HUMAN CAPITAL IN MOLDOVA IN THE CONTEXT OF ACTUAL DEMOGRAPHIC REALITIES

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Abstract

Moldova is now facing large depopulation mainly due to migration and high premature mortality, which both quantitatively and qualitatively affect human capital. The aim of this study is to comprehensively evaluate the influence of international migration and premature mortality on Moldova's human capital development. International migration impact was estimated based on net migration and age-specific net migration rates by sex. The level of mortality was assessed through the proportion of deaths before age 65, ASSMR, and lifespan disparity. Negative net migration represents almost 10% of the population in the last eight years, and 98.9% of cases refer to those aged 0-39. Annually, the losses determined by premature mortality represent 1.5-2% of the population up to 65 years. The most affected is the male population. Return migration cannot compensate for all the losses caused by negative net migration. The losses due to premature mortality are irreversible, while in migration, there is the probability of return to the country of origin. The direct losses in human capital must be cumulated by the indirect ones, translated into loss potential implications in socio-economic development.

Keywords: human capital, international migration, return migration, premature mortality, Moldova

JEL Code: J11, J24, R23

Introduction

Human capital is delineated by two major dimensions: quantitative and qualitative. When human capital is constrained quantitatively, it may manifest as highly skilled and qualitative, thus emerging as a considerably more valuable resource than a counterpart with greater quantitative representation but diminished qualitative attributes. The quality of human capital has become an increasingly prominent concern, particularly in light of the current demographic trends observed in many countries worldwide. Due to the high levels of demographic ageing, developed countries tend to make policies that encourage the immigration of foreigners with

work potential and highly skilled immigrants, thus ensuring the continuity of the social and economic development process. Skilled migrants contribute substantially to the development of science and technology, while low-skilled migrants present a source of cheap labour.

Nevertheless, migration is not always a positive phenomenon, and for sending countries, it represents the channel through which human capital, in essence, is lost. In the case of Moldova, migration has substantially affected the entire society for three decades. With the intensification of labour migration flows in the early 1990s, Moldova lost a significant number of its population each year. Recent estimates have put the population decline due to migration at over 1 million or more than 20% (Tabac & Gagauz, 2020)

The implications of health on human capital can be translated as the facilitation of conditions that foster access to other fundamental domains, such as education and skill development. On the other hand, the absence of health or precarious health prevents individuals from realising their potential and achieving full integration within human capital. Regarding Moldova, the trends exhibit some of Europe's lowest life expectancy at birth indicators. This is largely influenced by the observed mortality patterns and age structure. In the case of Moldova, the Eastern European mortality pattern is retained, with a notable emphasis on the adult population, particularly among males (Penina, 2022). This factor contributes to a slower progression in increasing life expectancy at birth (Gagauz, Tabac, & Pahomii, 2023). The recent improvements in life expectancy are primarily driven by reductions in infant mortality, with comparatively fewer reductions in mortality within the adult and elderly age groups.

The aim of this study is to comprehensively evaluate the influence of international migration and premature mortality on Moldova's human capital development.

1   Literature review

Migration is seen as both a stabilising force on human capital and a force which negatively influences it. Migrant-receiving countries are highlighted by the positive impact of migration on the diversification and sustainable development of human capital (Spiridonova & Sudova, 2018). In sending countries, the distortion of the accumulation and creation of human capital is noticeable, which leads to a slowdown of development, especially in countries with reduced technical potential (Di Maria & Stryszowski, 2009). Eastern Europe is one of the most affected areas by the emigration of human capital and brain drain (Newsham & Rowe, 2023). This concern extends to Moldova, which is an integral part of this affected geographical domain.

Migration is a determining factor in the accumulation or dissipation/destruction of human capital internally because well-trained people are involved in internal migration, which presents potential human capital for more developed internal areas. This process causes increasing regional discrepancies (Kooiman, Latten, & Bontje, 2018; Ballatore & Mariani, 2019). Internal migration allows the migration of human capital from less developed areas to highly developed ones within the country. Human capital originating from developed areas of the country is more actively involved in external migration to countries with high development potential (Ballatore & Mariani, 2019).

Return migration can be considered a chance to restore and stabilise human capital in donor countries. The human capital of returnees shows greater potential compared to the native population, untrained in migration, especially in entrepreneurial activity (Vārpiņa, Krūmiņa, Fredheim, & Paalzow, 2023). Being a debated aspect in the literature, some researchers believe that migrants trained in low-skill activities in the destination country do not accumulate human capital but lose their human capital potential. (Nieto, 2012).

The strong link between health and human capital quality and productivity is recorded in numerous scientific researches (Bloom, Canning, & Sevilla, 2001; Tamura, 2006; Pijalovic, 2013). Poorer health determined reduced possibilities to enhance the human capital of a person and even the propagation of this inequality in opportunities and in future generations (Chakraborty & Das, 2005). The study of Spanish flu on specific cohorts, which is very current, demonstrated the reduction in years of schooling and, respectively, in the accumulation of human capital (Percoco, 2016). The impact of health on human capital quality was also investigated through investments in health, and it was stated that investments in health go beyond the health area and enhance not just economic growth and economic standards but also the quality and accumulation of human capital (Bloom & Canning, 2003).

2   Data and methods

The data used in this research were retrieved from the National Bureau of Statistics (NBS) of Moldova's database. The used data on international migration, number of deaths and exposure population were disaggregated by gender and age. The analysis focused on the period 2014-2022. The starting point of the period is determined by the recalibration carried out by the NBS concerning the population figures. Therefore, from 2014 onwards, the population figures pertain only to the population with usual residence, excluding long-term international migrants.

International migration impact was estimated based on net migration and age-specific net migration rates by sex. Migration in-flows and out-flows refers to long-term migration (for a term of 12 months and more).

In order to capture the level of mortality, several indicators were computed: the proportion of deaths before the age of 65 based on real population and life tables data, Age-Specific Standardised Mortality Rate (ASSMR), and lifespan disparity. The proportion of deaths up to the age of 65 was calculated based on two methods to avoid the induced errors caused by the level of mortality and the age structure of the population. Age-Specific Standardised Mortality Rates were calculated using the European Standard Population 2013 as the reference. The lifespan disparity ($e^\dagger$ - *e-dagger*) is the average remaining life expectancy when death occurs or life expectancy/life years lost due to death (Shkolnikov, Andreev, Zhang, Oeppen, & Vaupel, 2011). It weights the average remaining life expectancy at age *x* by the number of life table deaths at age *x* (Kibele, 2012).

The used formula is expressed as follows:

$$e^\dagger = \sum_{\alpha=0}^{\omega-1} d_\alpha \bar{e}_\alpha \qquad (1)$$

where,

ω − is the highest age group, in our case, 85 years;

$\bar{e}$ − is the average remaining life expectancy;

α − age.

This paper also has the results of qualitative research carried out by authors in 2019 on a sample of 40 in-depth interviews with return migrants and experts.

3   Results

3.1   International migration, depopulation and human capital loss

Migration continues to be the major force behind depopulation and the loss of human capital. The population of Moldova decreased by 274.2 thousand people in 2014-2021, representing -9.6% of the population with usual residence at the beginning of 2014. The net migration rate varied between -0.3% and -1.8% (*Table 1*).

Table 1. Long-term migration in 2014-2021

	2014	2015	2016	2017	2018	2019	2020	2021
emigrants, thousand	123,0	127,3	153,4	158,3	158,8	153,3	72,4	113,8
immigrants, thousand	98,7	105,8	107,3	107,6	116,7	116,2	65,2	68,4
net migration, thousand	-24,2	-21,4	-46,1	-50,7	-42,0	-37,1	-7,2	-45,4
net migration rate, per 100	-0,8	-0,8	-1,6	-1,8	-1,5	-1,4	-0,3	-1,7
female net migration, %	68	70	48	41	40	39	36	35
urban net migration, %	68	61	45	43	51	54	48	41

Source: Author's calculation based on the NBS data

Net migration by age group shows a very tragic picture (*Table 2*). Migration included, first of all, the 20-24 and 25-29 age groups. However, particularly high values can also be observed in the age groups 0-4 years and 15-19 years. The results are alarming because young children do not migrate alone; therefore, the figures show an increase in the migration of adults and families with children.

The net balance of migration (-274.2 thousand people) is 70% made up of the working age population (15-59 years)[1], 72% of the reproductive age population (15-44 years), 60% of the young population (15-34 years) and in 31.2% of children aged 0-14. Moreover, 98.9% of the total net migration refers to the population aged 0-39.

**Table 2. Long-term migration by age groups in 2014-2021, thousand people**

	2014	2015	2016	2017	2018	2019	2020	2021	Total
0-4	-3,1	-2,5	-3,3	-3,6	-6,2	-6,4	-3,5	-6,0	**-34,6**
5-9.	-3,4	-3,3	-3,2	-3,4	-4,6	-4,7	-2,6	-3,5	**-28,8**
10-14.	-2,8	-2,6	-2,3	-2,5	-3,6	-3,5	-2,2	-2,7	**-22,3**
15-19	-4,9	-4,4	-5,1	-5,3	-4,6	-4,4	-2,9	-5,7	**-37,3**
20-24	-6,0	-5,0	-9,0	-9,6	-7,4	-5,6	-2,1	-8,7	**-53,4**
25-29	-4,0	-4,3	-8,7	-9,1	-6,7	-5,1	-1,3	-6,0	**-45,3**
30-34	-1,8	-2,3	-6,0	-6,6	-4,8	-3,9	-0,4	-4,7	**-30,5**
35-39	-0,9	-0,6	-3,5	-4,6	-3,3	-2,4	-0,1	-3,6	**-19,0**
40-44	-0,2	0,05	-2,9	-3,0	-1,9	-1,5	0,2	-2,7	**-11,8**
45-49	0,8	0,9	-1,4	-1,9	-0,6	-0,4	1,1	-1,6	**-3,2**
50-54	0,9	1,3	-0,2	-0,6	0,1	0,3	1,7	-0,7	**2,8**
55-59	1,0	1,1	0,2	0,2	0,6	0,5	2,0	0,4	**5,9**
60-64	0,5	0,6	0,0	-0,1	0,7	0,5	1,8	0,7	**4,7**
65-69	0,02	0,05	-0,2	-0,2	0,4	0,1	0,9	0,2	**1,2**
70-74	-0,2	-0,1	-0,2	-0,2	0,1	-0,2	0,2	-0,2	**-0,8**
75-79	-0,1	-0,1	-0,2	-0,1	-0,1	-0,1	0,02	-0,2	**-0,9**
80-84	-0,04	-0,1	-0,1	-0,1	-0,1	-0,1	-0,03	-0,2	**-0,6**
85+	0,04	-0,1	-0,03	-0,04	0,1	-0,05	-0,03	-0,1	**-0,2**
Total	**-24,2**	**-21,4**	**-46,1**	**-50,7**	**-42,0**	**-37,1**	**-7,2**	**-45,4**	**-274,2**

Source: Author's calculation based on the NBS data

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[1] The share of the working-age population (15-59 years) is lower than the population in the reproductive ages (15-44 years), due to the positive migration growth registered among migrants aged 50 and over.

The increased negative migration of young people and positive migration in the pre-retirement and retirement age groups is better captured when estimating the age-specific net migration rates by sex *(Fig.1)*. According to the results, the intensity of migration is high for all young age groups and for both sexes, but the most increased is the migration of the male population, especially those aged 15-29. Migration rates are generally positive around the ages of 45-50 – in women starting at age 45 and in men starting at age 50 (except some years). These results follow from the return of migrants of older generations, who for long periods are classified as labour migrants in Russia and Italy, but also in countries such as the Czech Republic and Poland. The outbreak of the Covid-19 pandemic in 2020 changed the trends of migration flows. Namely, it slightly stopped migration intensity and boosted the return to Moldova. This year, men aged 30-54 who were in some instability and insecurity at work abroad, as well as women working in Italy aged 40-74 (the pre-retirement and retirement ages) returned massively.

Fig. 1: Age-specific net migration rates by sex, per 100 people
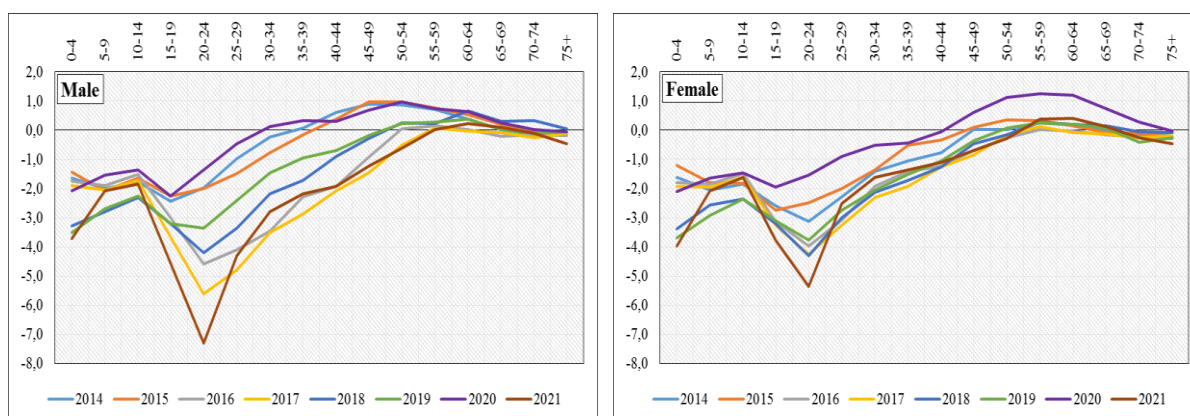
Source: Author's calculation based on the NBS data

So, it is undeniable that international migration only absorbs the demographic potential of Moldova and a considerable part of the human capital, taking into account that the net negative migration is enormous among those who have completed pre-university studies, and some of them also university studies, as well as among the adult economically productive population.

## 3.2 Human capital in the context of high premature mortality

One of the demographic instruments that facilitates the evaluation of the population's health status is premature mortality. Premature mortality encompasses a broader concept that

illuminates the trajectory of mortality within a specific population segment, the adult population.

In Moldova, 39,000 to 36,000 deaths are recorded annually, with approximately 53% and 47% of these occurring among males and females, respectively. Half of the recorded deaths occurred at the beginning of the analysed period before the age of 65 for males (*Fig. 2*). This proportion has steadily decreased, reaching 40% in 2022. The proportion of deaths before age 65 is approximately half for females compared to what is observed for males, and this gender gap has remained consistent throughout the period. The proportion of deaths up to 65 years based on life tables data repeats the trends observed in the real population. The path is lower, but the general tendency is the same.

The reduction trend is also corroborated by the Age-Specific Standardized Mortality Rate (ASSMR), and the gender gap is similarly highlighted (*Fig. 2*). ASSMR before the age of 65 for males decreased by approximately 16% between 2014 and 2022. For females, the reduction amounted to 17%. The most significant reductions among males were in the age groups of 35-44 years and 45-54 years. For females, notable reductions were in the age groups of 35-44 years, 45-54 years and 55-64 years.

**Fig. 2: ASSMR and proportion of deaths up to 65 years dynamics, 2014-2022**
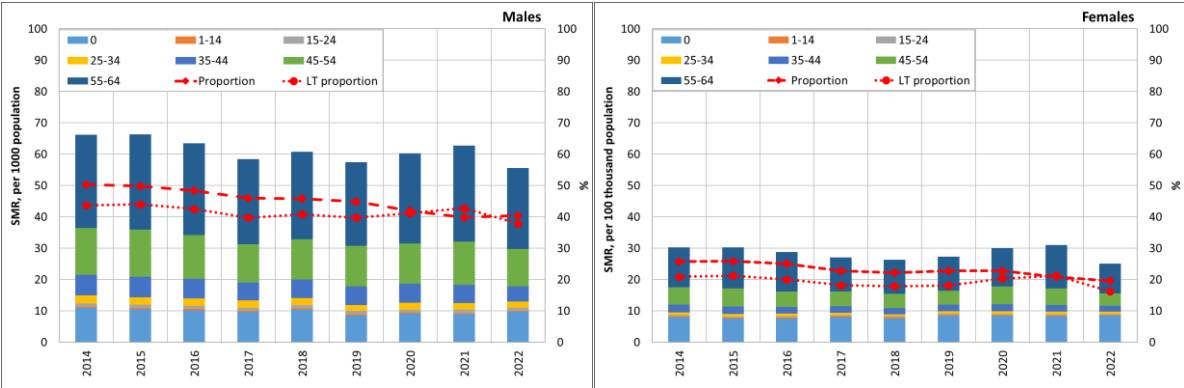
Source: Author's calculation based on the NBS data

The analysis of lifespan disparity indicates the same positive trend of reducing premature mortality and the persistence of gender disparities (*Fig. 3*). The pandemic changed the overall trends, contributing to a reduction in the gender gap. However, the post-pandemic data demonstrates a return to the usual mortality patterns. Lifespan disparity decreased for males by approximately 7%, from 13 to 12.1 years, and for females by 10%, from 10.6 to 9.5 years. The value of lifespan disparity indicates the years of life lost for males and females due to the increased variability in the age of death. A lower value for lifespan disparity indicates

that the age at which people in the general population pass away is closer to the value of life expectancy at birth. When there is greater variation in the age of death compared to the value of life expectancy at birth in the general population, an increase in lifespan disparity is noted. The elevated mortality levels in young and adult age groups observed in Moldova and the slow reduction in these figures result in slower progress in reducing lifespan disparity.

Fig. 3: Lifespan disparity dynamics by sexes, 2014-2022, years
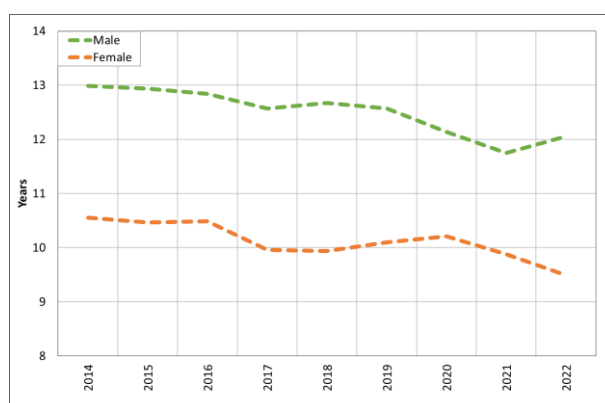
Source: Author's calculation based on the NBS data

3.3 Return migration and partial compensation of lost human capital

Return migration is poorly recorded in Moldova. A quantitative examination according to the characteristics and skills of return migrants is complicated. The disaggregated data of immigration flows provided by NBS showed that in 40%-60%, immigration represents the citizens of the Republic of Moldova. Qualitative research based on 40 interviews with returned migrants and experts allowed us to identify the return reasons and the contribution of returned migrants to the socio-economic and political development of Moldova. The return reasons are primarily related to the family situation and emotional attachment to places and people. Return was also determined by financial difficulties, discrimination, and the lack of integration in the destination country (Ianioglo, Tabac, Pahomii, Ceban, & Onofrei, 2021). Even though there are fewer, some interviewee migrants mentioned that they returned intending to make investments. Also, this trend is evident in the increase in the number of migrants financed by state programs and programs of non-governmental organisations for the initiation or development of businesses.

The inclusion of the Moldovan population in global migration processes has stimulated the development of small and medium enterprises and the emergence and development of innovative entrepreneurship ideas. Returned migrants succeeded in importing knowledge and professional skills from the countries where they were. Several women and families returned

from Italy have created and developed Italian-specific businesses in the production sector (production of bakery, traditional Italian pasta, cheese, etc.). Innovative entrepreneurship demonstrates the accumulation of new knowledge abroad and its transposition in the national business environment. Through return migration, the domestic market was diversified by new products from new species of plants and animals (imported, for example, from Austria, Belgium, Poland).

The field of entrepreneurship is not the only one that benefits from migration. Return migration also refers to young scholars and Moldovan professionals returning after completing training in globally competitive universities. Several public sectors in Moldova have assimilated cadres from the professional diaspora (Presidency, Government, Prosecutor's Office, education, health, etc.).

4   Conclusion

The presented demographic realities demonstrate the present and future perspectives regarding human capital in Moldova. Both international migration and premature mortality negatively affect the quantity and quality of human capital. The migration of young and adults produces a quantitative decrease in the trained population and the loss of state investments in its growth and formation. After completing their studies, the young and adults hardly find themselves in the native labour market, poorly branched in urban areas and almost non-existent in rural areas. This is essential for leaving the country and settling in countries with higher economic and social potential. At the same time, despite the recent trend of premature mortality decrease, its level remains relatively high, impacting the human capital. A high level of lifespan disparity points to individual-level inequalities, signifying varying chances for surviving to an advanced age within the general population and, by extension, for being an integral component of human capital.

The interdependence and the impact of these cannot be disregarded. They all must be considered within a common context and in the framework of their interrelation, emphasising the significance of the quantity and quality of human capital. It is important to highlight the development of policies and policy measures aimed at better-managing migration and decreasing premature mortality. Negative net migration represents almost 10% of the population in the last eight years. Annually, the losses determined by premature mortality represent 1.5-2% of the population up to 65 years. These direct losses must be cumulated with

the indirect losses determined by the potential economic and social development that the people who left the country or died prematurely could have brought.

The losses determined by mortality may not be at the same level or intensity as losses determined by migration, but they did not have the same repeatable character as migration. Once death occurs, it is an irreparable and irreversible loss. At the same time, migrants have the chance to return and contribute to the development of the country of origin and the accumulation of quality human capital.

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