

CONCEPT OF "VIRTUAL RETURN" IN HUMAN CAPITAL RECOVERY UNDER MIGRATION RISKS

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Abstract. The large-scale displacement of Ukrainian specialists due to the ongoing war has created significant challenges for national human capital recovery. Traditional mechanisms of return migration face structural, economic, and security-related obstacles. This paper introduces the concept of virtual return as a complementary approach to mitigating migration risks and preserving intellectual potential. Drawing on recent studies on migration, digital labor, and the impact of war on science and education, the research demonstrates that virtual return enables skilled professionals abroad to contribute remotely to the development of Ukraine through digital platforms, research collaborations, and educational projects. The analysis highlights the opportunities and limitations of this concept in the context of human capital restoration.

Keywords. virtual return; migration risks; human capital recovery; war; Ukraine; digital labor; brain drain

Introduction

Migration processes significantly influence the dynamics of human capital in countries experiencing war and socio-economic crises. According to de Rassenfosse (2023), war disrupts scientific ecosystems and accelerates the brain drain of highly skilled professionals, which in the case of Ukraine results in long-term developmental risks [1]. On the other hand, as Górný and van der Zwan (2024) argue, mobility trajectories of Ukrainian migrants are diverse and often shaped by digital labor opportunities [2]

In this regard, the concept of virtual return has emerged as a potential strategy for minimizing human capital losses without requiring physical repatriation. Virtual return refers to the engagement of emigrants in scientific, educational, and innovation projects from abroad, using digital infrastructures.

The aim of this study is to conceptualize virtual return as a mechanism of human capital recovery under migration risks.

Migration creates severe risks for the national labor market. Pham, Talavera and Wu (2023) highlight that wartime labor markets in Ukraine show contraction and structural shifts, with many sectors lacking skilled workers [3].

According to Ryndzak (2022), return migration can conserve human resources, but traditional physical return is hindered by war-related risks [4].

In this situation, virtual return offers a hybrid solution. As Adema, Chargaziia, Giesing & Poutvaara (2025) argue, Ukrainian refugees prioritize professional integration over welfare dependence, which creates preconditions for digital cooperation with institutions at home [5].

The concept of virtual return refers to the engagement of migrants' intellectual, social, and financial resources without their physical relocation to the home country. According to Górný and van der Zwan (2024), digital platforms and transnational networks create opportunities for remote work, teaching, scientific collaboration, and innovation development [2]. This allows emigrants to support Ukraine while remaining abroad.

Virtual return can manifest in various forms, including participation in joint scientific research and academic collaborations, online teaching, mentoring and workshops, as well as the creation of digital startups and innovative projects. It also involves financial support for cultural and social initiatives and contributes to strengthening professional and cultural ties with Ukraine. In this way, virtual return transforms migration from a factor of loss into a powerful resource for development. This concept creates new opportunities for preserving and enhancing human capital: Ukrainian scholars abroad can participate in research projects of Ukrainian universities and academic institutions; teachers and lecturers are able to deliver online courses to students in Ukraine, ensuring the continuity of knowledge transfer; professionals in the fields of innovation and entrepreneurship can remotely establish startups through digital platforms, thereby supporting the country's innovation capacity. Thus, virtual return enables migrants to remain engaged in the development of their homeland, even while residing abroad, and serves as an effective tool for the recovery of human capital in the context of contemporary migration risks.

However, the model also has limitations. As Zakharova (2020) emphasizes, structural demographic and socio-political crises complicate human capital restoration [6]. Moreover, long-term reliance on virtual return without policies for physical reintegration may deepen labor market imbalances (Table 1).

Table 1 Advantages and disadvantages of the virtual return concept

Advantages	Disadvantages
Preserves intellectual potential without physical relocation	Dependence on digital infrastructure
Enhances science and education through remote participation	Cannot fully replace the local workforce
Creates opportunities for innovation and digital startups	Requires effective coordination between state institutions and diaspora
Strengthens ties between migrants and Ukraine	Risk of "double detachment": weak integration both abroad and in Ukraine
Reduces long-term brain drain risks	May create inequality (limited access to digital resources)
Flexible: can be implemented despite security challenges	Needs state strategy and financial support
Supports identity and cultural connection with homeland	Limited direct impact on physical reconstruction (infrastructure, industry)

The study demonstrates that virtual return represents a promising approach to addressing human capital losses in wartime Ukraine. While it cannot fully substitute the physical presence of specialists, it provides a mechanism for leveraging global knowledge, skills, and networks in favor of national recovery. To maximize its potential, Ukraine needs a comprehensive policy framework integrating virtual engagement into broader strategies of human capital restoration.

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ОБҐРУНТУВАННЯ ЗОВНІШНІХ (МІЖНАРОДНИХ) ВОЄННО-ЕКОНОМІЧНИХ УМОВ РОЗВИТКУ ЗБРОЙНИХ СИЛ

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Поступальний розвиток Збройних Сил значною мірою залежать від того, наскільки вчасно і коректно враховано вплив зовнішніх, насамперед міжнародних, воєнно-економічних умов. Йдеться про структуру та обсяги допомоги, доступ до технологій, санкційні режими, кооперацію у сфері озброєнь,