# DEMOGRAPHIC AND ECONOMIC SHOCK EFFECTS OF THE FIRST YEAR OF WAR IN SUBCARPATHIAN REGION OF UKRAINE

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**Abstract**

Due to the 2022 Russian invasion, Ukraine suffered significant socio-economic damage. This study focuses on Subcarpathia, Ukraine's westernmost region, which, though not directly involved in the conflict, experienced substantial economic and social repercussions.

In the autumn of 2022, a survey was conducted in the Ukrainian-Hungarian border region near the authors' residence, home to a sizable Hungarian minority (12% of the regional population). Migration analysis revealed three categories within this community: 1) those who moved to safer parts of Hungary or other European countries; 2) those who temporarily fled but wish to return; 3) those who had previously emigrated. Various factors, reasons, and consequences were examined among these categories.

The research showed that besides the 2022 Russian invasion, Ukraine's prior economic challenges, the plight of the national minority, and other factors contributed to population emigration. Additionally, we explored factors that kept the local population in place, such as housing, employment, social, and psychological reasons.

While acknowledging social factors, our primary focus was on the economic aspect. Thus, this article evaluates the income, financial status, and changes caused by the war among the target group.

The demographic and economic analysis was based on a questionnaire survey, in the framework of which we examined more than 600 respondents, most of whom remained in Subcarpathia after the war. The research clearly indicates that the prolonged wartime situation increases the permanent settlement of emigrants (the main target group being in Hungary), and internal refugees are also planning to stay in the Subcarpathian region in the long term.

**Key words:** war in Ukraine, Subcarpathia, Migration, Hungarian minority, Economic impacts.

**JEL Code:** J11, J15, C15

## Introduction

The study aims to provide insight into the situation of the Subcarpathian region of Ukraine in the context of the Russian-Ukrainian war. The analysis focuses on both demographic and economic aspects and evaluates their interrelated (extinguishing) effects from the point of view of the population living along the Ukrainian-Hungarian border in the westernmost region of Ukraine. It is important to note that this area is inhabited by a native Hungarian minority, which until 1920 continuously belonged to the Kingdom of Hungary and the population was almost predominantly Hungarian. Then it was under the authority of Czechoslovakia until 1939, but after World War II, it was annexed by the Soviet Union. After the independence of Ukraine in 1991, Subcarpathia became the territory of the country. According to the last Ukrainian census in 2001, 12% of the region's population was Hungarian, and the majority of Hungarians lived in the examined border areas. However, after the 2014 revolution and the annexation of Crimea, the Hungarian population significantly declined, driven not only by economic reasons but also by unfavorable changes in Ukraine's minority policy and military conscription, which prompted some male residents to flee. These effects intensified after February 24, 2022.

Taking these peculiarities into account, the research focused on three groups: 1) Subcarpathian Hungarians who remained in their homeland after the outbreak of the war; 2) those who temporarily fled due to the war; and 3) those who had emigrated from Subcarpathia much earlier.

## Materials and Methods

The research is primarily methodological, relying on the collection and analysis of primary data, predominantly quantitative with a smaller qualitative component. In course of the study preparation, consultations were conducted with several experts to develop the questionnaire. Due to the limited mobility during wartime, an online survey format was chosen.

The research window lasted a little over a month, taking place between September 5 and October 9, 2022. The majority of responses were collected during the first two weeks of the survey. We gradually involved various organizations (educational institutions, business associations, etc.) after it became evident that the activity of advertising on social media was diminishing or the representation of certain groups was inadequate.

The questionnaire was prepared in the Hungarian language and targeted the Hungarian population living along the border or those who had previously emigrated from Subcarpathia. It was accessible online, and out of the 1,783 initiated responses, 611 became completed and evaluable. The dominant portion of the 611 respondents currently resides in Subcarpathia (479 individuals, 78.4%), 94 individuals (15.4%) left Subcarpathia in 2022 due to the war, and 38 individuals (6.2%) had previously left Subcarpathia. The results indicate that the highest level of representativeness was achieved among those who remained in their homeland, which was the primary target audience for the expected results of the study.

**Tab. 1: The distribution of the research sample by gender and marital status (in absolute numbers)**

| Category | By Gender | | By Marital Status | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | *Male* | *Female* | *Living with Partner* | *Divorced* | *Married* | *Single* | *Widowed* | |
| People living in Transcarpathia | 97 | 382 | 18 | 19 | 387 | 42 | 13 | ***94*** |
| Those who move away after the war | 36 | 58 | 9 | 0 | 70 | 13 | 2 | ***479*** |
| They moved earlier | 18 | 20 | 5 | 1 | 26 | 6 | 0 | ***38*** |
| ***Total*** | ***151*** | ***460*** | ***32*** | ***20*** | ***483*** | ***61*** | ***15*** | ***611*** |

Source: Questionnaire research (own editing).

## 1 The macroeconomic effects of the war in Ukraine in 2022 and expected consequences at the international economic level

The Ukrainian economy suffered significant losses in the early months of the full-scale Russian war. Due to the Russian invasion, GDP fell by more than 45% in March and April. The war led to an almost complete shutdown of the economy in 40% of the territory of Ukraine. After the Russian army was pushed out of the northern regions, the economy gradually began to recover. Our estimates suggest some improvement in the GDP decline, the decline in production may be 30-35 percent on an annual basis. However, the potential for further recovery are limited.

Inflation accelerated to 23.8% on an annual basis in August from 10% in 2021. Domestic consumer demand remains subdued due to declining real incomes, and thus, the main drivers of inflation are currently on the supply side.

The National Bank of Ukraine (NBU) and the government are taking measures to prevent the simultaneous impact of all inflationary factors to keep inflation under control. They prefer a scenario of longer-lasting high inflation over a shorter period of extremely high inflation. The key factors restraining price growth are the decline in domestic demand and the significant domestic supply of difficult-to-export grain and oilseeds.

The current account and financial account balances have been in deep deficit since the beginning of the war, putting significant pressure on the NBU's foreign exchange reserves.

Since February, the NBU's policy has been to offset excessive demand for foreign currency in the interbank market by selling reserves at a fixed exchange rate. During March-July, the NBU sold approximately $12 billion, reducing its reserves by 19% to $22.4 billion.

To slow down the decline in reserves, the NBU had to resort to a 20% devaluation of the hryvnia against the dollar (the dollar strengthened by 25%). The NBU decided not to switch to a flexible exchange rate regime, arguing that the fixed exchange rate has several advantages that provide a foundation for the economy during a period when other macroeconomic indicators are extremely volatile.

**Tab. 2: The financing of the Ukrainian budget in 2022**

| № | Indicators | 2021 | 2022 | 2023* |
|---|---|---|---|---|
| 1 | Budget deficit (without aid), billion $ | 5,41 | 33,21 | 31,05 |
| 2 | Loans, billion $ | 4,77 | 27,50 | 25,00 |
| 3 | GDP, billion $ | 199,77 | 160,50 | 161,30 |
| 4 | Budget deficit -to- GDP ratio (without aid), % | 2,71% | 20,69% | 19,25% |
| 5 | Budget deficit to GDP ratio, % | 5,10% | 37,83% | 34,75% |
| 6 | Public debt, billion $ | 97,95 | 111,34 | 133,93 |
| 7 | Public debt-to-GDP ratio, % | 49,03% | 69,37% | 83,03% |

Source: Own editing based on data from Ukrainian government sites (* forecast)

The economic crisis related to the country's situation led to a significant decrease in the tax revenues of the budget. In the first half of 2022, despite high inflation, it decreased by 12%. However, there are now clear signs that the situation has improved significantly since July, after the tax incentives introduced in the first weeks of the war were removed.

The economy continues to function, but in the coming years, it will face significant challenges. The loss of physical assets and human capital, combined with the difficult security situation, means that the recovery of GDP will be very slow (at most, a technical rebound can be expected due to the low base). Inflation has accelerated as expected but has not gone out of control.

In addition to national macroeconomic data, the study examined the effects occurring in global economic chains *(Koppány K. – Vakhal P., 2022)*. One important finding in connection with the war is that, while anomalies in global value chains caused by natural disasters, political decisions (Brexit), and the pandemic were able to recover in the short term, in the case of war, the partial or complete destruction of physical and human infrastructure (in Ukraine), the long-term ripple effects of sanctions against Russia, and the negative consequences for other countries, especially energy-dependent Europe, have much deeper and longer-lasting consequences.

It is important to note that most analyses that examine the consequences of war emphasize that war primarily affects the European economy beyond the parties involved *(Pisani-Ferry, 2022; Madina-He-Akmal, 2022; Loftin, Lynch, and Calhoun, 2011).* Of course, the development of the international economy as a whole is significantly hindered by the disruptions in the real economy and money market caused by the Russian-Ukrainian conflict. Militarized conflicts and wars in the past have shown that they have a tremendous impact on regional and global economies *(Jola-Sanchez and Serpa, 2021; Hang et al., 2021).*

Geopolitical risks have a significant negative impact on the process of determining oil prices *(Antonakakis et al., 2017; Mitsas, Golitsis, and Khodaykulov, 2022).* Higher oil prices, for example, rose due to the Gulf War in 1990. After the invasion, the price of oil increased from $21 per barrel in July to $46 per barrel by mid-October *(IMF, 2022)*. The IMF recognizes geopolitical risks as a factor threatening economic well-being *(Palakandaras et al., 2018),* and the term refers to tensions or wars between states that affect international relations, and the broader concept also encompasses risks arising from the escalation of such conflicts *(Caldara and Iacoviello, 2018).*

# 2 Demographic and economic impact assessment in Subscarpathia

The following analysis examines two directions based on the questionnaire research presented above. On the one hand, the mobility of the Hungarian national minority living on the Subcarpathian border, as well as the economic situation of the target group in relation to the war and other effects.

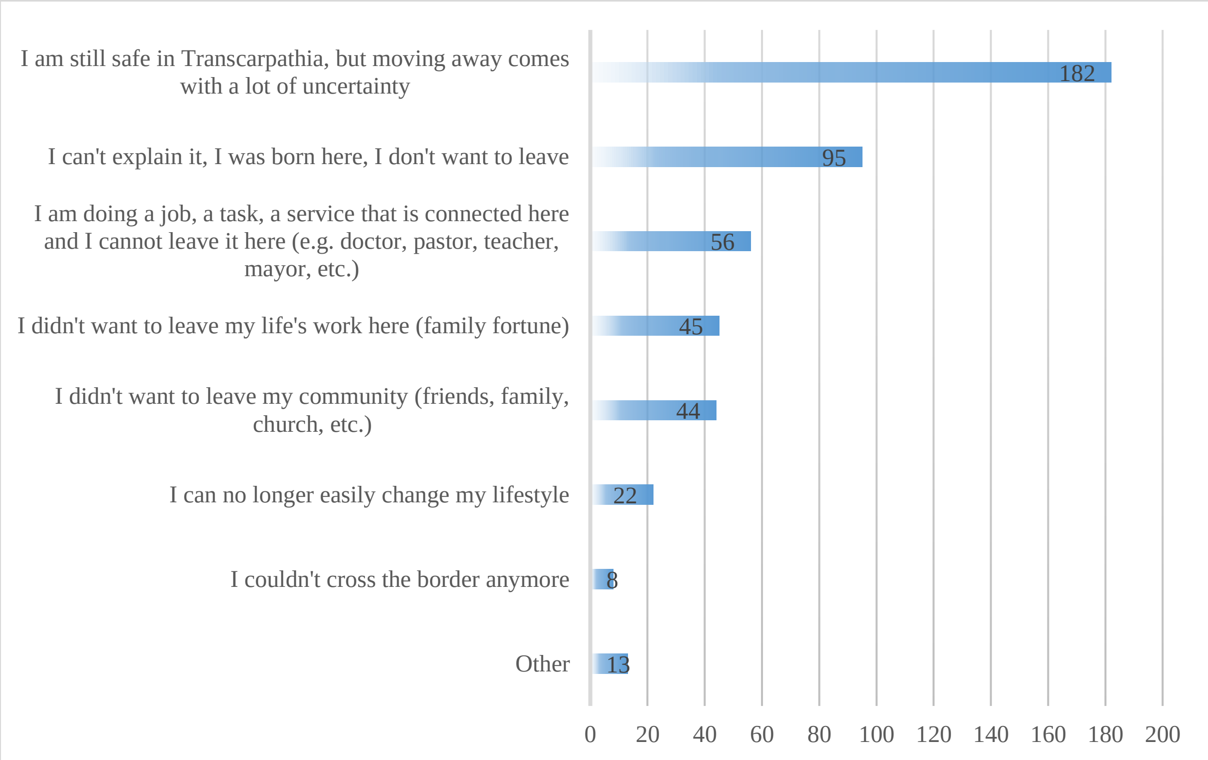
## 2.1 Mobility issues of the target group.

Below, we present the mobility-related motivations of the people living in the region, analysing the results of the survey. Due to the methodology of this questionnaire survey, it is not suitable for estimating how many people left the region since the war or before it. However, we had the opportunity to measure factors such as why did they stay, or did they leave their home? What other change would move those who are still planning the future at home? With whom did they go, or would they go? What country would they move to and why? Let's examine what answers the Subcarpathian Hungarians gave based on the sample.

***The migration-related motivations of people living in Subcarpathia after the war***

The first and most important question we had to ask the Hungarians staying in Subcarpathia was why they decided not to leave their homeland (Fig. 1).

**Fig. 1: Why did you decide to stay in Subcarpathia even after the outbreak of the war?**




Source: Questionnaire research (own editing).

It can be observed that in the first place is the uncertainty underlying behind the moving. Since they feel that they are not exposed to a direct threat of war in their homeland, they consider staying at home to be a lower risk than moving to an uncertain place. This mainly occurs in the middle and older age groups. The second most common reason is a strong local identity and attachment to Subcarpathia and their hometown. The third most prevalent reason is a sense of vocation, as many of them hold positions and roles within the local community that require them to stay (e.g., teachers, healthcare workers, clergy).

As an interesting fact, it's worth to note that two-thirds of those who stayed at home have never spent more than 2 months abroad in their lifetime and do not plan to do so in the future (35%).

The next question examined what new negative event would cause them to move from Subcarpathia. Almost 60% of the respondents (n=293) chose that the further escalation of armed conflicts to Subcarpathian direction would mean the tipping point for them to relocate. After that, significantly behind (10.6%), respondents indicated that they would change their place of residence due to the strengthening of anti-Hungarian sentiment, as well as difficulties in making a living and high inflation (10%). In almost every case, this decision would affect the entire family, as respondents mostly identified their family or spouse as accompanying them, rather than relocating alone. However, in the case of older parents and relatives, they preferred to stay at home.

For the next question, we examined which countries respondents would consider as potential migration destinations A significant majority (92%) indicated Hungary, only two dozen people answered that they would move to Germany, Austria, the Czech Republic, or possibly another neighboring country.

***Temporary or permanent migration***

While in the case of those who stayed at home, the question of which country they would move to was a hypothetical one, for those who temporarily or permanently relocated, it was a highly practical, almost life-defining question.

96% of those who moved in 2022 (n=94 people) came to Hungary, which is not a surprising. Of course, according to our assumption, there is not such a high ratio, because many Subcarpathians had previously worked in the Czech Republic, Austria, and Germany, and their families after the outbreak of war likely moved to these workplaces.

A similar pattern is observed among those who had previously moved, 92% of respondents (n=38 individuals) also live in Hungary. In addition to language and cultural ties, the respondents see the planned or actual move to Hungary mostly in terms of relatives and friends already living there. Given the strong Hungarian identity of the respondents, it's reasonable to assume that if the research had expanded into dual or rather Ukrainian (or other Ukrainian nationalities) directions, the results might have shown greater diversity in the choice of destination countries.

Among the population who left Subcarpathia in 2022 after the outbreak of the war, we investigated the other effects of this mobility process with additional questions. For example, with whom they left their former place of residence.

It can be concluded that the emigration caused by the war primarily (45%) affected families with small children in such a way that the entire family moved together from their place of residence. 17% are those who came alone. However, it is clear from the survey that a smaller number of multi-generational families left after the outbreak of the war, so in many cases the grandparents stayed at home. When we investigated the reason for this, 94.4% of the respondents indicated that there was no will to do so, and only 1-1% indicated that the parents did not come for financial, health, or other reasons.

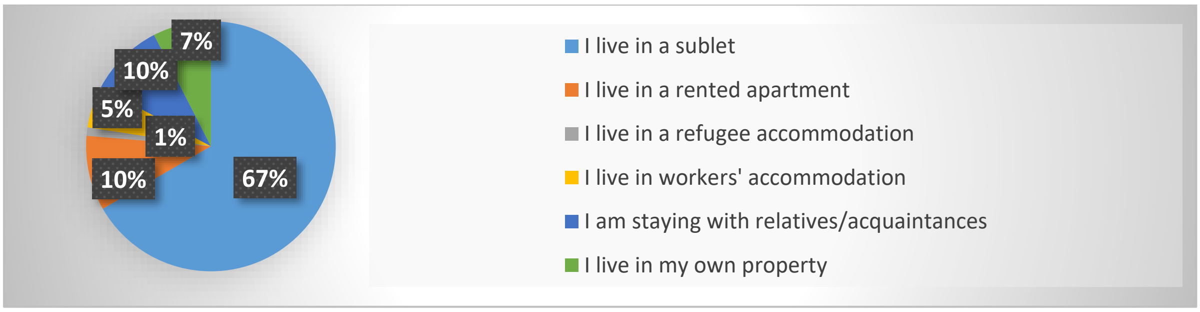
When asked whether the older parents plan to move in the future, it can be seen that the parents' stay at home was not only a decision due to the speed of the situation, but also that ¾ of the respondents do not have any long-term intentions to leave. 17% have plans, but the processes have not yet been started, and in the case of only 6%, the relocation of the extended family have already started.

For those who temporarily relocated, we also examined the specifics of their new living environment and their adaptability to it. 66% of respondents moved to a place where they have relatives or acquaintances.

Regarding enrolment in schools, 67 responses were received, with 68.7% indicating that their children were enrolled in September-October 2022. It was expected that as time passed and the war's hopelessness persisted, the attachment of families with children to their new place of residence and school system would grow stronger.

Examining the housing situation of those who relocated after the war, it's noticeable that 67% of them have their own rented apartments, while the remaining third is divided among various options such as shared accommodations, refugee housing, workers' dormitories, staying with relatives, or owning their own property.

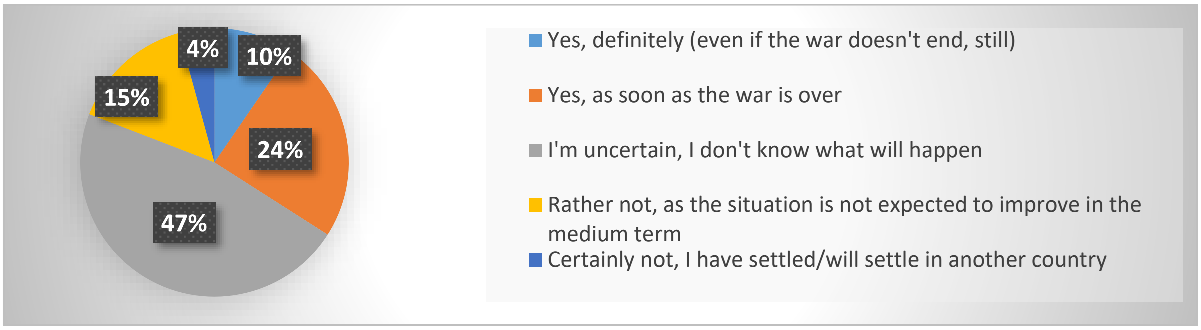
**Fig. 2: Housing conditions.**




Source: Questionnaire research (own editing).

One of the most important and difficult questions in the study of Subcarpathian Hungarians staying at home is what can be expected in relation to the return of families who moved after the war. Of course, we know that this issue is greatly influenced by how long the war lasts, so the following diagram reflects a current situation in September 2022, which may change significantly if the current situation persists for a longer period.

**Fig. 3: Are you planning to move back to Subcarpathia?**




Source: Questionnaire research (own editing).

What is a positive surprise in the current situation is that only 4% of the respondents indicated that they would definitely not move home, as they have already settled in their place of residence. If we add those who prefer not to (15%), then 1/5 of the respondents represent those who do not return to their homeland. However, the largest proportion are those who are uncertain (47%), as if a protracted war and a hopeless economic situation can be counted on in Ukraine, the number of those who will not return will significantly increase in the end. 10% are committed to returning home to such an extent that they would go home even before the end of the war.

On the whole, it can be seen that the uncertainty about the future is the greatest among temporary resettlers in the autumn of 2022. So this population group could still be kept in Subcarpathia if the war ended as soon as possible.

### 2.2. Economic situation assessment from the perspective of the population

Due to the limitation of the scope of the article, we cannot present the results of the economic situation assessment with detailed figures, but let's examine the most important conclusions after the data analysis.

We examined in comparison whether those who temporarily relocated and those who stayed at home were more frequently in an employee or income-generating status. In the autumn of 2022, the proportion of those who were employed was even higher among those who live at home than among those who moved away after the war. Most residents of Subcarpathia work in some form of public budget institution (21.6%). Understandably, this percentage was much lower for those who came in 2022 (8.7%). In the sector breakdown, both those who stay at home and those who have moved are mostly engaged in agriculture (35% and 23% respectively).

In the case of those who relocated - examining the dynamics of changes in jobs - in the case of trade, the proportion of those who worked (had business) in this sector before and after the war was almost halved. In the case of the education and research sector, the opposite trend occurred: it started from a low percentage before the war (18.7%), increasing to 34.6% after the war outbreak. This means that more people in this sector stayed at home or kept their jobs, so the ratios were rearranged in this way.

We had a hypothesis that if there were industrial investments in Hungary near the Hungarian-Ukrainian border, it would provide significant assistance to the Hungarian population in Subcarpathia since the population lives relatively close to the border. Most respondents agreed with this idea, but it was not an absolute majority. They reasoned that such projects would not be viable due to the uncertainty of the border situation and the importance of investments within Subcarpathia. Those who deemed such investments worthwhile expected an average monthly wage of approximately 800-1000 EUR to make it viable.

When examining the average income of families, there are significant differences among the three samples. In terms of euros, an average family in Subcarpathia earned 830 EUR, while those who relocated after the war earned 1600 EUR, and those who had moved earlier earned over 2600 EUR per month on a family level. These income differences, especially among young people, force the decision to relocate.

## Conclusion

The article examines the consequences of the Russian-Ukrainian war tangentially from a national and international perspective, but with a focus on Subcarpathia and within it, the native Hungarian minority living near the Ukrainian-Hungarian border.

The demographic and economic analysis was based on a questionnaire survey, in the framework of which we examined more than 600 respondents, most of whom remained in Subcarpathia after the war. Some of them left their homeland in the first days of the war, and another part had left it before (but mainly since 2014).

According to the results of the research, the hope of those staying in the place is that the war will not escalate and thus not spread to the westernmost county of Ukraine, and since this is where they have their existence, jobs, etc., they chose to stay at home instead of the uncertainty of moving.

Those who moved clearly named the threat of war, the economic situation, and ethnic atrocities as factors that they do not see a future in their homeland.

We examined the economic situation separately, the most important conclusion of which is that, compared to those who stay at home, those who move have a higher family income (the longer you have moved, the greater the difference in income), but the additional costs (housing, food) are also much higher.

In the autumn of 2022, a significant part of the so-called temporary movers still thought that if the war ended soon, they would rather move home. The longer the state of war, the mobilization of men and other negative effects, the lower the probability of this happening.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