3), 681–730. <https://doi.org/10.1257/jel.50.3.681>
3. Grabowska I., Jastrzebowska A. (2023). Migration informal human capital of returnees to Central Europe: a new resource for organisations. *Central European Management Journal*. DOI 10.1108/CEMJ-01-2022-0014. CEMJ-01-2022-0014 PUBLISHED
4. ILO: Global Employment Trends for Youth 2024. International Labour Office. URL : <https://www.donorplatform.org/post/publications/ilo-global-employment-trends-for-youth-2024/>
5. de Lange T. Welcoming talent? A comparative study of immigrant entrepreneurs' entry policies in France, Germany and the Netherlands. *Comp Migr Stud*. 2018;6(1):27. doi: 10.1186/s40878-018-0092-4.
6. OECD. (2024). Migration policies, returns, and attracting talent. OECD Publishing. URL : <https://www.oecd.org/en/topics/migration-policies-returns-and-attracting-talent.html>.