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RISK PREFERENCES AND THE WILLINGNESS TO RELOCATE TO DANGER: EVIDENCE FROM WARTIME UKRAINE

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ABSTRACT

Risk Preferences and the Willingness to Relocate to Danger: Evidence from Wartime Ukraine

We elicit reservation wage premia for relocating to two Ukrainian cities, using a household survey conducted in mid-April to mid-July 2024 during the Russian invasion of Ukraine: high-risk Kharkiv (near the frontline) and moderate-risk Kyiv. Risk tolerance is a strong predictor of willingness to move to Kharkiv—the most risk-averse have roughly half the odds of the most risk-tolerant—but matters much less for Kyiv. This asymmetry is difficult to reconcile with the hypothesis that risk tolerance merely proxies for general mobility preferences. Separately estimating the elasticity of intertemporal substitution (EIS $\approx$ 0.04), we find that including it renders risk tolerance insignificant for Kyiv but not for Kharkiv---a pattern illuminated by the Epstein-Zin separation of risk aversion and the EIS: risk aversion adds predictive power only when danger is high, while the EIS operates equally for both cities as a common relocation-cost channel. The very low EIS implies that relocation incentives structured as future benefits may be ineffective; frontloaded subsidies are more likely to influence behavior.

JEL CLASSIFICATION: D15, D81, J61, R23
KEYWORDS: Risk preferences, elasticity of intertemporal substitution, migration, compensating differentials, Ukraine, war

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1 Introduction

Workers demand higher wages for dangerous jobs—a cornerstone prediction of labor economics since Adam Smith. Yet the micro-foundations of this compensating differential remain largely unobserved: we know that dangerous occupations pay more on average, but not how the reservation premium varies across individuals with different risk preferences, nor which dimensions of preference—attitudes toward risk versus willingness to trade off consumption over time—govern the decision at different levels of danger.

We study these questions using a household survey conducted in Ukraine in mid-April to mid-July 2024, during the active phase of the Russian invasion. The survey elicits risk tolerance using the income-gamble methodology of Barsky et al. (1997) and asks respondents about their willingness to relocate for one year to work in a city exposed to war. Crucially, we elicit not just a binary move/stay decision but a reservation wage premium: respondents state whether they would relocate at a 25%, 50%, or 100% wage premium, or would refuse at any price. This design yields an individual-level reservation premium for relocation to a dangerous area. In addition to risk preferences and willingness to relocate, the survey collects detailed information on household demographics, labor force status, income and consumption, financial security, war-related experiences (displacement, job loss, property damage), and time preference parameters.

We ask the relocation question for two cities that differ sharply in security risk: Kharkiv—a large city near the frontline, under continuous bombardment—and Kyiv, the capital, which faces intermittent missile attacks but substantially lower physical danger. This two-city design provides a built-in lower-risk benchmark. If measured risk tolerance merely proxied for general mobility preferences—openness to change, taste for novelty, restlessness—it would predict willingness to relocate equally for both cities. Instead, we find a striking asymmetry: risk tolerance is a strong predictor of willingness to move to high-risk Kharkiv, but matters much less for moderate-risk Kyiv. The most risk-averse have roughly half the odds of accepting any given wage premium for Kharkiv compared to the most risk-tolerant; for Kyiv, only the extremes of the distribution differ significantly. This asymmetry is consistent with the interpretation that our risk tolerance measure captures preferences relevant to physical danger, not merely general attitudes toward change. A within-respondent test that differences out all individual-level heterogeneity—general mobility taste, personality, wealth, networks—confirms this pattern: risk tolerance jointly predicts the Kharkiv-Kyiv willingness gap ($p < 0.004$), and a formal Wald test on the stacked ordered logit confirms that the risk-tolerance coefficients differ significantly across cities ($p = 0.001$).

The survey also elicits time preferences—the elasticity of intertemporal substitution (EIS) and the subjective discount rate—using consumption-path choices at varying interest rates, again following Barsky et al. (1997). This allows us to separately measure the two preference dimensions that standard CRRA utility conflates: risk aversion and the EIS. Under Epstein-Zin preferences, these are free parameters with distinct roles. Risk aversion governs how the individual evaluates the uncertain consumption in a dangerous city; the EIS governs willingness to accept short-run disruption (moving costs, adaptation) for longer-run gains (the wage premium). We find that when the EIS is included as a control, it absorbs the explanatory power of risk tolerance for moderate-risk Kyiv but not for high-risk Kharkiv. The Epstein-Zin separation of risk aversion and the EIS illuminates this pattern: risk aversion predicts willingness to move only when danger is high, while the EIS operates equally for both cities as a common relocation-cost channel.

Beyond risk and time preferences, younger age, male gender, absence of children, and unemployment are associated with greater willingness to relocate. War-related property damage—especially business destruction—is a strong predictor for Kharkiv. Liquidity constraints deter relocation to Kyiv, consistent with the upfront costs of moving.

These findings have implications for wartime relocation policy. Ukraine and other countries affected by war face the practical challenge of repopulating cities near the frontline to support economic reconstruction (Becker et al., 2025; Anastasia et al., 2022). Our results suggest that the risk profile of potential movers is strongly associated with stated willingness to relocate and may be relevant for the design of relocation programs: extremely risk-averse individuals are unlikely to respond to wage incentives alone and may require safety assurances or non-monetary support, while risk-tolerant and younger individuals are more receptive to economic incentives. Households with children face substantially higher barriers, suggesting that family-oriented support (housing, schooling, childcare) may be necessary to broaden participation.

The very low EIS we estimate (≈ 0.04), combined with a preference for present over future consumption, implies that relocation incentives structured as future benefits—deferred pay, pension enhancements, long-run career promises—may be ineffective. If these stated preferences translate into actual behavior, frontloaded subsidies, signing bonuses, and immediate cost offsets would be more effective than deferred benefits. More broadly, the Epstein-Zin-motivated decomposition suggests that different preference dimensions bind at different levels of danger, which has implications for how we model migration decisions under risk and for the design of incentive structures that target the operative margin of the decision.

We note that our evidence is based on stated hypothetical willingness, not observed behavior, and our sample is not representative of the Ukrainian population; these caveats apply to all policy inferences drawn from our results. Our paper does not address the desirability of relocation policies.

The rest of the paper is structured as follows. Section 2 reviews the related literature. Section 3 presents a simple conceptual framework for the relocation decision under risk. Section 4 describes our survey and the security and economic situation in Ukraine at the time when the survey was implemented. Section 5 presents our analysis of risk preferences. Section 6 presents the analysis of willingness to relocate. Section 7 examines the role of time preferences and the elasticity of intertemporal substitution. Section 8 concludes.

2 Related Literature

Our paper relates to several strands of the economics literature.

Risk preferences and migration. A robust empirical regularity is that more risk-averse individuals are less likely to migrate. Jaeger et al. (2010) provide the first direct evidence using the German Socio-Economic Panel. Huber and Nowotny (2020) generalize this to 30 transition countries, showing that risk aversion significantly reduces willingness to migrate—but that this effect is attenuated in riskier environments, where even risk-averse people consider migration because staying is also risky. Goldbach and Schlüter (2018) find similar patterns in Ghana and Indonesia, adding that out-migrants are both less risk-averse and more patient. Theoretically, these findings align with models where migration outcomes are uncertain and risk-averse individuals require larger expected gains or stronger insurance to move (Harris and Todaro, 1970; Kennan and Walker, 2011). While this literature studies selection *into* migration, we study willingness to move *into a dangerous location*—the demand side of a compensating differential for physical risk.

War and risk preferences. Exposure to war and violence can reshape risk preferences, though the direction is ambiguous. Voors et al. (2012) find that violence exposure in Burundi increased risk-seeking and impatience, while Callen et al. (2014) document the opposite in Afghanistan—trauma-induced extreme risk aversion. Cameron and Shah (2015) find increased risk aversion after natural disasters in Indonesia. These mixed results underscore the importance of directly measuring risk preferences rather than assuming uniform effects of war exposure. A related strand examines who flees: Ceriani and Verme (2018) find that more risk-averse individuals are more likely to flee Nigeria's war zones, since staying is the risky option. Our setting inverts this—we ask who would *enter* a dangerous area for economic gain—but the underlying logic is the same: risk preferences shape decisions where the options differ in their risk profiles.

Compensating differentials for danger. Workers demand higher wages for riskier jobs and there are many ways to quantify the compensating differential (see Viscusi (1993) for a survey of this literature). The hedonic wage framework has been used to estimate the value of statistical life (VSL) from observed wage-risk tradeoffs (Thaler and Rosen, 1976). Our survey design—which offers discrete wage premium thresholds (25%, 50%, 100%) or refusal at any price—directly elicits willingness-to-accept for war-zone risk, connecting to this literature at the individual level. By linking the demanded premium to measured risk tolerance, we provide micro-foundations for the compensating differential: more risk-averse individuals are less likely to consider relocation at any price, while more risk-tolerant individuals are willing to move at lower premia. This connects the migration-under-uncertainty literature with the labor economics of hazardous work. Lavetti (2023) provides a recent overview of the empirical challenges in estimating compensating differentials, emphasizing the importance of worker heterogeneity in risk preferences—precisely the channel our survey-based design exploits.

Time preferences and mobility. Migration involves short-term sacrifice for long-term benefit—a fundamentally intertemporal tradeoff. Goldbach and Schlüter (2018) find that migrants are more patient than non-migrants, and Bryan et al. (2014) show that alleviating risk and credit constraints induces migration, highlighting that liquidity and patience jointly determine mobility. Micro estimates of the elasticity of intertemporal substitution (EIS) are typically near zero (Hall, 1988; Yogo, 2004; Havránek, 2015), while experimentally elicited discount rates tend to be positive and well above market rates (Frederick et al., 2002; Warner and Pleeter, 2001). In war settings, Voors et al. (2012) find that violence increases impatience. Our paper is among the first to jointly elicit risk preferences and EIS in a war setting and examine their separate roles in relocation decisions. Our finding that the elasticity of intertemporal substitution absorbs the role of risk preferences for a moderate-risk destination but not for a high-risk one suggests that these two preference dimensions play distinct roles depending on the level of danger.

3 Conceptual Framework

We present a simple model of the relocation decision under risk that guides our empirical analysis and helps interpret the results.

3.1 Relocation under risk

Consider an individual deciding whether to relocate for one year to a city with wage premium $\pi > 0$ but security risk $p \in (0, 1)$ of suffering a loss $L \in (0, w(1+\pi))$ (injury, property damage, psychological harm). If the individual stays, they earn wage w with certainty. If they move, they earn $w(1 + \pi)$ (with probability $1 - p$) or losing L (with probability p).

Assume the individual has CRRA utility:

$$u(c) = \frac{c^{1-\gamma}}{1-\gamma}, \quad \gamma > 0,\ \gamma \neq 1, \tag{1}$$

where γ is the coefficient of relative risk aversion (the inverse of risk tolerance). The individual moves if the expected utility of moving exceeds the utility of staying:

$$(1-p)\, u\big(w(1+\pi)\big) + p\, u\big(w(1+\pi) - L\big) > u(w).$$

Define the *reservation wage premium* $\bar{\pi}(\gamma, p, L)$ as the value of π that makes the individual indifferent between staying and moving:

$$(1-p)\, u\big(w(1+\bar{\pi})\big) + p\, u\big(w(1+\bar{\pi}) - L\big) = u(w).$$

The reservation premium $\bar{\pi}$ has intuitive comparative statics:

1. **Risk aversion (γ):** $\frac{\partial \bar{\pi}}{\partial \gamma} > 0$. More risk-averse individuals require a higher wage premium to accept the gamble of moving to a dangerous location. For sufficiently high γ, no finite premium induces moving—the individual refuses at any price. This maps directly to the "Not willing to move under any circumstances" response in our survey.

2. **Danger (p):** $\frac{\partial \bar{\pi}}{\partial p} > 0$. A more dangerous destination requires a higher premium. This predicts that required premia should be higher for Kharkiv (high p) than for Kyiv (lower p), which is consistent with the data.

3. **Loss severity (L):** $\frac{\partial \bar{\pi}}{\partial L} > 0$. Greater potential losses raise the reservation premium.

Since our survey asks about willingness to move to both Kharkiv (high p) and Kyiv (lower p), the model's first prediction provides a built-in validity check: if our risk tolerance measure captures genuine risk preferences, it should be a stronger predictor of willingness to move to the more dangerous destination. Kyiv serves as a lower-risk benchmark in this design.

3.2 Intertemporal substitution and Epstein-Zin preferences

The one-period model above abstracts from the intertemporal dimension of relocation. In practice, moving involves short-term disruption (moving costs, adaptation) followed by potential longer-term benefits (savings from the wage premium). A richer model with two periods captures this tradeoff.

Suppose the individual lives for two periods. In period 1, the individual decides whether to move. If they stay, they consume $c_1 = w$. If they move, they pay an upfront moving cost m and consume $c_1 = w - m$. In period 2, the move takes effect: if the individual moved, they work in the risky city and earn $w(1 + \pi)$ but face probability p of suffering loss L, so period-2 consumption is uncertain. If they stayed, they consume $c_2 = w$ with certainty. Under standard CRRA expected utility, the individual maximizes:

$$V = u(c_1) + \beta\, \mathbb{E}\left[u(c_2)\right],$$

where $\beta = \frac{1}{1+\rho}$ is the discount factor, ρ is the subjective discount rate, $u(\cdot)$ is the CRRA utility function from equation (1), and the expectation is over the uncertain period-2 consumption. Specifically, for the mover, $\mathbb{E}[u(c_2)] = (1 - p)\, u(w(1 + \pi)) + p\, u(w(1 + \pi) - L)$. A key limitation of this specification is that the CRRA parameter γ simultaneously determines both attitudes toward risk and the willingness to substitute consumption across time. Specifically, the elasticity of intertemporal substitution (EIS) equals $1/\gamma$, so a highly risk-averse individual (high γ) is mechanically unwilling to substitute consumption intertemporally (low EIS). Yet these are conceptually distinct preferences: risk aversion governs how the individual evaluates the uncertain period-2 consumption in the dangerous city, while the EIS governs willingness to accept lower period-1 consumption (due to the moving cost) in exchange for potentially higher period-2 consumption.

The recursive preferences of Epstein and Zin (1989) disentangle the two. The Epstein-Zin utility aggregator takes the form:

$$V_t = \left[(1 - \beta)\, c_t^{1-1/\sigma} + \beta \left(\mathbb{E}_t \left[V_{t+1}^{1-\gamma}\right]\right)^{\frac{1-1/\sigma}{1-\gamma}}\right]^{\frac{1}{1-1/\sigma}}, \tag{2}$$

where $\gamma > 0$ is the coefficient of relative risk aversion and $\sigma > 0$ is the elasticity of intertemporal substitution, now a free parameter independent of γ. When $\sigma = 1/\gamma$, equation (2) reduces to standard CRRA expected utility. When $\sigma \neq 1/\gamma$, attitudes toward risk and intertemporal substitution are decoupled.

In the relocation context, the decision to move depends on *both* parameters:

- A higher γ (more risk-averse) raises the reservation premium for dangerous destinations, as in the one-period model. Risk aversion governs how the individual evaluates the uncertain period-2 consumption in the dangerous city.
- A higher σ (more willing to substitute intertemporally) makes the individual more willing to accept lower period-1 consumption (due to the moving cost) in exchange for the potentially higher but risky period-2 consumption, lowering the reservation premium.

Because our survey elicits risk preferences and time preferences with separate instruments, we can examine whether survey-based proxies for γ and σ play different roles in the willingness-to-move decision—a distinction that standard CRRA conflates. We do not estimate the structural parameters of an Epstein-Zin model; rather, we use the EZ framework to motivate separately measuring risk tolerance and intertemporal substitution and to interpret the resulting reduced-form patterns. Section 7 carries out this exercise.

4 Our Survey Data

4.1 Survey design

We designed a structured survey titled "Managing Financial Risks during the Russian-Ukrainian War." The survey was administered online and conducted in Ukraine in mid-April to mid-July 2024. It was advertised as a university research survey by Ivan Franko L'viv National University. The estimated time to complete the questionnaire was 15-20 minutes. The full questionnaire is reproduced in Appendix A.

Participation in the survey was voluntary. Respondents were informed about the confidentiality of the collected information, which would be used exclusively for research purposes. The data were collected anonymously, precluding identification of individual respondents. Completing the questionnaire was considered confirmation of informed consent to participate in the study.

The questionnaire consisted of several thematic blocks:

- *Socio-demographic characteristics:* age, gender, marital status, presence of children, household composition;
- *Economic status:* employment, income level, consumption and saving practices, financial security at the time of the survey and before the start of the full-scale invasion;
- *War-related experiences:* internal displacement, job loss, damage or loss of property;

- *Risk preference assessment:* based on choices among hypothetical income paths, adapted from the methodology of Barsky et al. (1997), to determine the level of tolerance for financial risk;
- *Time preferences:* assessment of intertemporal preferences through choices among alternative consumption scenarios under different interest rate levels, allowing estimation of the elasticity of intertemporal substitution parameters;
- *Willingness to relocate and willingness to pay for security measures:* respondents were asked to evaluate their hypothetical willingness to move for one year to work in Kharkiv or Kyiv, specifying the desired wage premium or refusing to relocate under any conditions; respondents were also asked to indicate the share of income they would be willing to allocate toward insuring personal property and toward air defense protection for their locality;
- *Expectations:* regarding the labor market, inflation, and the duration of the war.

4.2 Security and economic situation during the survey

Our survey was conducted in mid-April to mid-July 2024, over two years after Russia launched its full-scale invasion of Ukraine in February 2022. This subsection describes the security and economic conditions that prevailed during the survey period.

At the time of the survey, Ukraine remained under systematic missile and drone attacks targeting major cities, including Kyiv and Kharkiv. Frequent air-raid alerts, the threat of massive strikes, and the destruction of critical infrastructure created an atmosphere of persistent anxiety among the population. The invasion had triggered massive population displacement: as of early 2025, over 4.6 million internally displaced persons were officially registered, and over 6.8 million Ukrainian citizens were abroad, substantially transforming the demographic structure and the labor market.[2]

The initial economic shock of the invasion was severe. In 2022, Ukraine's GDP contracted sharply: fixed capital decreased by an estimated 20% due to destruction, occupation, and a deficit of investment, and the labor force contracted by 27% due to migration, mobilization, and loss of control over territories.[3] The economy partially recovered, growing by 5.5% in 2023, but the pace of recovery slowed to 2.9% in 2024. Inflation reached 12% in 2023, eroding the purchasing power of the population; by 2024, inflationary pressures eased to approxi-

[2] International Organization for Migration, "Ukraine — Internal Displacement Report," General Population Survey, Round 21, January 2025. United Nations High Commissioner for Refugees, "Ukraine Refugee Situation," Operational Data Portal, `https://data.unhcr.org/en/situations/ukraine`.

[3] World Bank (2024).

mately 6.5%.[4] At the time of the survey, the average wage was 21,473 UAH (approximately $535), and poverty remained elevated.[5]

The labor market reflected these strains. According to the National Bank of Ukraine's quarterly business surveys, over 40% of enterprises reported labor shortages in 2024, up from 26% in 2023, constraining economic growth potential.[6] Despite the difficult conditions, the banking system showed signs of stability: household deposits exceeded 1.23 trillion UAH, and lending grew by 7.41%.[7] International assistance played an important role in maintaining macrofinancial equilibrium—$42 billion in 2024—along with strategic partnership programs, including the ERA initiative of $50 billion for 2024-2027.[8]

Crucially for our research design, Kharkiv and Kyiv differed sharply in the level of security risk during the survey period. Kharkiv, located approximately 30 km from the Russian border, was under near-continuous threat. On May 10, 2024—at the very start of our survey—Russia launched a ground offensive into northern Kharkiv oblast, its largest territorial push in 18 months, triggering the evacuation of over 10,500 civilians from border areas.[9] In addition to the ground combat, Kharkiv was subject to daily shelling, missile strikes, and drone attacks. Kyiv, while also targeted by periodic missile and drone strikes, experienced far fewer and shorter alerts and no ground combat.

Figure 1 illustrates this contrast using air raid alert data. On May 31, 2024—a representative day during the survey—Kharkiv oblast was under air raid or artillery shelling alerts for nearly the entire 24-hour period, with sub-regions such as Lypetska and Vovchanska hromadas under continuous alert. Kyiv city and Kyiv oblast, by contrast, experienced only brief alerts lasting approximately one to two hours. This pattern persisted throughout the mid-April to mid-July 2024 survey period. Throughout 2024, OHCHR consistently identified Kharkiv oblast as one of the regions with the highest civilian casualties, alongside Donetsk and Kherson; Kyiv was not among them.[10]

These were the conditions under which our respondents made their assessments of willingness to relocate.

[4] International Monetary Fund (2024), Table A4; National Bank of Ukraine (2024c).

[5] State Statistics Service of Ukraine (Derzhstat), "Average Wages and Salaries by Types of Economic Activity," 2024, https://ukrstat.gov.ua/.

[6] National Bank of Ukraine (2024a).

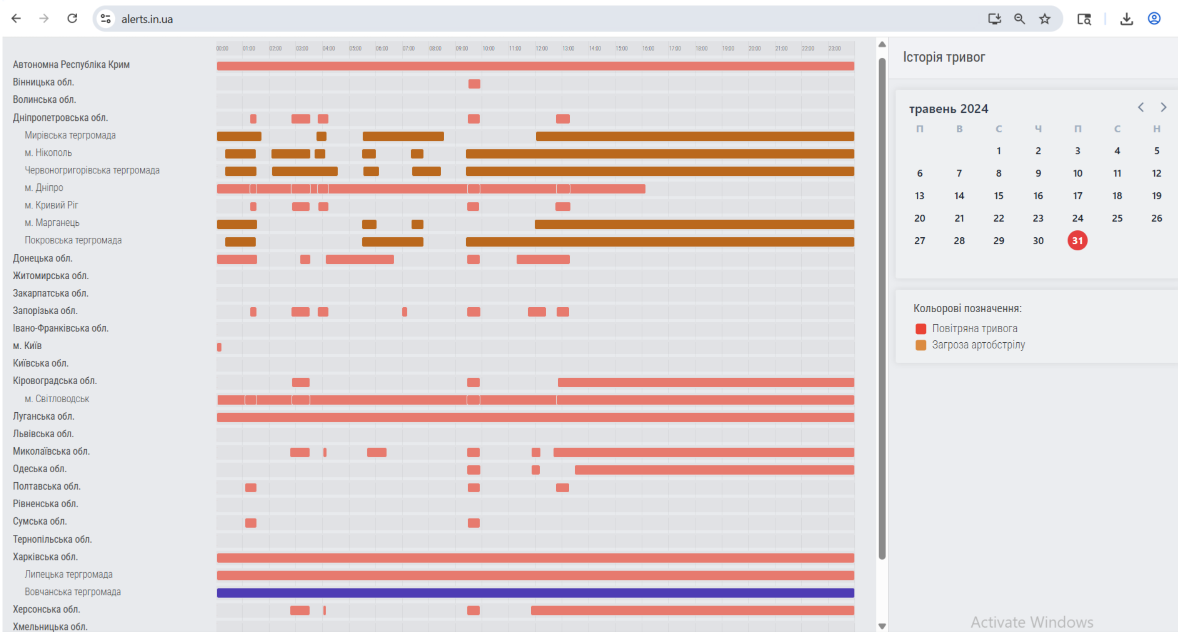
[7] National Bank of Ukraine (2024b).

[8] Kiel Institute for the World Economy (2025).

[9] Institute for the Study of War, "Russian Offensive Campaign Assessment, May 10, 2024," https://www.understandingwar.org/backgrounder/russian-offensive-campaign-assessment-may-10-2024.

[10] OHCHR, "Report on the Human Rights Situation in Ukraine, 1 September - 30 November 2024," 31 December 2024, para. 19.

Figure 1: Air Raid Alerts by Oblast, May 31, 2024



Notes: Data from `alerts.in.ua`. Labels are in Ukrainian; oblasts are listed alphabetically. Red bars indicate air raid alerts (*povitryiana tryvoga*); orange bars indicate artillery shelling threats (*zagroza artobstrilu*). The horizontal axis spans 24 hours (00:00-23:00). Kyiv city (м. Київ) and Kyiv oblast (Київська обл.) appear in the middle of the figure with minimal alert bars. Kharkiv oblast (Харківська обл.) and its sub-regions appear near the bottom with near-continuous red and orange bars spanning the full 24-hour period.

4.3 Sample description

In this section, we reports summary statistics for our sample of 1,286 respondents (Table A1). Given the nature of the survey, the age structure of the sample is skewed toward younger respondents: 37% belong to the 19-25 age group, likely reflecting the online mode of administration and the university-based recruitment. The share of respondents aged 36-45 is 26% and aged 46-55 is 17%. Older age groups (56+ years) are represented to a lesser extent (7% combined), partly reflecting limited participation in digital surveys and potential access barriers. The gender composition of the sample is asymmetric: 68% are women and 32% are men. This disproportion likely reflects, in part, the mobilization of men of military age. The sample is highly educated: 69% hold a bachelor's degree or higher (35% bachelor's, 34% master's or above), 25% have some college or vocational education, and 6% have only a high school diploma. Employment status shows a predominance of paid employment: 68% of respondents are employed, 10% are self-employed, and 22% are not working. Health insurance coverage in the sample is as follows: 68% have no private health insurance, 21% receive it from their employer, and 11% pay for it independently. Ukraine provides universal access to state-funded medical services, so the absence of private insurance does not imply a lack of basic coverage. Income levels (in hryvnias) range from less than 10,000 to more than 200,000 UAH. The largest share falls in the 10,000-25,000 UAH group (28%), roughly in line with the national average wage of approximately 21,500 UAH at the time of the survey. High-income groups (above 100,000 UAH) constitute only 9%. Ownership of high-risk assets serves as a marker of financial risk propensity: 77% of respondents hold no such assets, 15% hold them at up to 10% of their portfolio, and only 1% hold more than 50%.

4.4 Expectations about war, labor market, and inflation

Our survey elicits respondents' expectations along three dimensions—war duration, labor market conditions, and inflation (Table A1). Regarding the duration of the war, the modal response is one to two years (39%), with another 28% expecting three to five years and 15% expecting more than five years; only 6% expect the war to end within six months. Views on the labor market are cautiously optimistic: a majority (56%) considers finding a job "possible," while 19% find it "difficult" and 17% find it "easy." Inflation expectations are dispersed, with the largest group (37%) expecting 5-10% inflation and roughly a third expecting rates above 15%.

5 Risk Preferences

5.1 Measuring risk preferences

Following Barsky et al. (1997), we measure individual risk preferences from responses to hypothetical gambles on lifetime income. The first question asks whether the respondent would accept a 50-50 gamble of doubling lifetime income versus losing one-third. Those who reject face a less risky follow-up (lose one-fifth); those who accept face a riskier one (lose one-half). This yields four groups ordered by risk aversion: Category I (reject both—highest risk aversion), Category II (reject one-third, accept one-fifth), Category III (accept one-third, reject one-half), and Category IV (accept both—highest risk tolerance). In the regression tables that follow, we label these groups by risk tolerance: "very low" ($\gamma > 3.76$; Category I), "low" ($\gamma \in [2, 3.76]$; Category II), "moderate" ($\gamma \in [1, 2]$; Category III), and "very high" ($\gamma < 1$; Category IV, the omitted baseline). See Appendix A, Block IV for the exact wording.[11]

[11] Although the ranking of these choices by risk aversion does not require a specific functional form, we can calculate the bounds of the relative risk aversion parameters under the assumption of constant relative risk aversion utility (see Table B1 in Appendix B for the gamble structure, CRRA bounds, and our empirical distribution, following Barsky et al. 1997, Table 1).

The empirical distribution over risk aversion categories in our sample is as follows: 38% of respondents are in Category I (highest risk aversion), 17% in Category II, 18% in Category III, and 28% in Category IV (lowest risk aversion, highest risk tolerance). The average risk tolerance in our sample (assuming constant relative risk aversion) is 0.68.

5.2 Distribution and validation

The distribution of risk tolerance across demographic groups follows well-established patterns. Risk tolerance declines monotonically with age: mean tolerance falls from 0.87 in the 19-25 group to 0.30 among those aged 65 and older (Table A2). Men are somewhat more risk tolerant than women (mean tolerance 0.73 vs. 0.63), although the gender gap is statistically significant only among the youngest respondents (Figure A1). These gradients are qualitatively consistent with findings from non-war settings (Barsky et al., 1997; Dohmen et al., 2011; Croson and Gneezy, 2009), suggesting that our measure captures stable preference heterogeneity rather than transitory war-related shifts in attitudes.

Among respondents with positive savings, those classified as more risk tolerant are significantly more likely to hold a larger share of their portfolio in high-risk assets (Figure A2). This correlation provides external support for the informativeness of the survey-based measure.[12]

6 Analysis of the Willingness to Move

This section presents the main empirical analysis. We first describe the model specification and variable selection (Section 6.1), then report the Kharkiv results linking risk tolerance to willingness to relocate (Section 6.2), compare the Kharkiv estimates with those for Kyiv—a lower-risk benchmark (Section 6.3), test the danger-specific channel using a within-respondent design (Section 6.4), and finally present robustness checks (Section 6.5).

[12] We also examined whether risk tolerance predicts willingness to pay (WTP) for insurance (survey questions Q51-Q52). Contrary to the expectation that more risk-averse respondents would demand more insurance, we find a negative association: the most risk-averse category has lower self-insurance WTP (Spearman $\rho = -0.086$, $p = 0.002$). This counterintuitive result is driven by liquidity constraints, which are strongly negatively associated with insurance WTP ($\hat{\beta} = -0.670$, $p < 0.001$) and disproportionately prevalent among the most risk-averse. Once liquidity is controlled for, the risk-insurance association weakens substantially ($p = 0.073$). In a wartime setting where insurance markets are underdeveloped and payout credibility is low, WTP for insurance reflects affordability and institutional trust rather than risk preferences per se.

6.1 Model specification

We measure the willingness to move by the respondent's answer to a hypothetical relocation scenario. Respondents are asked to imagine that their employer offers them a one-year assignment in Kharkiv—a city close to the zone of active combat operations and thus relatively unsafe at the time of the survey—and to state the minimum wage premium they would require (see Appendix A for the exact wording). The response options yield four ordered categories: "Not willing to move" (under any premium), "Willing at 100% premium," "Willing at 50%," and "Willing at 25%." A fifth category, "Already working in Kharkiv" (30 respondents), is excluded because our research question concerns forward-looking willingness to relocate. The one-year duration is a deliberate design choice: it introduces reversibility and option value, lowering the stakes relative to a permanent move and making the scenario more comparable to temporary migration and rotational assignments common in reconstruction settings.

We examine how individuals' risk preferences (categorized as high risk, moderate, low and very low risk tolerance) relate to willingness to move to Kharkiv. As in migration models, we treat "no move" (the status quo) as a natural reference category because it allows us to interpret results in terms of odds of moving versus staying.

Our main variable of interest is the individual's risk category. We also control for a rich set of socio-economic and war-related factors. The socio-economic covariates are age, gender, number of children, education level, labor force status, and income category. The war-related variables collected by our survey are: (i) indicators capturing the individuals' war experiences—internally-displaced-person status, having experienced a job loss due to war, and an indicator for the extent of property damage due to the war; (ii) indicators of financial security—an indicator for being liquidity constrained and a set of indicators capturing the self-reported degree of financial worries; and (iii) expectations about duration of the war, the state of the labor market, and inflation. All variables are categorical except for the number of children, which we also convert into a categorical variable to improve the stability of the models.

We implement two modeling strategies. Under ordered logit, we treat the willingness to move as an ordered outcome, assuming proportional odds across outcome categories differing only by cutoff threshold points. Under multinomial logit (MNL), we treat willingness to move as a nominal outcome with separate odds for each category relative to a base.

We first estimate both multinomial and ordered logit models with a full set of controls (Table A3). The ordered logit has a lower AIC (2155 vs. 2220) and a much lower BIC (2391 vs. 2895), indicating that the ordered specification provides a better balance of fit and parsimony. We proceed with ordered logit for interpretation. Of the 1,286 survey respondents, 1,231 have non-missing values for the Kharkiv willingness question and all covariates; 1,164 have non-missing values for Kyiv. The sample size difference reflects item non-response on the willingness-to-move questions and individual covariates.

Many fine-grained controls—education, income categories, financial worries, labor market expectations, and inflation expectations—are individually and jointly insignificant. We therefore refine the model via backward stepwise selection ($p > 0.10$ for removal), retaining displacement and job loss indicators regardless of significance because of their substantive interest.[13] The resulting parsimonious specification keeps risk tolerance, age, gender, number of children, labor force status, liquidity constraints, displacement status, job loss, property damage, and an indicator for expecting the war to last longer than five years.

We test the proportional odds assumption and find it is violated for a few age categories (26-35, 56-65, 66+) and the out-of-labor-force indicator. We therefore re-estimate the parsimonious model using generalized ordered logit, imposing proportional odds only where the assumption holds. The final model does not violate the parallel lines assumption ($\chi^2(38) = 30.20$, $p = 0.812$).

6.2 Risk tolerance and willingness to move to Kharkiv

Table 1 presents the results; for comparison, column 1 shows a specification with risk categories only, and column 3 shows the full ordered logit with all controls. The very low risk-tolerance coefficient is -0.774 in the preferred generalized ordered logit (column 2) and -0.817 in the full-controls ordered logit (column 3); the larger coefficient in column 1 (-1.222) reflects the absence of demographic controls, which absorb some of the variation attributed to risk tolerance when omitted.

Risk preferences.—The central finding is that risk tolerance strongly predicts willingness to move to Kharkiv, consistent with the model's prediction that the reservation premium increases in risk aversion ($\partial\bar{\pi}/\partial\gamma > 0$; Section 3.1). Relative to the most risk-tolerant group, the very low risk tolerance category has a coefficient of -0.774 ($p < 0.01$), implying that the odds of being in a higher willingness category decrease by a factor of 0.46 ($= e^{-0.774}$). Low risk tolerance is also associated with significantly lower willingness ($\hat{\beta} = -0.540$, $p < 0.01$), while moderate risk tolerance is not significantly different from high. The gradient is thus concentrated at the tails of the risk distribution: the most risk-averse individuals are far less

[13] Backward stepwise selection risks data-mining the preferred specification. We mitigate this by showing that the risk-tolerance gradient is stable across the full-control model (Table A3, column 2), the parsimonious model (Table 1), and multiple robustness checks (Table 7).

willing to relocate to a dangerous city, while the distinction between moderate and high risk tolerance is small.[14]

Demographics.—Age, gender, and children all matter in expected directions. Older respondents are significantly less willing to move; the 36-45 and 46-55 age groups have coefficients around −1.0 relative to the 19-25 baseline. Women are significantly less willing than men ($\hat{\beta} = -0.610$, $p < 0.01$). Having children is associated with lower willingness, with the coefficient especially large for three or more children ($\hat{\beta} = -1.154$, $p = 0.014$).[15] The unemployed are significantly more willing to move ($\hat{\beta} = 0.669$, $p < 0.01$), consistent with lower opportunity cost of the status quo.

War experiences and economic constraints.—Property damage, especially business destruction ($\hat{\beta} = 1.950$, $p = 0.001$) and home damage ($\hat{\beta} = 0.800$, $p = 0.011$), is positively and significantly associated with willingness to move. In the framework of Section 3.1, respondents who have already suffered property damage have a lower value of the status quo, reducing the reservation premium required to relocate (perhaps due to lower attachment to the current location). Displacement from near the frontline carries a positive but insignificant coefficient ($\hat{\beta} = 0.412$), as does recent job loss ($\hat{\beta} = 0.286$).[16] Liquidity constraints carry a negative but statistically insignificant coefficient for Kharkiv ($\hat{\beta} = -0.285$, $p = 0.102$); for Kyiv, by contrast, the effect is large and significant (−0.455, $p < 0.01$), consistent with relocation to a more accessible destination requiring upfront financial resources. Expecting the war to last more than five years is marginally positively associated with willingness ($\hat{\beta} = 0.326$, $p = 0.058$).

To gauge the magnitude of these effects, Figure 2(a) shows predicted probabilities for a baseline individual (male, age 36-45, employed, no children, not displaced). If this person is in the lowest risk tolerance category, the predicted probability of refusing to move is approximately 80%; if in the most risk-tolerant category, it drops to roughly 65%. The

[14] An alternative interpretation is that the risk tolerance categories partly capture heterogeneous beliefs about the level of danger in Kharkiv rather than pure preferences. If individuals with lower risk tolerance also perceive Kharkiv as more dangerous, the gradient would reflect belief heterogeneity rather than preference heterogeneity. We cannot rule this out, since our survey does not elicit destination-specific subjective risk assessments. However, the within-respondent Kharkiv-Kyiv differential mitigates this concern: individual-level beliefs about absolute danger are absorbed, and the identifying variation comes from the *difference* in perceived danger across cities, which is anchored by objective indicators (Section 4.2).

[15] The coefficients on age and children may partly reflect place attachment—emotional ties to community, schools, and social networks—rather than purely economic mobility costs (DaVanzo, 1983). Our controls capture monetary moving costs imperfectly; the residual age and child effects likely bundle both economic frictions and non-pecuniary attachment.

[16] The positive displacement coefficient may also reflect family reunification motives: respondents displaced from eastern oblasts may have family members who remained in or near Kharkiv. Our survey does not identify the location of remaining family members, so we cannot distinguish the reunification channel from reduced attachment to the current location.

Table 1: Willingness to Move to Kharkiv

	(1) Ordered logit	(2) Generalized ordered logit (cumulative logits)			(3) Ordered logit
	Risk only	Threshold 1	Threshold 2	Threshold 3	Full controls
Risk tolerance (baseline = very high)					
Moderate	−0.367**	−0.232	*prop. odds*		−0.274
	(0.172)	(0.183)			(0.189)
Low	−0.700***	−0.540***	*prop. odds*		−0.576***
	(0.181)	(0.193)			(0.199)
Very low	−1.222***	−0.774***	*prop. odds*		−0.817***
	(0.158)	(0.172)			(0.176)
Age group (baseline = 18–25)					
26–35		−0.401*	−0.858***	−0.070	−0.432**
		(0.209)	(0.286)	(0.449)	(0.219)
36–45		−1.052***	*prop. odds*		−1.013***
		(0.201)			(0.221)
46–55		−0.897***	*prop. odds*		−0.850***
		(0.212)			(0.230)
56–65		−1.041***	−0.249	0.763	−0.733
		(0.396)	(0.417)	(0.572)	(0.451)
66+		−1.713***	−1.046	0.373	−1.617**
		(0.559)	(0.638)	(0.775)	(0.638)
Gender (baseline = male)					
Female		−0.610***	*prop. odds*		−0.610***
		(0.136)			(0.146)
Number of children (baseline = none)					
1 or 2		−0.285**	*prop. odds*		−0.293*
		(0.141)			(0.153)
3 or more		−1.154**	*prop. odds*		−1.233***
		(0.472)			(0.466)
Labor force status (baseline = employed)					
Unemployed		0.669***	*prop. odds*		0.588**
		(0.256)			(0.277)
Not in labor force		0.342*	0.297	1.007***	0.369*
		(0.189)	(0.214)	(0.325)	(0.189)
Liquidity constrained (baseline = no)					
Yes		−0.285	*prop. odds*		−0.312
		(0.174)			(0.197)
Internally displaced (baseline = no)					
Neither occupation nor frontline		0.058	*prop. odds*		−0.041
		(0.355)			(0.382)
Near frontline		0.412	*prop. odds*		0.398
		(0.311)			(0.367)
Under occupation		0.013	*prop. odds*		−0.100
		(0.324)			(0.396)
Lost job due to war (baseline = no)					
Jobless < 6 months		0.286	*prop. odds*		0.236
		(0.232)			(0.238)
Jobless > 6 months		0.079	*prop. odds*		0.023
		(0.297)			(0.346)
War duration expectation (baseline = < 6 months)					
> 5 years		0.326*	*prop. odds*		Included*
		(0.172)			
War-related property damage (baseline = none)					
Negligible		0.581*	*prop. odds*		0.618
		(0.333)			(0.379)
Business destroyed		1.950***	*prop. odds*		2.027***
		(0.610)			(0.711)
Home damaged		0.800**	*prop. odds*		0.772**
		(0.315)			(0.353)
Education, income, financial worries, labor market & inflation expectations					Included
Constant/cut points	Yes	Yes	Yes	Yes	Yes
N	1,231		1,231		1,231
Log likelihood	−1112.2		−1016.3		−1022.4
AIC	2236.4		2100.6		2148.8
BIC	2267.1		2274.5		2414.8

Notes: The dependent variable is willingness to move to Kharkiv, coded on a 4-point ordinal scale: (1) not willing, (2) willing at 100% pay premium, (3) willing at 50%, (4) willing at 25%. Model 1 is an ordered logit with risk tolerance categories only. Model 2 is a generalized ordered logit (parsimonious specification via backward stepwise selection); variables satisfying the proportional odds assumption have a single coefficient ("prop. odds"), while variables violating it show separate coefficients at each threshold. Model 3 is an ordered logit with the full set of controls including property damage indicators. Standard errors in parentheses (robust in Models 1 and 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. *Included: Model 2 includes only the indicator for expecting the war to last >5 years; Model 3 includes all war duration, labor market, and inflation expectation categories.

probability of expressing moderate willingness (e.g., willing at 50% pay premium) roughly doubles from 7% to 14% as we move from the most risk-averse to the most risk-tolerant group.

We also test whether risk tolerance interacts with war-related disruptions by adding interactions of risk category with displacement status, job loss, labor force status, and liquidity constraints to the parsimonious model. None of the interaction terms reach conventional significance levels. The descriptive patterns are suggestive—for instance, displaced individuals who are risk-averse show somewhat higher willingness to move than equally risk-averse non-displaced individuals—but the modest sample sizes in the interacted cells preclude strong conclusions.

6.2.1 Marginal effects

To complement the ordered logit coefficients with quantities directly interpretable in probability terms, we compute average marginal effects (AME; Table A4). Relative to the most risk-tolerant category, the most risk-averse respondents are 14.4 percentage points more likely to refuse relocation to Kharkiv ($p < 0.001$) and 3.2 percentage points less likely to accept the smallest premium (25%). Even the low risk tolerance group ($\gamma \in [2, 3.76]$) is 10.4 percentage points more likely to refuse ($p < 0.01$). These marginal effects are large relative to the base probability of refusal (62% for the most risk-tolerant), confirming that risk preferences are economically meaningful for relocation decisions.

6.2.2 Extensive and intensive margins

We decompose the ordered response into two stages using a hurdle model (Table 2). The first stage is a logit for whether the respondent is willing to move at any wage premium (extensive margin); the second stage is an ordered logit for the required premium, conditional on being willing (intensive margin). Risk tolerance operates almost entirely through the extensive margin: the most risk-averse have 56% lower odds of being willing to move at all (OR $= 0.44$, $p < 0.001$), but conditional on willingness, risk category does not significantly predict the required premium ($N = 380$; risk-category coefficients are jointly insignificant, $p = 0.229$; only the low category is marginally significant individually). This decomposition suggests that risk aversion manifests as a participation constraint—a refusal to consider relocation to a dangerous area at any price—rather than as a demand for a higher compensating wage differential. If these stated preferences reflect actual behavior, the implication is that for the most risk-averse individuals, wage premia alone may not suffice; non-monetary interventions (safety assurances, community support) may be necessary.

Table 2: Hurdle Model: Extensive and Intensive Margins of Willingness to Move to Kharkiv

	(1) Extensive (logit)	(2) Intensive (ologit | willing)
Risk tolerance (baseline = very high, $\gamma < 1$)		
Moderate ($\gamma \in [1, 2]$)	−0.255	0.177
	(0.195)	(0.270)
Low ($\gamma \in [2, 3.76]$)	−0.474**	−0.570*
	(0.203)	(0.336)
Very low ($\gamma > 3.76$)	−0.829***	−0.029
	(0.178)	(0.266)
Parsimonious controls	Yes	Yes
N	1,231	380
Pseudo R^2	0.141	0.070
Joint test: risk categories (p-value)	<0.001	0.229

Notes: The hurdle model decomposes the ordered willingness-to-move response into two stages. Column (1): logit for whether the respondent is willing to move at any wage premium (extensive margin); coefficients are log-odds. Column (2): ordered logit for the required premium conditional on being willing (intensive margin). Parsimonious controls include age, gender, number of children, labor force status, liquidity constraints, internal displacement, job loss, war duration expectations, and property damage. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

6.3 Kharkiv vs. Kyiv: a lower-risk benchmark

Our survey asked respondents about both Kharkiv and Kyiv, providing a built-in lower-risk benchmark. The conceptual framework in Section 3.1 predicts that the reservation premium rises with the danger of the destination ($\partial\bar{\pi}/\partial p > 0$), implying that risk tolerance should matter more for high-p Kharkiv than for moderate-p Kyiv. Kyiv, while the capital of a country at war, faces less direct security risk than Kharkiv: it is not near the front line and, at the time of our survey, experienced significantly fewer missile and drone attacks. We first estimate the Kyiv model on a separate sample and then exploit the within-respondent variation using a stacked design. As with Kharkiv, the ordered logit fits better than the multinomial logit by both AIC and BIC (Table A5). Table 3 reports the parsimonious results.

The contrast with the Kharkiv estimates in Table 1 is striking. In the barebones specification (column 1), moderate and low risk tolerance are economically small and statistically insignificant for Kyiv (−0.127 and −0.035), whereas for Kharkiv these coefficients are −0.367 and −0.700 and highly significant. Only the most extreme category—very low risk tolerance—retains a significant negative coefficient for Kyiv (−0.922), compared with −1.222 for Kharkiv.

The generalized ordered logit (column 2) sharpens the contrast further. For Kharkiv, all three risk tolerance categories satisfy the proportional odds assumption: risk preferences shift willingness to move uniformly across the entire response scale. For Kyiv, moderate and low risk tolerance satisfy proportional odds with coefficients near zero (0.029 and 0.202, both

Table 3: Willingness to Move to Kyiv

	(1) Ordered logit	(2) Generalized ordered logit (cumulative logits)			(3) Ordered logit
	Risk only	Threshold 1	Threshold 2	Threshold 3	Full controls
Risk tolerance (baseline = very high)					
Moderate	−0.127	0.029	*prop. odds*		0.012
	(0.162)	(0.169)			(0.170)
Low	−0.035	0.202	*prop. odds*		0.172
	(0.159)	(0.169)			(0.172)
Very low	−0.922***	−0.530***	−0.401**	0.080	−0.463***
	(0.136)	(0.160)	(0.170)	(0.245)	(0.149)
Age group (baseline = 18–25)					
26–35		−0.894***	*prop. odds*		−0.904***
		(0.187)			(0.203)
36–45		−1.015***	*prop. odds*		−1.040***
		(0.165)			(0.180)
46–55		−1.163***	*prop. odds*		−1.160***
		(0.179)			(0.190)
56–65		−1.405***	*prop. odds*		−1.222***
		(0.336)			(0.355)
66+		−1.806***	*prop. odds*		−1.688***
		(0.370)			(0.399)
Gender (baseline = male)					
Female		−0.489***	*prop. odds*		−0.439***
		(0.123)			(0.126)
Number of children (baseline = none)					
1 or 2		−0.342***	*prop. odds*		−0.315**
		(0.123)			(0.126)
3 or more		−1.135***	*prop. odds*		−1.045***
		(0.330)			(0.335)
Labor force status (baseline = employed)					
Unemployed		0.382	0.985***	0.377	0.624***
		(0.290)	(0.270)	(0.376)	(0.240)
Not in labor force		0.172	*prop. odds*		0.258
		(0.167)			(0.175)
Liquidity constrained (baseline = no)					
Yes		−0.455***	*prop. odds*		−0.383**
		(0.146)			(0.157)
Internally displaced (baseline = no)					
Neither occupation nor frontline		0.597*	*prop. odds*		0.733**
		(0.356)			(0.362)
Near frontline		0.813***	*prop. odds*		0.928***
		(0.291)			(0.300)
Under occupation		0.179	*prop. odds*		0.233
		(0.302)			(0.356)
Lost job due to war (baseline = no)					
Jobless $<$ 6 months		0.158	*prop. odds*		0.181
		(0.219)			(0.225)
Jobless $>$ 6 months		−0.072	*prop. odds*		−0.021
		(0.267)			(0.280)
War duration expectation (baseline = $<$ 6 months)					
6–12 months		0.687**	*prop. odds*		0.560
		(0.340)			(0.348)
1–2 years		1.000***	*prop. odds*		0.888***
		(0.309)			(0.319)
3–5 years		0.972***	*prop. odds*		0.865***
		(0.316)			(0.326)
$>$ 5 years		0.920***	*prop. odds*		0.915***
		(0.331)			(0.339)
War-related property damage (baseline = none)					
Negligible		0.249	*prop. odds*		0.397
		(0.323)			(0.329)
Business destroyed		0.708	*prop. odds*		0.750
		(0.606)			(0.639)
Home damaged		0.426	*prop. odds*		0.561*
		(0.287)			(0.294)
Education, income, financial worries, labor market & inflation expectations					Included
Constant/cut points	Yes	Yes	Yes	Yes	Yes
N	1,164		1,164		1,164
Log likelihood	−1472.6		−1351.9		−1341.3
AIC	2957.1		2769.7		2786.7
BIC	2987.5		2936.7		3049.8

Notes: The dependent variable is willingness to move to Kyiv, coded on a 4-point ordinal scale: (1) not willing, (2) willing at 100% pay premium, (3) willing at 50%, (4) willing at 25%. Model 1 is an ordered logit with risk tolerance categories only. Model 2 is a generalized ordered logit (parsimonious specification via backward stepwise selection); variables satisfying the proportional odds assumption have a single coefficient ("prop. odds"), while variables violating it show separate coefficients at each threshold. Model 3 is an ordered logit with the full set of controls including all property damage indicators, education, income, financial worries, and labor market and inflation expectation categories. Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

insignificant). Very low risk tolerance, however, violates proportional odds: its effect attenuates from −0.530 at the first threshold to −0.401 at the second and becomes statistically insignificant (0.080) at the third. In other words, very risk-averse individuals are less likely to consider moving to Kyiv at all, but conditional on considering it, risk aversion does not discriminate among pay premia. For Kharkiv, by contrast, risk aversion reduces willingness to move uniformly at every margin.

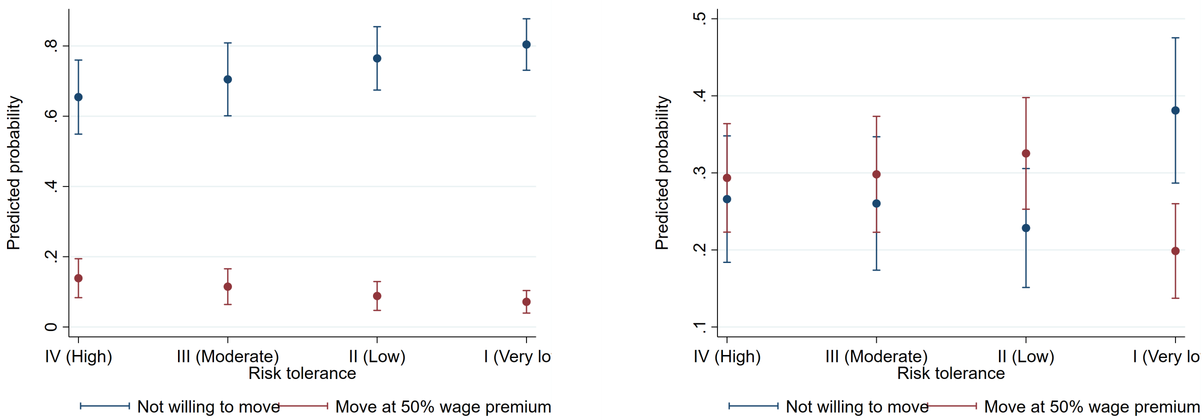
The fact that very low risk tolerance predicts lower willingness to move even to moderate-risk Kyiv requires interpretation. A strict benchmark test would require risk tolerance to be irrelevant for Kyiv entirely. This partial result is informative, however. The lowest risk tolerance category comprises the most risk-averse individuals ($\gamma > 3.76$, 38% of the sample). For such individuals, even the moderate and intermittent missile threat facing Kyiv may cross the threshold at which physical danger becomes salient. The key finding is not that risk tolerance is zero for Kyiv, but that it operates differently: only the most risk-averse category matters, the effect attenuates across thresholds (generalized ordered logit), and the within-respondent differential is driven by the middle of the distribution where the Kharkiv-Kyiv gap in perceived danger is most relevant (also see discussion below). The pattern is consistent with a model in which the reservation premium increases in both risk tolerance (inversely) and destination danger: for moderate danger, only extremely low risk tolerance binds; for high danger, the constraint binds across a wider range.

Figure 2 illustrates the comparison using predicted probabilities from the full parsimonious specifications. For Kharkiv, the monotonic gradient is crisp: moving from very high to very low risk tolerance increases the predicted probability of "not willing to move" from roughly 65% to 80%, while the probability of accepting a 50% pay premium halves from 14% to 7%. For Kyiv, the gradient is flat across the first three risk categories and rises only for the very-low-tolerance group.

Table 4 summarizes how the covariates differ across the two destinations. The demographic and economic covariates tell a complementary story. Age, gender, and number of children have similar signs and magnitudes for both cities, consistent with these variables capturing general mobility costs rather than risk-specific responses. Displacement from near the frontline is positively associated with willingness to move to both Kharkiv and Kyiv, suggesting that the displacement effect reflects reduced attachment to current location rather than differential risk evaluation. War-related property damage—strongly significant for Kharkiv, where business destruction increases the odds of willingness to move sevenfold ($e^{1.950} \approx 7.0$, though only 21 respondents report this category)—is insignificant for Kyiv. This pattern is consistent with property damage proxying for direct exposure to war risk: respondents whose

Figure 2: Predicted Probabilities by Risk Tolerance: Kharkiv vs. Kyiv

(a) Kharkiv **(b)** Kyiv



Note: Predicted probabilities for "Not willing to move" and "Willing to move at 50% pay premium" from the parsimonious generalized ordered logit (column 2 of Tables 1 and 3). Baseline individual: male, age 36-45, no children, employed, not displaced, no job loss. Bars show 95% confidence intervals.

property was destroyed are more willing to move to another risky city, but this experience does not differentially affect their willingness to move to Kyiv.

Table 4: Determinants of Willingness to Move: Kharkiv (High Risk) vs. Kyiv (Moderate Risk)

Variable	Kharkiv	Kyiv
Risk tolerance (moderate, low)	Significant, negative	Insignificant, near zero
Risk tolerance (very low)	-0.774^{***}, uniform effect	-0.530^{***}, attenuates to 0
Property damage	Significant, positive	Insignificant
War duration expectations	Only >5 years marginal	All horizons significant
Liquidity constrained	Insignificant	-0.455^{***}
Age, gender, children	Significant	Significant (similar magnitudes)

Notes: Summary of key coefficient patterns from the parsimonious generalized ordered logit (Tables 1 and 3). "Uniform effect" indicates that the proportional odds assumption holds; "attenuates to 0" indicates that the coefficient shrinks to insignificance at higher thresholds. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

War duration expectations are significant for both cities but play different roles. For Kyiv, all duration categories beyond the baseline (<6 months) are positively and significantly associated with willingness to move, with coefficients around 0.7-1.0. This is intuitive: respondents who expect a protracted war are more willing to move to the capital. For Kharkiv, only the longest horizon (>5 years) is marginally significant. An important difference emerges for liquidity constraints: being liquidity constrained is strongly negatively associated with willingness to move to Kyiv (-0.455, $p < 0.01$) but not to Kharkiv (-0.285, $p = 0.10$). One interpretation is that liquidity constraints bind for the realistic prospect of moving to moderate-risk Kyiv but are less relevant for the more hypothetical scenario of moving to dangerous Kharkiv.

6.3.1 Extensive and intensive margins

Does the extensive-margin mechanism documented for Kharkiv (Table 2) replicate for the lower-risk destination? Table 5 reports the Kyiv hurdle model. The pattern partially replicates: the most risk-averse have significantly lower odds of being willing to move at all (extensive margin: -0.587, $p < 0.001$), but conditional on willingness, risk category is jointly insignificant ($p = 0.954$). The key difference lies in the intermediate categories: moderate and low risk tolerance are insignificant for Kyiv on both margins, whereas for Kharkiv, low risk tolerance significantly reduces the extensive margin (-0.474, $p < 0.05$). This is consistent with the framework prediction: only at the extreme of risk aversion is the participation constraint binding for a moderate-risk destination; for high-risk Kharkiv, it binds across a wider range of the risk distribution.

Table 5: Hurdle Model: Extensive and Intensive Margins of Willingness to Move to Kyiv

	(1) Extensive (logit)	(2) Intensive (ologit | willing)
Risk tolerance (baseline = very high, $\gamma < 1$)		
Moderate ($\gamma \in [1, 2]$)	-0.038	0.113
	(0.206)	(0.208)
Low ($\gamma \in [2, 3.76]$)	0.302	-0.002
	(0.221)	(0.212)
Very low ($\gamma > 3.76$)	-0.587^{***}	-0.034
	(0.174)	(0.200)
Parsimonious controls	Yes	Yes
N	1,164	724
Pseudo R^2	0.136	0.065
Joint test: risk categories (p-value)	<0.001	0.954

Notes: The hurdle model decomposes the ordered willingness-to-move response into two stages. Column (1): logit for whether the respondent is willing to move at any wage premium (extensive margin); coefficients are log-odds. Column (2): ordered logit for the required premium conditional on being willing (intensive margin). Parsimonious controls include age, gender, number of children, labor force status, liquidity constraints, internal displacement, job loss, war duration expectations, and property damage. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

6.3.2 Cross-city Wald test

We formalize the cross-city comparison with an interaction test. We estimate a single ordered logit on the pooled sample of $N = 2{,}264$ respondent-city observations (1,132 respondents $\times$ 2 cities), with risk-category dummies, a Kharkiv indicator, and their interactions, plus the full set of demographic and war-experience controls, clustering standard errors at the respondent level. The Wald test rejects the null that the risk $\times$ city interactions are jointly zero ($\chi^2(3) =$

16.32, $p = 0.001$; Table A6). All three interaction terms are negative, indicating a steeper risk-tolerance gradient for the high-danger city: the low risk-tolerance category shows the largest differential (-0.779, $p < 0.001$), while the interaction for the very low tolerance group is smaller (-0.436, $p = 0.008$), consistent with a floor effect: the most risk-averse refuse both cities, compressing their cross-city differential toward zero.

6.4 Within-respondent test: absorbing individual heterogeneity

The separate-city regressions above compare coefficients across two samples, but they cannot rule out that the risk-tolerance gradient reflects unobserved individual characteristics that correlate with both measured risk tolerance and willingness to move. If, for example, more risk-tolerant individuals are also more adventurous, more optimistic about their earning prospects, wealthier, better connected, or simply more mobile, the risk-tolerance coefficient in the separate-city regressions would capture these traits rather than attitudes toward physical danger per se.

The within-respondent design eliminates this concern. Each respondent i answers the relocation question for both cities, so we can form the first difference $\Delta Y_i = \text{WTM}_{i,\text{Kharkiv}} - \text{WTM}_{i,\text{Kyiv}}$, where $\text{WTM}_{i,c}$ denotes the willingness to move of respondent i to city c, and regress it on risk-category dummies. This is equivalent to estimating a stacked respondent $\times$ city model with respondent fixed effects α_i: differencing removes α_i and with it every time-invariant individual characteristic—general mobility preferences, personality traits, cognitive ability, wealth, social networks, and any other unobserved factor common to both relocation decisions. What survives is the *danger-specific* component: the extent to which risk tolerance predicts willingness to move *more* for high-risk Kharkiv than for moderate-risk Kyiv. We restrict the sample to the $N = 1{,}132$ respondents who answered both relocation questions. Table 6 reports the results. The risk-category dummies are jointly significant in all specifications (F-test $p < 0.004$). The pattern is non-monotonic: the low tolerance group ($\gamma \in [2, 3.76]$) drives the differential ($\hat{\beta} = -0.315$, $p < 0.001$ with full controls), while the most risk-averse ($\gamma > 3.76$) show no significant differential. This is consistent with a floor effect: the most risk-averse refuse to move to *either* city, so their Kharkiv-Kyiv gap is approximately zero. The danger-specific risk channel operates in the middle of the distribution, where respondents are willing to consider moderate-risk Kyiv but not high-risk Kharkiv. An ordered logit on the differenced outcome confirms these findings (χ^2 joint test $p < 0.001$).

Risk tolerance thus operates through a risk channel: it predicts willingness to relocate to a dangerous city (Kharkiv) but not to a lower-risk one (Kyiv), exactly as the framework in Section 3.1 predicts. Demographics, by contrast, capture general mobility frictions

Table 6: Within-Respondent Analysis: $\Delta Y_i = \text{WTM}_{i,\text{Kharkiv}} - \text{WTM}_{i,\text{Kyiv}}$

	OLS (first difference)			Ordered logit on ΔY	
	(1)	(2)	(3)	(4)	(5)
Risk tolerance (baseline = very high, $\gamma < 1$)					
Moderate ($\gamma \in [1, 2]$)	−0.109	−0.123	−0.162*	−0.214	−0.338*
	(0.086)	(0.085)	(0.084)	(0.186)	(0.188)
Low ($\gamma \in [2, 3.76]$)	−0.277***	−0.272***	−0.315***	−0.619***	−0.722***
	(0.088)	(0.088)	(0.090)	(0.177)	(0.186)
Very low ($\gamma > 3.76$)	0.013	0.017	−0.086	0.064	−0.152
	(0.065)	(0.065)	(0.068)	(0.142)	(0.152)
Origin region (baseline = Lviv)					
Kyiv city/oblast		−0.421	−0.496*		−1.089
		(0.295)	(0.290)		(0.698)
Other western oblasts		0.014	−0.007		0.010
		(0.069)	(0.070)		(0.150)
Eastern/central/southern		0.323***	0.300***		0.761***
		(0.112)	(0.115)		(0.282)
Demographic controls	No	No	Yes	No	Yes
N	1,132	1,132	1,132	1,132	1,132
R^2 / Pseudo R^2	0.014	0.026	0.068	0.008	0.035
Joint test: risk categories (p-value)	0.003	0.002	0.004	<0.001	<0.001

Notes: The dependent variable is the within-respondent difference in willingness to move: $\text{WTM}_{i,\text{Kharkiv}} - \text{WTM}_{i,\text{Kyiv}}$, where $\text{WTM} \in \{1, 2, 3, 4\}$. Because the first difference absorbs all person-level heterogeneity, any remaining association between risk tolerance and ΔY must reflect a danger-specific channel. Columns (1)–(3) estimate OLS on the raw difference; columns (4)–(5) estimate an ordered logit on a five-category recoding (≤ -2, -1, 0, $+1$, $\geq +2$). Demographic controls include age, gender, number of children, labor force status, liquidity constraints, internal displacement, job loss, war duration expectations, and property damage. Robust standard errors in parentheses (clustered at respondent level for OLS). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

common to both destinations. Property damage selectively increases willingness to move to Kharkiv, consistent with a lower value of the status quo among those who have already suffered war-related losses. War duration expectations selectively increase willingness to move to Kyiv, consistent with respondents viewing the capital as a lower-risk destination during a protracted war. Taken together, these patterns—supported by within-respondent analysis and the robustness checks in Section 6.5—provide evidence that our survey-based risk measure captures a genuine behavioral disposition toward physical danger rather than generic attitudes toward change or novelty.

6.5 Robustness

We subject our main findings to several additional robustness checks. First, we add controls for war-induced economic changes. The survey records income, labor force status, and savings both before the war (December 2021) and at the time of the survey, allowing us to construct individual-level change variables. Approximately 55% of respondents experienced a change in income bins, with a slight average upward shift consistent with nominal wartime inflation. Adding income change, labor force transition (lost or gained employment), and savings change as controls does not attenuate the risk-tolerance gradient: the most risk-averse category coefficient moves from −0.779 to −0.830 for Kharkiv and from −0.459 to −0.446 for Kyiv. War-induced economic shocks thus do not confound the risk-willingness relationship.

Second, we verify robustness to survey quality. Our questionnaire includes an attention check (identifying a color mentioned earlier in the survey); 8% of respondents fail. Excluding these respondents leaves all risk-category coefficients virtually unchanged (−0.734 vs. −0.779 for the most risk-averse, Kharkiv), confirming that inattentive responses do not drive our findings.

Third, we add origin-region controls to address the possibility that the risk-tolerance gradient reflects geographic proximity to Kharkiv rather than preferences. We group respondents into four regions: Lviv (67%), Kyiv city/oblast (8%), other western oblasts (17%), and eastern/central/southern oblasts (9%). As expected, respondents from Eastern Ukraine are more willing to move to both cities, but risk-category coefficients are unaffected: −0.758 vs. −0.779 for the most risk-averse (Kharkiv). Geography does not explain the risk-willingness gradient.

Fourth, we examine gender heterogeneity. Our sample is 68% female, raising the question of whether the risk-willingness gradient differs by gender. Gender-stratified regressions reveal a steeper gradient for women: the coefficient on the most risk-averse category is −1.00 for women ($N = 839$, $p < 0.001$) compared with −0.54 for men ($N = 392$, $p = 0.06$). The formal interaction test has $p = 0.053$, just above the 5% level. This pattern is consistent with women facing compounding constraints—caregiving responsibilities, gendered norms around physical risk, and the mobilization of working-age men—that amplify the behavioral consequences of risk aversion. For Kyiv, the gender gap in the risk gradient is qualitatively similar ($p = 0.081$) but smaller in magnitude, suggesting that gendered constraints interact with danger-specific risk evaluation.[17]

Fifth, we assess robustness to omitted variable bias using the method of Oster (2019). The key parameter is δ, the ratio of the importance of unobservable to observable selection that would be needed to explain away the estimated coefficient. For the binary willingness outcome (any premium), we obtain $\delta = 2.59$ for Kharkiv and $\delta = 2.78$ for Kyiv. Both exceed the conventional threshold of 1, indicating that unobservables would need to be more than 2.5 times as important as our rich set of observables to explain the risk-tolerance gradient. The result is similarly robust using the continuous risk-category variable ($\delta = 2.53$ for Kharkiv).

[17] The female coefficient combines several channels that our data cannot fully separate: differential risk tolerance conditional on the survey measure, caregiving responsibilities that raise the cost of relocation, social norms discouraging women from entering danger zones, and the wartime absence of male household members due to mobilization. The gender-stratified regressions show that the risk-tolerance gradient is steeper for women, but we cannot identify which of these channels drives the difference.

Table 7 summarizes the risk-tolerance coefficients across all specifications, including gender-stratified estimates (columns 3-4).

Table 7: Robustness of Risk-Tolerance Coefficients Across Specifications

	(1) Baseline	(2) + Pre-war changes	(3) Males only	(4) Females only	(5) Attention check	(6) + Region controls
Panel A: Kharkiv (high risk)						
Moderate ($\gamma \in [1, 2]$)	-0.237	-0.274	-0.346	-0.135	-0.264	-0.219
	(0.185)	(0.187)	(0.292)	(0.240)	(0.199)	(0.186)
Low ($\gamma \in [2, 3.76]$)	-0.543^{***}	-0.590^{***}	-0.695^{**}	-0.448^{*}	-0.549^{***}	-0.519^{***}
	(0.191)	(0.192)	(0.297)	(0.251)	(0.202)	(0.192)
Very low ($\gamma > 3.76$)	-0.779^{***}	-0.830^{***}	-0.539^{*}	-1.000^{***}	-0.734^{***}	-0.758^{***}
	(0.172)	(0.173)	(0.287)	(0.219)	(0.180)	(0.173)
N	1,231	1,231	392	839	1,138	1,231
Panel B: Kyiv (moderate risk)						
Moderate ($\gamma \in [1, 2]$)	0.041	0.037	0.540^{**}	-0.290	0.085	0.075
	(0.167)	(0.166)	(0.273)	(0.217)	(0.175)	(0.170)
Low ($\gamma \in [2, 3.76]$)	0.224	0.239	0.344	0.114	0.301^{*}	0.260
	(0.167)	(0.168)	(0.282)	(0.215)	(0.176)	(0.169)
Very low ($\gamma > 3.76$)	-0.459^{***}	-0.446^{***}	-0.360	-0.559^{***}	-0.445^{***}	-0.431^{***}
	(0.151)	(0.152)	(0.286)	(0.181)	(0.158)	(0.151)
N	1,164	1,164	370	794	1,072	1,164

Notes: All specifications are ordered logits with the parsimonious control set (age, gender, number of children, labor force status, liquidity constraints, internal displacement, job loss, war duration expectations, property damage). Baseline = very high risk tolerance ($\gamma < 1$). Column (1): baseline ordered logit specification; coefficients differ slightly from the generalized ordered logit in Tables 1 and 3 because the latter relaxes proportional odds for select variables. Column (2): adds pre-war change variables (income bin change, labor force transition, savings change). Columns (3)–(4): gender-stratified samples (gender excluded from controls). Column (5): excludes 8% of respondents who failed the attention check. Column (6): adds origin-region fixed effects (Lviv, Kyiv city/oblast, other western, eastern/central/southern). Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

7 Time Preferences and the Willingness to Move

As shown in Section 3.2, Epstein-Zin preferences separate risk aversion (γ) from the elasticity of intertemporal substitution (σ). In the relocation context, γ governs the reservation premium for dangerous destinations, while σ governs willingness to accept short-run costs (moving, adaptation) for longer-run gains. Our survey elicits both dimensions with separate instruments, yielding ordinal proxies for each. We do not estimate structural EZ parameters; instead, we ask a reduced-form question: do survey-based measures of risk tolerance and intertemporal substitution have different predictive power for willingness to move, and does the pattern vary with the level of danger? This section describes how we measure time preferences, reports the resulting estimates, and tests whether the EIS proxy adds explanatory power beyond what risk tolerance alone provides.

7.1 Measurement and sample

We measure the desired slope of the consumption path over time and the change of the slope in response to changes in interest rates, following Barsky et al. (1997). Respondents choose among hypothetical consumption paths at three interest rates: zero, positive (4.6%), and negative (−4.6%). These choices reveal two preference parameters—the elasticity of intertemporal substitution (σ) and the subjective rate of time preference (ρ). The full set of questions and bar charts is reproduced in Appendix A, Block V. Note that Barsky et al.'s original survey module was administered to 198 respondents (116 after sample restrictions).

Following Barsky et al. (1997), we impose three restrictions on the sample: we eliminate uninformative corner choices, inconsistent responses, and responses implying a negative EIS. Appendix C details each restriction and the number of observations eliminated at each step. These restrictions substantially reduce the sample: from 1,286 observations to 413 for the calculation of the EIS, and to 79 for the calculation of the subjective discount rate (the remaining 334 have an EIS of exactly zero). For each respondent in the restricted sample we compute (1) a range for the elasticity of intertemporal substitution, (2) the slope of the consumption path at zero interest rate, and (3) for those with nonzero EIS, the subjective interest rate.

7.2 Estimates of time preference parameters

For each respondent, we calculate the annualized slope of the consumption path,

$$\Delta \ln C = \frac{1}{T} \ln \frac{C_{\text{after}}}{C_{\text{before}}},$$

where T is the horizon in years over which the consumption path is observed. At each of the three interest rates, we then compute the elasticity of intertemporal substitution, σ, from the Euler equation

$$\frac{\dot{C}}{C} = \sigma(r - \rho),$$

where r is the real interest rate and ρ is the subjective discount rate. This equation has two unknowns; since we observe consumption paths at three interest rates, we have three pairs of equations from which to compute σ and ρ for each individual.

Table 8 reports the results. We find a very low elasticity of intertemporal substitution: the midpoint averages 0.04, implying little willingness to substitute consumption across time. The consumption slope at zero interest rate averages −0.015, indicating a preference for present over future consumption and therefore a positive subjective discount rate. For the 79 respondents with nonzero EIS, the average subjective discount rate is 3.5%.

Table 8: Preference Parameters for Consumption Paths

Parameter	N	Mean	Std. Dev.	Min	Max
Elasticity of intertemporal substitution (σ)					
Lower bound	413	0.037	0.082	0	0.681
Upper bound	413	0.120	0.259	0	1.169
Midpoint	413	0.041	0.098	0	0.488
Consumption slope at zero interest rate ($\Delta \ln C$)					
Slope	413	−0.015	0.915	−2.243	2.243
Subjective discount rate (ρ, %)					
Lower bound	79	−3.09	7.57	−11.59	4.60
Upper bound	79	3.96	7.26	−4.60	11.59
Midpoint	79	3.52	1.11	≈0	5.80

Notes: The elasticity of intertemporal substitution and the subjective discount rate are calculated from consumption-path choices following Barsky et al. (1997). Each parameter is computed from three pairs of interest rate scenarios ($r = 0$, $r = 4.6\%$, $r = -4.6\%$); the table reports bounds and midpoints across pairs. Sample restrictions are detailed in Appendix C. The EIS sample ($N = 413$) excludes corner choices, inconsistent responses, and negative implied EIS. The subjective discount rate sample ($N = 79$) further excludes respondents with EIS = 0.

Table 9 breaks down these parameters by risk tolerance category. We do not find a significant relationship between the EIS and risk aversion. However, the desired consumption slope at zero interest rate decreases (becomes more negative) as risk tolerance increases: the mean slope ranges from +0.05 for the most risk-averse category to −0.07 for the most risk-tolerant, suggesting that more risk-tolerant individuals tend to prefer earlier consumption, though this gradient is not statistically significant given the small cell sizes. Appendix Figures A3, A4, and A5 show the distributions of these parameters.

Our estimate of a very low EIS is consistent with the literature. Hall (1988) found the EIS close to zero using aggregate data; Yogo (2004) obtains similar results with weak-instrument-robust methods; and a meta-analysis of 2,735 estimates by Havránek (2015) shows that micro estimates are systematically lower than the values assumed in macroeconomic calibrations (0.5-2) and often near zero. Barsky et al. (1997), whose methodology we follow, also obtained low EIS estimates in the original Health and Retirement Study sample. The positive subjective discount rate is likewise consistent with the experimental literature: Frederick et al. (2002) survey the evidence that personally elicited discount rates substantially exceed market rates, and Warner and Pleeter (2001) estimate personal discount rates of 10-20% using revealed preference from military downsizing. The combination of low EIS and positive

Table 9: Consumption Paths Preference and Risk Tolerance Responses

	EIS Midpoint (σ)			Cons. Slope ($\Delta \ln C$)			Subj. Rate (ρ, %)		
Risk Tolerance	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.
High ($\gamma < 1$)	96	0.042	0.091	96	−0.075	1.053	23	3.48	1.07
Moderate ($\gamma \in [1, 2]$)	68	0.045	0.109	68	−0.059	0.866	11	3.77	1.11
Low ($\gamma \in [2, 3.76]$)	58	0.073	0.110	58	−0.031	1.336	23	3.47	0.95
Very Low ($\gamma > 3.76$)	186	0.028	0.089	186	+0.051	0.660	19	3.73	1.24
All	413	0.041	0.098	413	−0.015	0.915	79	3.52	1.11

Notes: Each row corresponds to a risk tolerance category based on the Barsky et al. gamble responses (see Appendix B). The EIS midpoint is the average of the lower and upper bounds of the elasticity of intertemporal substitution. The consumption slope is the annualized $\Delta \ln C$ at zero interest rate. The subjective discount rate is available only for respondents with nonzero EIS.

time discounting is broadly consistent with the experimental literature, though the evidence on how war affects patience is mixed: Voors et al. (2012) find that violence exposure in Burundi increases impatience, while Callen et al. (2014) find the opposite in Afghanistan.

In sum, the time preference parameters we estimate—very low EIS and a preference for present consumption—are consistent with both the broader literature and the wartime setting of our survey. The key question is whether these parameters help explain willingness to move, beyond what risk tolerance alone captures.

7.3 Willingness to move and time preference

We now test whether the EIS adds explanatory power for willingness to move beyond risk tolerance alone. We augment the parsimonious model from Section 6 with the individual's EIS midpoint, and separately estimate a specification that interacts the risk tolerance categories with the EIS.[18] The sample size is 395 for Kharkiv and 370 for Kyiv—smaller than the 413 EIS-restricted observations due to item non-response on the willingness-to-move question and covariates. We therefore first reestimate our preferred specification using these samples to verify that our baseline results are not driven by sample selection. These results are presented in Table 10, column 1 for Kharkiv and column 4 for Kyiv. For both cities, the very low risk tolerance category retains its sign and approximate magnitude: -0.85 ($p = 0.008$) for Kharkiv and -0.51 ($p = 0.067$) for Kyiv, compared with -0.78 and -0.46 in the full

[18] A limitation of our EIS measure is that the consumption-path questions are cognitively demanding: respondents must evaluate hypothetical consumption profiles at different interest rates. Low measured EIS may partly reflect cognitive difficulty or satisficing rather than genuine intertemporal preferences. The sample restrictions we impose (excluding inconsistent and corner responses) mitigate this concern but cannot eliminate it.

sample. However, the low and moderate risk-tolerance categories lose statistical significance in the smaller sample, so the gradient is less precisely estimated overall. We estimate these regressions via ordinal logit; the smaller sample size makes the generalized ordered logit impractical, and the proportional odds violations identified in Section 6 involved variables other than the EIS.

Table 10: Willingness to Move and the Intertemporal Elasticity of Substitution

	Kharkiv			Kyiv		
	(1)	(2)	(3)	(4)	(5)	(6)
Risk tolerance (base: High, $\gamma < 1$)						
Moderate ($\gamma \in [1, 2]$)	−0.491	−0.520	−0.392	0.214	0.206	0.138
	(0.429)	(0.430)	(0.496)	(0.357)	(0.351)	(0.397)
Low ($\gamma \in [2, 3.76]$)	−0.204	−0.254	0.049	0.524*	0.444	0.606*
	(0.336)	(0.337)	(0.383)	(0.312)	(0.312)	(0.344)
Very Low ($\gamma > 3.76$)	−0.851***	−0.790**	−0.772**	−0.514*	−0.430	−0.341
	(0.323)	(0.321)	(0.352)	(0.281)	(0.284)	(0.306)
EIS midpoint (σ)		2.127*	3.481*		3.555***	4.799***
		(1.226)	(1.819)		(1.162)	(1.805)
EIS × Risk tolerance interactions						
$\sigma\times$ Moderate			−2.200			0.879
			(2.896)			(2.901)
$\sigma\times$ Low			−4.544			−2.638
			(3.294)			(2.363)
$\sigma\times$ Very Low			0.470			−2.939
			(3.153)			(3.234)
Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes
War experience controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	395	395	395	370	370	370
Pseudo R^2	0.129	0.134	0.137	0.129	0.141	0.143

Notes: Ordered logit regressions with robust standard errors in parentheses. The dependent variable is the willingness to move on a 1-4 scale (not willing at any premium, willing at 100% premium, willing at 50%, willing at 25%). Models (1) and (4) are the parsimonious specification from Section 6 reestimated on the EIS-restricted sample. Models (2) and (5) add the EIS midpoint. Models (3) and (6) add interactions between the EIS and risk tolerance categories. Demographic controls include age, gender, number of children, labor force status, and liquidity constraints. War experience controls include displacement status, job loss, war expectations, and property damage. $^*p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 10, columns 2, 3, 5 and 6 show the results from the ordinal logit regressions for the willingness to move to Kharkiv and for the willingness to move to Kyiv estimated with the elasticity of intertemporal substitution as an additional control. First, for Kharkiv, we find that the elasticity of substitution enters with a positive coefficient, statistically significant at the 10% level. That is, individuals who are more willing to substitute intertemporally are more willing to relocate to Kharkiv. In the restricted-sample baseline (column 1), only the very low risk tolerance category is statistically significant (-0.85, $p = 0.008$); the low and moderate categories are not significant in this smaller sample. Inclusion of the elasticity of intertemporal substitution attenuates the very low risk tolerance coefficient, which remains statistically significant but at the 5% rather than 1% level (-0.79, $p = 0.014$). All other variables maintain their magnitude and significance after inclusion of the elasticity. The interaction terms between the elasticity and the risk tolerance categories are not statistically significant (column 3).

For Kyiv, the coefficient on the elasticity of intertemporal substitution is positive, large and strongly statistically significant. Its inclusion renders the coefficient on the very low risk tolerance statistically insignificant. As a result, risk categories are no longer statistically significantly associated with the willingness to move. That is, once the elasticity of intertemporal substitution is controlled for, risk preference categories are no longer statistically significantly associated with willingness to move to the less risky destination.

These results map onto the Epstein-Zin framework developed in Section 3.2. There, γ governs the reservation premium for dangerous destinations, while σ determines willingness to accept short-run costs for longer-run gains. For Kharkiv, the primary consideration is physical danger—security risk swamps intertemporal trade-offs, so γ remains the binding constraint even after controlling for σ. For Kyiv, where the security risk is moderate, the decision turns more on whether the individual is willing to bear the short-run disruption of moving for the longer-run wage premium—precisely the trade-off governed by σ. This interpretation is consistent with the EIS absorbing the explanatory power of risk tolerance for Kyiv but not for Kharkiv.[19] We further test whether the EIS effect differs across cities using the stacked respondent-city design. In the EIS subsample ($N = 720$ observations, 360 respondents), we estimate the stacked ordered logit with a continuous EIS midpoint, a Kharkiv indicator, and their interaction. The EIS $\times$ Kharkiv interaction is not statistically significant ($\chi^2(1) = 0.52$, $p = 0.469$; Table A7), while the risk-tolerance categories remain jointly significant ($\chi^2(3) = 9.02$, $p = 0.029$). The EIS raises willingness to move equally for both cities, as expected: intertemporal substitution governs the short-run-cost/long-run-

[19] An alternative, purely mechanical explanation is that the Kyiv risk-tolerance coefficient is already weak (only the extreme category is significant), so adding any positively correlated covariate could push it below significance. Against this, the EIS enters with a large, precisely estimated coefficient for both cities, and the cross-city interaction test confirms that the EIS effect does not differ across destinations ($p = 0.469$; Table A7), consistent with the EIS capturing a common relocation-cost channel rather than merely absorbing noise from a fragile coefficient.

gain trade-off common to any relocation, not the danger-specific channel that differentiates Kharkiv from Kyiv. We note that these regressions use a substantially smaller sample due to the restrictions required to estimate the elasticity, so this finding should be interpreted with caution.

Table 11 shows the results from the ordinal logit regressions for the willingness to move to the two cities estimated with the slope of consumption growth at zero interest rate as an additional control. For both cities, the coefficient on the slope is positive but small and not statistically significant. This is consistent with the distinction between the two parameters: the EIS captures responsiveness to intertemporal price changes (interest rates, wage premia), which is directly relevant to the relocation trade-off, while the consumption slope at zero interest rate reflects the direction of impatience but not the margin on which relocation incentives operate.

Table 11: Willingness to Move and the Slope of Consumption Growth at Zero Interest Rate

	Kharkiv	Kyiv
Risk tolerance (base: High, $\gamma < 1$)		
Moderate ($\gamma \in [1, 2]$)	-0.466	0.251
	(0.428)	(0.359)
Low ($\gamma \in [2, 3.76]$)	-0.208	0.518
	(0.333)	(0.314)
Very Low ($\gamma > 3.76$)	-0.856^{***}	-0.513^{*}
	(0.320)	(0.283)
Consumption slope ($\Delta \ln C$ at $r = 0$)	0.155	0.183
	(0.131)	(0.123)
Demographic controls	Yes	Yes
War experience controls	Yes	Yes
Observations	395	370
Pseudo R^2	0.131	0.131

Notes: Ordered logit regressions with robust standard errors in parentheses. The dependent variable is the willingness to move on a 1-4 scale (not willing at any premium, willing at 100% premium, willing at 50%, willing at 25%). The consumption slope is the annualized $\Delta \ln C$ at zero interest rate, where positive values indicate a preference for rising consumption. Controls are the same as in Table 10. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

8 Conclusions

This paper studies the relationship between individual risk preferences and the willingness to relocate to a dangerous area, using a novel household survey conducted in Ukraine during the active phase of the Russian-Ukrainian war in mid-April to mid-July 2024. Our survey elicits risk tolerance using the Barsky et al. (1997) income-gamble methodology, measures willingness to relocate to two cities differing in security risk—Kharkiv (high risk) and Kyiv (moderate risk)—and jointly elicits time preferences and the elasticity of intertemporal substitution.

Consistent with theoretical predictions, risk tolerance is a strong predictor of willingness to move to the high-risk Kharkiv: very risk-averse individuals have roughly half the odds of expressing willingness to move at every wage threshold compared to the most risk-tolerant (odds ratio ≈ 0.46). In contrast, risk preferences play a much smaller role for the moderate-risk Kyiv, where only the extreme ends of the risk tolerance distribution differ significantly. This asymmetry—strong for Kharkiv, weak for Kyiv—is confirmed by a within-respondent stacked model (Section 6.4): risk tolerance jointly predicts the Kharkiv-Kyiv differential ($p < 0.004$), a formal cross-city interaction test rejects equality of the risk gradient ($\chi^2(3) = 16.32$, $p = 0.001$), and the result survives an Oster (2019) coefficient stability test ($\delta \approx 2.6$). If our risk tolerance measure captures genuine risk preferences, it should predict willingness to move to the more dangerous destination—which it does, with the asymmetry confirmed by within-respondent analysis and cross-city interaction tests.

Beyond risk attitudes, we find that younger age, male gender, and absence of children are associated with greater willingness to relocate across all specifications for both cities. Unemployment is a significant predictor in the full sample but not in the smaller EIS-restricted sample. Prior displacement from near-frontline territories is associated with higher willingness to move to Kyiv, though this result is not uniformly significant across specifications and displacement categories. War-related property damage—especially business destruction—is a strong predictor of willingness to move to Kharkiv, though it is not significant for Kyiv. Liquidity constraints significantly deter relocation to Kyiv, consistent with the upfront costs of moving. These patterns generally hold for both cities, though the magnitudes differ and some predictors (e.g., unemployment) are stronger for one city than the other.

We estimate a very low elasticity of intertemporal substitution of approximately 0.04, consistent with the micro-estimation literature (Hall, 1988; Yogo, 2004; Havránek, 2015) and the original estimates of Barsky et al. (1997). The negative consumption slope at zero interest rate implies a positive subjective discount rate, consistent with impatience, though the evidence on whether war increases or decreases patience is mixed (Voors et al., 2012; Callen et al., 2014). When we include the elasticity of intertemporal substitution as an additional control in our preferred specification, it enters positively and significantly for both cities, but the point estimate is numerically larger for the moderate-risk Kyiv. Importantly, the inclusion of the elasticity renders the risk tolerance coefficients statistically insignificant for Kyiv, while the very low risk tolerance category remains a significant predictor for Kharkiv. A cross-city interaction test confirms that the EIS effect does not differ between cities ($p = 0.469$), consistent with intertemporal substitution governing a common relocation-cost channel rather than a danger-specific margin. This reduced-form pattern is consistent with the Epstein-Zin separation of risk aversion and intertemporal substitution, and suggests that survey-based proxies for these two preference dimensions have distinct predictive power depending on the level of danger.

Our results have several implications. First, they provide micro-foundations for compensating wage differentials for danger. A hurdle-model decomposition shows that risk tolerance operates almost entirely through the extensive margin—whether to consider relocation at all—rather than the intensive margin of the required premium. More risk-averse individuals do not demand a higher wage premium; they refuse to consider relocation at any price. If stated preferences translate into actual behavior, wage premia alone may not suffice for the most risk-averse; non-monetary interventions such as safety assurances is likely necessary. Second, the risk-willingness gradient is steeper for women ($p = 0.053$), consistent with compounding constraints from caregiving and gendered norms around physical risk. Third, the very low elasticity of intertemporal substitution combined with a preference for present consumption suggests that relocation incentive policies promising future benefits may be less effective than frontloaded subsidies, though this inference rests on a restricted subsample of approximately 400 respondents. These results are robust to controlling for war-induced changes in income, employment, and savings; to excluding respondents who fail an attention check; and to adding origin-region controls (Section 6.5).

Several caveats apply. Our survey relies on hypothetical willingness to move, which may differ from actual behavior—a standard limitation of stated-preference designs. Demand characteristics may also play a role: the survey was administered by a Ukrainian university during wartime, and respondents may anchor their stated willingness on perceived social desirability (e.g., appearing prudent by refusing to move to a dangerous city). The sample, while large ($N = 1{,}286$), is drawn from the network of a western Ukrainian university and overrepresents younger, more educated, and female respondents relative to the Ukrainian population; the results may not generalize to the full population. We measure stated preferences in a cross-section, which limits causal interpretation: reverse causality is possible if war experiences alter risk preferences themselves, and common-method bias could arise from eliciting both risk tolerance and willingness to move in the same survey instrument. Additionally, the Kharkiv relocation question always precedes the Kyiv question in the survey, so order effects could partly inflate the Kharkiv-Kyiv differential if responding to the high-risk scenario anchors subsequent answers. For male respondents, relocating to Kharkiv may carry the additional perceived risk of military mobilization, a confound that our data cannot separate from pure physical danger aversion. Moreover, the relocation vignette is framed as an individual decision, but actual migration is typically a household choice: the coefficients on children and age may partly reflect spousal vetoes, schooling disruption, or eldercare obligations rather than the respondent's own preferences alone. Finally, Kyiv differs from Kharkiv not only in danger but also in amenities—it is the capital, a larger agglomeration, and a deeper labor market—so the within-respondent differential captures a joint danger-and-amenity contrast, not a pure danger contrast. However, the within-respondent Kharkiv-Kyiv differential, the Oster stability test, and the robustness to war-experience controls all mitigate these concerns. The estimation of the elasticity of intertemporal substitution requires excluding respondents with corner or inconsistent choices, reducing the sample to approximately 400 observations. A balance comparison shows that the EIS-restricted sample is older, more likely to be employed, and overrepresents the most risk-averse category (46% vs. 34%, $p = 0.001$) relative to the full sample, though it does not differ significantly on gender, liquidity, displacement, war expectations, or—crucially—willingness to move to either city ($p > 0.28$). Reassuringly, the risk-tolerance coefficients in the baseline specification are similar across the two samples (-0.851 vs. -0.779 for the most risk-averse, Kharkiv), but the compositional differences warrant caution when interpreting the EIS-related results.

Despite these limitations, our paper makes a distinct contribution to the literature at the intersection of risk preferences, migration, and war. It is among the first to jointly elicit risk tolerance and the elasticity of intertemporal substitution in a war setting and to examine their separate roles in relocation decisions involving physical danger. The lower-risk benchmark provided by the two-city design, reinforced by within-respondent analysis and coefficient stability tests, offers evidence that risk preferences matter specifically for decisions involving danger, not merely for mobility in general.

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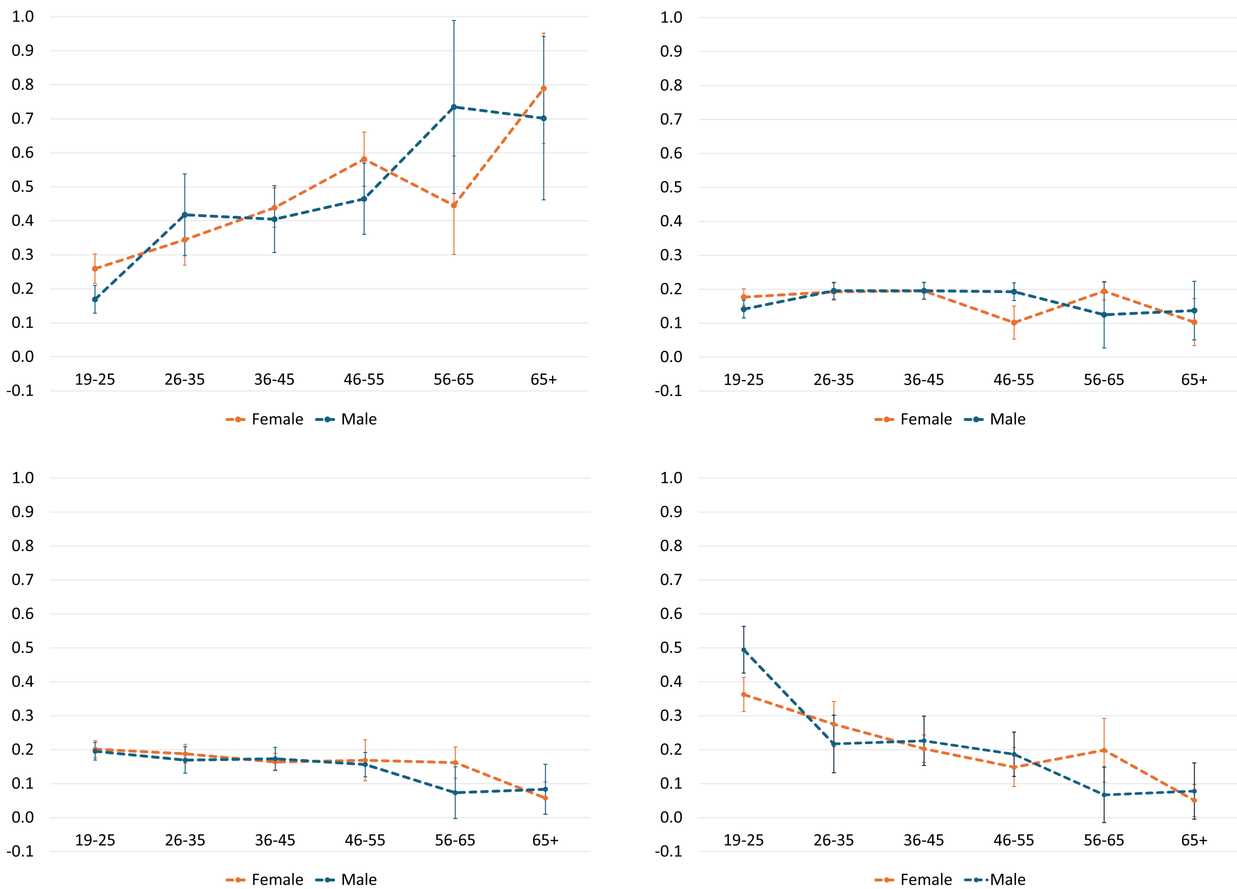
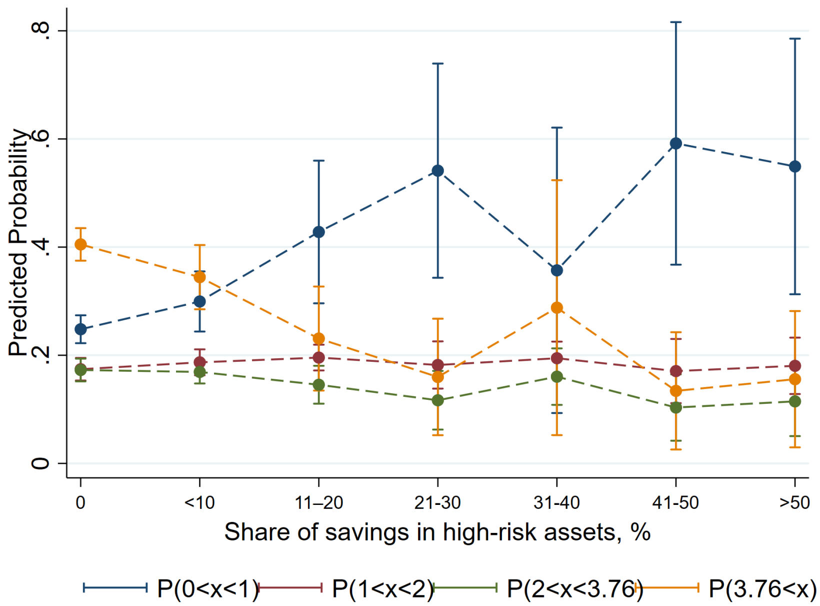
Appendix

Figure A1: Risk Tolerance by Age-Gender



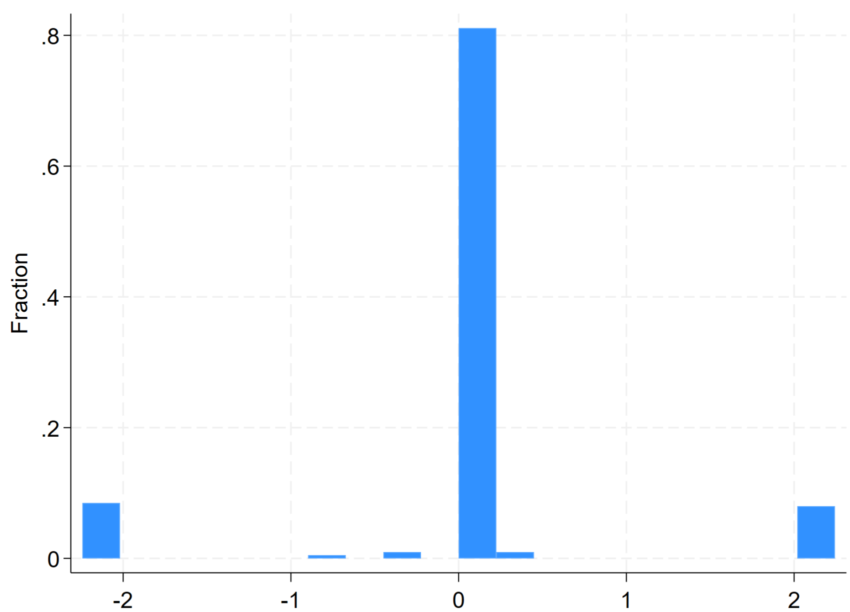
Notes: Each panel shows the predicted probability of choosing risk tolerance Category I through IV (from most risk-averse to most risk-tolerant) by age group, separately for men and women. Bars show 95% confidence intervals. Authors' calculations using the survey data.

Figure A2: Risk Tolerance and High-Risk Assets



Notes: Predicted probability of holding high-risk assets (stocks, cryptocurrency, or foreign currency) by risk tolerance category. Bars show 95% confidence intervals. Authors' calculations using the survey data.

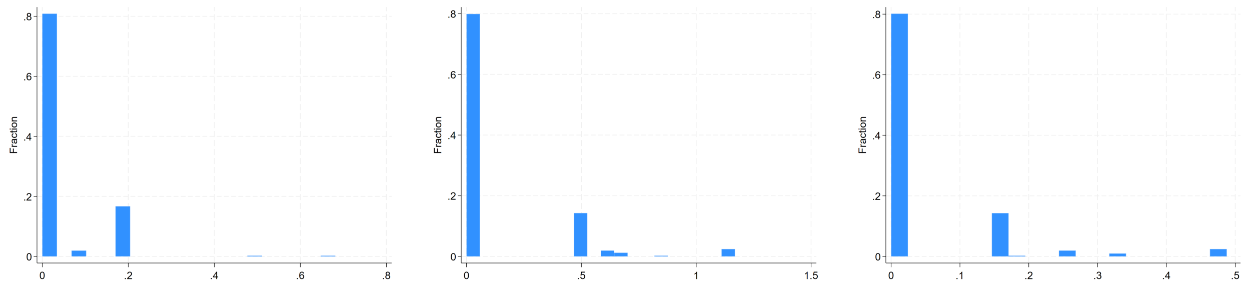
Figure A3: Consumption Growth at Zero Interest Rate



Notes: Histogram of the annualized consumption slope $\Delta \ln C = \frac{1}{T}\ln(C_{\text{after}}/C_{\text{before}})$ at zero interest rate. Sample restricted to $N = 413$ observations after eliminating corner choices, inconsistent responses, and negative implied EIS (see Appendix C).

Figure A4: Intertemporal Elasticity of Substitution

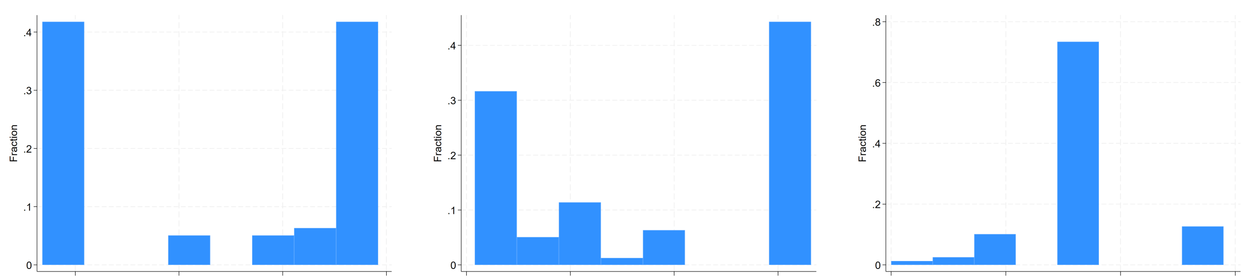
(a) Lower bound **(b)** Upper bound **(c)** Midpoint



Notes: Distribution of the elasticity of intertemporal substitution (σ) computed from consumption-path choices at three interest rates following Barsky et al. (1997). Each panel shows the lower bound, upper bound, and midpoint across the three pairs of interest rate scenarios. $N = 413$ after sample restrictions. Approximately 80% of respondents have an EIS at or near zero.

Figure A5: Subjective Interest Rate

(a) Lower bound **(b)** Upper bound **(c)** Midpoint



Notes: Distribution of the subjective discount rate (ρ, in percent) for respondents with nonzero EIS ($N = 79$). Each panel shows the lower bound, upper bound, and midpoint across the three pairs of interest rate scenarios. The midpoint averages 3.5%.

Table A1: Sample Statistics

Characteristic	Frequency	Percent
	Age	
19-25 years	470	37
26-35 years	165	13
36-45 years	336	26
46-55 years	223	17
56-65 years	52	4
65+ years	40	3
	Gender	
Male	408	32
Female	878	68
	Number of Children	
0 children	658	51
1-2 children	575	45
3 or more children	53	4
	Education	
High school	80	6
Some college or vocational	323	25
Bachelor's degree	452	35
Master's and higher	431	34
	Employment Status	
Employed	877	68
Self-employed	129	10
Unemployed	80	6
Out of labor force	200	16
	Income (in UAH)	
<10,000	107	8
10,000-25,000	357	28
25-40,000	311	24
40-55,000	180	14
55-75,000	124	10
75-100,000	93	7
100-200,000	79	6
>200,000	35	3
	Financial Concern (1-10 scale)	
1-4	379	29
4-7	662	51
8-10	245	19
	Medical Insurance	
No medical insurance	878	68
Yes, paid by employer	265	21

Table A1 (continued)

Characteristic	Frequency	Percent
Yes, self-pay	143	11
Fraction in High-Risk Assets		
0%	985	77
1-10%	192	15
11-20%	43	3
21-30%	24	2
31-40%	10	1
41-50%	15	1
>50%	17	1
Risk Tolerance		
I (Least tolerance)	482	38
II	215	17
III	226	18
IV (Most tolerance)	352	28
Need to Borrow		
No, can pay without borrowing	928	72
Yes, need to borrow to pay	297	23
Could not pay, even by borrowing	61	5
Liquidity		
Non-constrained	1,003	78
Constrained	283	22
Internally Displaced		
No	1,127	88
Yes, neither occupation nor frontline	37	3
Yes, near frontline	63	5
Yes, under occupation	59	5
Damaged Property		
No	1,135	88
Insignificant	42	3
Yes, business	21	2
Yes, home	88	7
Lost Job		
No	1,093	85
Yes, jobless <6 months	118	9
Yes, jobless >6 months	75	6
Expected War Duration		
<6 months	71	6
6-12 months	152	12
1-2 years	506	39
3-5 years	358	28

Table A1 (continued)

Characteristic	Frequency	Percent
>5 years	199	15
Expected Job Search Ease		
Easy	214	17
Possible	715	56
Difficult	248	19
Impossible	27	2
Do not know	82	6
Expected Inflation		
<5%	106	8
5-10%	481	37
11-15%	310	24
16-25%	192	15
26-30%	113	9
>30%	84	7
Willingness to Move to Kharkiv		
Not willing	859	69
At 100+% premium	183	15
At 50% premium	141	11
At 25% premium	59	5
Willingness to Move to Kyiv		
Not willing	446	38
At 100+% premium	336	29
At 50% premium	284	24
At 25% premium	109	9
Total	1,286	100

Notes: Authors' calculations using the survey data. Percentages are rounded to the nearest integer.

Table A2: Risk Tolerance by Demographic Group

Demographic group	Percent choosing response				Number of	Mean Risk
	I (highest risk aversion)	II	III	IV (lowest risk aversion)	Responses	Tolerance
By age						
19-25	21	17	20	40	470	0.87
26-35	34	23	20	23	165	0.63
36-45	43	18	15	22	336	0.57
46-55	54	13	17	16	223	0.48
56-65	54	13	12	21	52	0.53
>65	77	3	13	8	40	0.30
By gender						
Female	40	17	17	25	878	0.63
Male	33	16	19	32	408	0.73
Male, by age						
19-25	15	15	22	48	176	0.99
26-35	42	13	27	17	52	0.56
36-45	41	17	16	24	80	0.60
46-55	47	19	16	19	75	0.53
56-65	73	18	0	9	11	0.29
>65	71	7	14	7	14	0.32
Female, by age						
19-25	25	18	20	35	294	0.80
26-35	30	27	17	26	113	0.66
36-45	44	18	14	22	256	0.56
46-55	58	10	17	15	148	0.45
56-65	49	12	15	24	41	0.59
>65	81	0	12	8	26	0.29
Total	38	17	18	28	1,275	0.68

Notes: Categories I (highest risk aversion) through IV (lowest risk aversion) are defined in Section 5.1. Mean risk tolerance is computed under CRRA using the midpoint of each category's risk tolerance bounds.

Table A3: Models with Full Sets of Covariates, Kharkiv

	Multinomial logit (base = not willing)			Ordered logit
	At 100% premium	At 50% premium	At 25% premium	
Risk tolerance (baseline = very high)				
Moderate	−0.386	−0.334	−0.007	−0.260
	(0.258)	(0.272)	(0.405)	(0.187)
Low	−0.249	−1.097***	−0.514	−0.590***
	(0.250)	(0.342)	(0.440)	(0.197)
Very low	−0.948***	−0.769***	−0.936**	−0.816***
	(0.241)	(0.255)	(0.399)	(0.177)
Age group (baseline = 18–25)				
26–35	−0.038	−1.008***	−0.556	−0.431*
	(0.279)	(0.378)	(0.513)	(0.221)
36–45	−0.873***	−1.306***	−1.050**	−1.026***
	(0.287)	(0.346)	(0.508)	(0.216)
46–55	−0.613**	−1.135***	−1.166**	−0.849***
	(0.282)	(0.346)	(0.578)	(0.228)
56–65	−2.346**	−0.892	0.230	−0.750*
	(1.088)	(0.555)	(0.695)	(0.455)
66+	−2.339**	−2.374*	−0.451	−1.579**
	(1.050)	(1.221)	(0.832)	(0.623)
Gender (baseline = male)				
Female	−0.671***	−0.589***	−0.862***	−0.634***
	(0.191)	(0.216)	(0.306)	(0.144)
Number of children (baseline = none)				
1 or 2	−0.123	−0.352	−0.341	−0.252*
	(0.189)	(0.226)	(0.359)	(0.151)
3 or more	−0.818	−14.471*** †	−0.373	−1.260***
	(0.549)	(0.387)	(0.798)	(0.486)
Education (baseline = primary/secondary)				
Vocational	−0.175	0.016	0.004	−0.041
	(0.363)	(0.374)	(0.502)	(0.257)
Bachelor's	0.031	−0.063	0.479	0.096
	(0.370)	(0.392)	(0.510)	(0.260)
Master's/PhD	−0.241	−0.171	−0.101	−0.172
	(0.393)	(0.431)	(0.636)	(0.289)
Labor force status (baseline = employed)				
Self-employed	−0.059	−0.017	−0.146	−0.045
	(0.295)	(0.336)	(0.564)	(0.225)
Unemployed	0.149	0.455	1.360***	0.620**
	(0.366)	(0.410)	(0.435)	(0.276)
Not in labor force	0.188	0.121	0.896**	0.304
	(0.244)	(0.281)	(0.359)	(0.188)
Income (baseline = lowest category)				
Category 2	0.273	0.385	0.121	0.204
	(0.417)	(0.428)	(0.523)	(0.310)
Category 3	0.392	0.408	−0.328	0.147
	(0.429)	(0.422)	(0.593)	(0.315)
Category 4	0.669	1.064**	−1.237	0.390
	(0.461)	(0.468)	(0.752)	(0.340)
Category 5	−0.428	0.419	−0.252	−0.030
	(0.546)	(0.503)	(0.665)	(0.381)
Category 6	0.479	0.569	−0.795	0.134
	(0.462)	(0.475)	(0.713)	(0.344)
Financial worries (baseline = not worried)				
Somewhat worried	0.215	0.037	−0.294	−0.027

Continued on next page

Table A3 continued

	Multinomial logit (base = not willing)			Ordered logit
	At 100% premium	At 50% premium	At 25% premium	
	(0.223)	(0.234)	(0.357)	(0.161)
Very worried	0.708**	0.226	−0.082	0.247
	(0.306)	(0.330)	(0.489)	(0.212)
Liquidity constrained (baseline = no)				
Yes	−0.082	−0.441	−0.656	−0.350*
	(0.253)	(0.305)	(0.440)	(0.196)
Internally displaced (baseline = no)				
Neither occupation nor frontline	0.923*	0.593	−14.511*** †	0.206
	(0.487)	(0.561)	(0.590)	(0.356)
Near frontline	1.029**	0.705	1.171**	0.811***
	(0.424)	(0.469)	(0.539)	(0.302)
Under occupation	0.421	0.241	0.247	0.362
	(0.419)	(0.425)	(0.573)	(0.299)
Lost job due to war (baseline = no)				
Jobless < 6 months	−0.224	0.457	1.094**	0.378
	(0.319)	(0.325)	(0.483)	(0.234)
Jobless > 6 months	−0.479	0.177	0.623	0.111
	(0.443)	(0.416)	(0.643)	(0.315)
War duration expectation (baseline = < 6 months)				
6–12 months	−0.071	0.345	0.437	0.315
	(0.539)	(0.632)	(0.784)	(0.409)
1–2 years	0.126	0.235	0.048	0.182
	(0.485)	(0.588)	(0.728)	(0.372)
3–5 years	0.349	0.101	−0.132	0.168
	(0.490)	(0.595)	(0.765)	(0.377)
> 5 years	0.182	0.631	0.827	0.549
	(0.523)	(0.612)	(0.746)	(0.393)
Labor market expectations (baseline = easy to find job)				
Possible	−0.072	−0.131	−0.027	−0.072
	(0.238)	(0.265)	(0.372)	(0.175)
Difficult	−0.053	0.428	−0.734	0.023
	(0.306)	(0.325)	(0.564)	(0.224)
Impossible	0.528	1.356	0.028	0.406
	(0.634)	(0.854)	(0.925)	(0.495)
Do not know	0.370	0.007	−0.572	−0.082
	(0.398)	(0.502)	(0.685)	(0.296)
Inflation expectations (baseline = lowest)				
Category 2	−0.098	0.200	−0.572	−0.149
	(0.337)	(0.405)	(0.434)	(0.244)
Category 3	−0.447	0.221	−0.693	−0.280
	(0.360)	(0.422)	(0.461)	(0.259)
Category 4	−0.586	0.217	−0.872	−0.340
	(0.405)	(0.455)	(0.535)	(0.290)
Category 5	−0.129	−0.142	−0.486	−0.268
	(0.432)	(0.518)	(0.580)	(0.322)
Category 6	−0.353	−0.373	−1.099	−0.466
	(0.478)	(0.636)	(0.669)	(0.377)
Constant	−0.653	−1.128	−0.771	
	(0.691)	(0.845)	(1.136)	
Cut point 1				−0.363
				(0.600)
Cut point 2				0.614
				(0.600)
Cut point 3				2.085

Continued on next page

Table A3 continued

	Multinomial logit (base = not willing)			Ordered logit
	At 100% premium	At 50% premium	At 25% premium	
				(0.614)
N		1,231		1,231
Log pseudolikelihood		−977.87		−1031.57
Pseudo R^2		0.146		0.099
AIC		2219.7		2155.1
BIC		2895.0		2390.5

Notes: The dependent variable is willingness to move to Kharkiv, coded on a 4-point ordinal scale: (1) not willing to move, (2) willing at a 100% pay premium, (3) willing at 50%, (4) willing at 25%. The multinomial logit uses "not willing to move" as the base outcome; coefficients for each alternative are reported separately. The ordered logit imposes the proportional odds assumption across thresholds. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. † Coefficient reflects near-complete separation in the multinomial logit (a category predicts the outcome almost perfectly); the point estimate is unreliable and should be interpreted with caution. The ordered logit yields a lower AIC (2155 vs. 2220) and substantially lower BIC (2391 vs. 2895), favoring the more parsimonious ordered specification.

Table A4: Average Marginal Effects of Risk Tolerance on Willingness to Move

	(1) Not willing to move	(2) At 100% premium	(3) At 50% premium	(4) At 25% premium
Panel A: Kharkiv (high risk), $N = 1{,}231$				
Moderate ($\gamma \in [1, 2]$)	0.047	−0.014	−0.021	−0.012
	(0.037)	(0.012)	(0.016)	(0.009)
Low ($\gamma \in [2, 3.76]$)	0.104***	−0.034***	−0.045***	−0.025***
	(0.036)	(0.013)	(0.016)	(0.008)
Very low ($\gamma > 3.76$)	0.144***	−0.050***	−0.061***	−0.032***
	(0.032)	(0.012)	(0.014)	(0.008)
Panel B: Kyiv (moderate risk), $N = 1{,}164$				
Moderate ($\gamma \in [1, 2]$)	−0.008	−0.000	0.005	0.003
	(0.033)	(0.000)	(0.019)	(0.014)
Low ($\gamma \in [2, 3.76]$)	−0.043	−0.002	0.025	0.020
	(0.032)	(0.002)	(0.019)	(0.015)
Very low ($\gamma > 3.76$)	0.095***	−0.010**	−0.053***	−0.032***
	(0.031)	(0.004)	(0.018)	(0.011)

Notes: Average marginal effects from the parsimonious ordered logit (Tables 1 and 3). Each column reports the change in the predicted probability of the indicated outcome relative to the baseline category (very high risk tolerance, $\gamma < 1$). Delta-method standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A5: Multinomial Logit vs. Ordered Logit: Willingness to Move to Kyiv (Full Covariates)

	Multinomial logit (base = not willing)			Ordered logit
	At 100% premium	At 50% premium	At 25% premium	
Risk tolerance (baseline = very high)				
Moderate	−0.219	−0.065	0.087	0.007
	(0.246)	(0.258)	(0.350)	(0.169)
Low	0.194	0.279	0.127	0.177
	(0.254)	(0.274)	(0.402)	(0.171)
Very low	−0.572***	−0.804***	−0.346	−0.468***
	(0.205)	(0.231)	(0.310)	(0.155)
Age group (baseline = 18–25)				
26–35	−0.793***	−1.041***	−1.853***	−0.899***
	(0.286)	(0.313)	(0.496)	(0.205)
36–45	−0.892***	−1.379***	−1.491***	−1.032***
	(0.251)	(0.282)	(0.371)	(0.182)
46–55	−0.966***	−1.455***	−2.011***	−1.137***
	(0.257)	(0.298)	(0.410)	(0.193)
56–65	−1.741***	−1.114**	−2.585**	−1.252***
	(0.474)	(0.479)	(1.091)	(0.364)
66+	−1.051**	−2.279***	−2.915**	−1.641***
	(0.438)	(0.792)	(1.261)	(0.370)
Gender (baseline = male)				
Female	−0.289	−0.626***	−0.890***	−0.460***
	(0.180)	(0.191)	(0.253)	(0.129)
Number of children (baseline = none)				
1 or 2	−0.337**	−0.512***	−0.353	−0.308**
	(0.169)	(0.193)	(0.262)	(0.129)
3 or more	−0.866**	−1.588***	−1.043	−1.071***
	(0.421)	(0.521)	(0.699)	(0.333)
Education (baseline = primary/secondary)				
Vocational	0.066	−0.038	0.019	−0.002
	(0.407)	(0.388)	(0.481)	(0.258)
Bachelor's	0.292	−0.244	0.101	−0.074
	(0.407)	(0.398)	(0.485)	(0.255)
Master's/PhD	0.495	−0.089	0.114	−0.005
	(0.423)	(0.426)	(0.539)	(0.272)
Labor force status (baseline = employed)				
Self-employed	−0.519*	0.146	−0.005	0.009
	(0.277)	(0.282)	(0.387)	(0.206)
Unemployed	−0.321	0.974**	0.699	0.648**
	(0.441)	(0.404)	(0.508)	(0.257)
Not in labor force	−0.059	0.041	0.490	0.224
	(0.254)	(0.256)	(0.343)	(0.177)
Income (baseline = lowest category)				
Category 2	0.454	0.652	0.151	0.396
	(0.330)	(0.408)	(0.515)	(0.263)
Category 3	0.464	0.983**	0.479	0.637**
	(0.345)	(0.418)	(0.515)	(0.269)
Category 4	0.689*	0.954**	0.529	0.580**
	(0.386)	(0.448)	(0.565)	(0.287)
Category 5	0.197	0.611	0.315	0.436
	(0.423)	(0.475)	(0.598)	(0.320)
Category 6	0.662*	0.605	0.098	0.300
	(0.384)	(0.452)	(0.572)	(0.290)
Financial worries (baseline = not worried)				
Somewhat worried	0.487**	0.134	0.508*	0.184
	(0.190)	(0.200)	(0.276)	(0.134)

Continued on next page

Table A5 continued

	Multinomial logit (base = not willing)			Ordered logit
	At 100% premium	At 50% premium	At 25% premium	
Very worried	0.539**	0.017	0.182	0.107
	(0.257)	(0.291)	(0.437)	(0.192)
Liquidity constrained (baseline = no)				
Yes	−0.117	−0.678***	−0.473	−0.376**
	(0.201)	(0.252)	(0.358)	(0.159)
Internally displaced (baseline = no)				
Neither occupation nor frontline	0.119	0.717	1.176*	0.749*
	(0.596)	(0.543)	(0.656)	(0.392)
Near frontline	0.738	1.336***	1.766***	1.162***
	(0.451)	(0.471)	(0.516)	(0.284)
Under occupation	0.947**	1.226**	0.357	0.441
	(0.436)	(0.530)	(0.738)	(0.285)
Lost job due to war (baseline = no)				
Jobless < 6 months	0.022	0.182	0.596	0.208
	(0.324)	(0.351)	(0.414)	(0.239)
Jobless > 6 months	0.032	0.661	−0.728	0.011
	(0.408)	(0.455)	(0.742)	(0.283)
War duration expectation (baseline = < 6 months)				
6–12 months	0.716	0.530	0.773	0.568
	(0.435)	(0.542)	(0.980)	(0.363)
1–2 years	0.921**	0.902*	1.383	0.877***
	(0.399)	(0.502)	(0.908)	(0.337)
3–5 years	0.944**	0.937*	1.354	0.842**
	(0.407)	(0.512)	(0.922)	(0.343)
> 5 years	0.532	0.938*	1.418	0.916**
	(0.434)	(0.539)	(0.928)	(0.361)
Labor market expectations (baseline = easy to find job)				
Possible	0.021	0.396	−0.186	0.063
	(0.221)	(0.240)	(0.313)	(0.159)
Difficult	0.247	0.147	0.242	0.211
	(0.266)	(0.312)	(0.384)	(0.196)
Impossible	−0.594	−0.751	0.285	−0.213
	(0.647)	(1.005)	(1.184)	(0.555)
Do not know	−0.470	−0.680	−0.288	−0.509*
	(0.362)	(0.493)	(0.567)	(0.294)
Inflation expectations (baseline = lowest)				
Category 2	0.070	−0.017	0.066	0.016
	(0.348)	(0.367)	(0.459)	(0.244)
Category 3	0.218	0.026	−0.074	0.002
	(0.358)	(0.379)	(0.485)	(0.250)
Category 4	0.169	0.422	0.037	0.197
	(0.393)	(0.405)	(0.523)	(0.269)
Category 5	0.171	−0.226	−0.826	−0.308
	(0.420)	(0.450)	(0.651)	(0.286)
Category 6	0.326	−0.639	−2.058**	−0.493
	(0.418)	(0.565)	(1.045)	(0.303)
Constant	−0.992	−0.494	−1.424	
	(0.713)	(0.774)	(1.290)	
Cut point 1				−0.480
				(0.555)
Cut point 2				0.980
				(0.555)
Cut point 3				2.826
				(0.564)
N		1,164		1,164
Log pseudolikelihood		−1296.22		−1346.32

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Table A5 continued

	Multinomial logit (base = not willing)			Ordered logit
	At 100% premium	At 50% premium	At 25% premium	
Pseudo R^2		0.1375		0.1042
AIC		2856.4		2784.6
BIC		3524.3		3017.4

Notes: The dependent variable is willingness to move to Kyiv, coded on a 4-point ordinal scale: (1) not willing, (2) willing at 100% pay premium, (3) willing at 50%, (4) willing at 25% or no premium. The multinomial logit (MNL) uses "not willing" as the base outcome; columns report coefficients for each alternative relative to this base. The ordered logit imposes a single index with threshold (cut) parameters. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. AIC $= -2 \ln L + 2k$; BIC $= -2 \ln L + k \ln N$.

Table A6: Cross-City Test: Risk Tolerance × City Interactions

	Stacked Ordered Logit
Risk tolerance (base: High, $\gamma < 1$)	
Moderate ($\gamma \in [1, 2]$)	0.084
	(0.160)
Low ($\gamma \in [2, 3.76]$)	0.223
	(0.156)
Very Low ($\gamma > 3.76$)	-0.375^{***}
	(0.143)
Kharkiv	-1.004^{***}
	(0.114)
Risk tolerance × Kharkiv interactions	
Moderate × Kharkiv	-0.367^{*}
	(0.198)
Low × Kharkiv	-0.779^{***}
	(0.204)
Very Low × Kharkiv	-0.436^{***}
	(0.165)
Demographic controls	Yes
War experience controls	Yes
Observations	2,264
Respondents	1,132
Pseudo R^2	0.126
Wald test: interactions jointly zero	
$\chi^2(3)$	16.32
p-value	0.001

Notes: Stacked ordered logit on the pooled respondent × city sample. Each respondent contributes two observations: one for Kharkiv and one for Kyiv. The dependent variable is willingness to move on a 1-4 scale. The risk tolerance main effects capture the Kyiv coefficients; the interaction terms capture the additional effect for Kharkiv. Robust standard errors clustered at the respondent level in parentheses. Demographic controls: age, gender, number of children, labor force status, liquidity constraints. War experience controls: displacement status, job loss, war expectations, property damage. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A7: Cross-City Test: EIS $\times$ City Interaction

	Stacked Ordered Logit
Risk tolerance (base: High, $\gamma < 1$)	
Moderate ($\gamma \in [1, 2]$)	-0.115
	(0.313)
Low ($\gamma \in [2, 3.76]$)	0.172
	(0.261)
Very Low ($\gamma > 3.76$)	-0.551^{**}
	(0.253)
EIS midpoint (σ)	3.294^{***}
	(1.052)
Kharkiv	-1.458^{***}
	(0.149)
EIS $\times$ Kharkiv	-0.853
	(1.178)
Demographic controls	Yes
War experience controls	Yes
Observations	720
Respondents	360
Pseudo R^2	0.161
Wald tests	
EIS $\times$ Kharkiv = 0: $\chi^2(1)$	0.52
p-value	0.469
Risk categories jointly = 0: $\chi^2(3)$	9.02
p-value	0.029

Notes: Stacked ordered logit on the pooled respondent $\times$ city sample, restricted to the EIS subsample. Each respondent contributes two observations: one for Kharkiv and one for Kyiv. The dependent variable is willingness to move on a 1-4 scale. The EIS midpoint is the average of the lower and upper bounds of the elasticity of intertemporal substitution. Robust standard errors clustered at the respondent level in parentheses. Demographic controls: age, gender, number of children, labor force status, liquidity constraints. War experience controls: displacement status, job loss, war expectations, property damage. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

A Survey Questionnaire

The survey was titled "Managing Financial Risks during the Russian-Ukrainian War" and was administered online in mid-April to mid-July 2024 by Ivan Franko National University of Lviv, in Ukrainian. Below is an English translation of the questionnaire.

I **Socio-demographic characteristics. [Please tell us about yourself.]**

1. How old are you? Choose one.
   - 19-25
   - 26-35
   - 36-45
   - 46-55
   - 56-65
   - >65
2. What is your gender? Choose one.
   - Female
   - Male
3. In which oblast do you currently reside? Choose one.
   - *[List of oblasts]*
4. What is the highest level of school you have completed or the highest degree you have received? Choose one.
   - High school diploma (or equivalent)
   - Vocational or occupational program
   - Some college but no degree
   - Bachelor's degree (for example: BA, BS)
   - Specialist degree
   - Master's degree
   - Post-graduate degree (for example: PhD, MD, JD)
5. How many adults are in your home, including you? *Enter the number.*
6. How many children under 18 years old in your household? *Enter the number.*

II **Current economic situation: employment, savings, investments, borrowing, and credit**

This section asks about 2024.

7. What activity did you spend the most hours on last week? Choose one.
   - Working full-time (for someone)
   - Working part-time (for someone)
   - Working as self-employed
   - Not working and seeking employment
   - In school, not working and not seeking employment
   - Taking care of children and other family members, not working and not seeking employment
   - Taking care of children and other family members, not working and seeking employment
   - Retired, not working and not seeking employment
8. What is your occupation in full-time work?
9. What is your occupation in part-time work?
10. What is your industry?
11. What is the source of income for your household? Choose everything that applies.
    - Full-time work (for someone)
    - Part-time work (for someone)
    - Freelance work
    - Self-employment
    - Income from garden, land
    - Retirement pension
    - Social services payments
    - Rental income
    - Income from investment activity
    - Financial help from family/friends
    - Other
12. How much income does your household normally earn in a month in 2024, including from all sources mentioned in question 11? Choose one.
    - <5,000 UAH
    - 5,001-10,000
    - 10,001-20,000
    - 20,001-30,000

  - 30,001-40,000
  - 40,001-50,000
  - 50,001-75,000
  - 75,001-100,000
  - 100,001-200,000
  - >200,000

13. What percentage of the total household income do you save?
  - I do not save
  - <5%
  - 5-10%
  - 11-20%
  - 21-30%
  - 31-40%
  - 41-50%
  - 51-60%
  - 61-75%
  - >75%

14. What is your most important reason for saving? Choose all that apply.
  - I do not save
  - Education (for yourself, child, grandchild, or other family members)
  - Buy a car or other vehicle
  - Emergencies or unexpected needs
  - Buy a home
  - Home improvements/repairs
  - Buy household goods, appliances, home furnishings
  - Travel/vacation
  - Financial protection during retirement
  - Start a business
  - Medical treatment
  - Pay off debt
  - Other (please specify)

15. What do you do with the money left after consumption? Choose all that apply.

- No money is left after current spending
- Saving at home in the national currency
- Saving at home in foreign currency
- Saving at the bank, debit card, national currency
- Saving at the bank, debit card, foreign currency
- Saving at the bank, deposit account
- Invest in crypto
- Buying real estate
- Buying land
- Buying war bonds
- Buying other bonds or stocks
- Buying precious metals
- Other

16. Where does the largest share of your money after consumption go? Choose one.
    - No money is left after current spending
    - Saving at home in the national currency
    - Saving at home in foreign currency
    - Saving at the bank, debit card, national currency
    - Saving at the bank, debit card, foreign currency
    - Saving at the bank, deposit account, national currency
    - Saving at the bank, deposit account, foreign currency
    - Invest in crypto
    - Buying real estate
    - Buying land
    - Buying war bonds
    - Buying other bonds or stocks
    - Buying precious metals
    - Other
17. What fraction of your savings goes towards high-risk assets?
    - 0%
    - <10%
    - 11-20%

- 21-30%
- 31-40%
- 41-50%
- >50%

18. Do you or your family have medical insurance?
    - Yes, paid by employer
    - Yes, self-pay or private insurance
    - No

19. If you borrowed (took credit) after the full-scale invasion in February 2022, what was the purpose of the credit?
    - I did not borrow
    - For ongoing needs
    - To buy a home
    - To buy a car
    - Used credit limit on my credit card
    - For education
    - For medical treatment
    - For home repairs
    - Other

20. If you borrowed, where did you borrow?
    - I did not borrow
    - Bank
    - Credit union
    - Lombard
    - Microfinancing organization
    - Extended family
    - Friends
    - Acquaintances
    - Other

21. Do you pay your debts on time?
    - I do not have debt

– Yes
– No

III **Financial security: Hypothetical scenario**

22. If your household experienced unexpected one-time expenses of UAH 15,000, would you need to borrow money to pay for the expense? Choose one.
    – No, I would not need to borrow money to cover the expense
    – Yes, I would need to borrow money to cover the expense
    – I could not pay for this expense, even by borrowing
23. On a scale from 1 to 10, how concerned are you about your household's current financial situation? 1 represents the lowest level of concern (or no concerns), and 10 represents the highest level of concern.

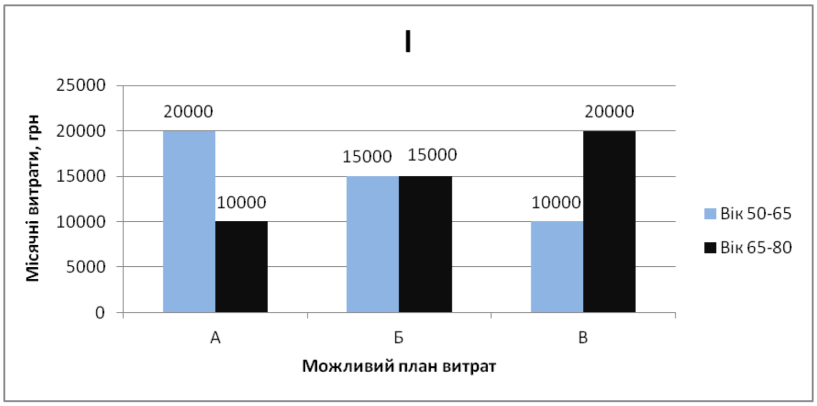
IV **Risk tolerance: Hypothetical scenario**

24. Suppose that you are the only income earner in the family, and you have a good job guaranteed to give you your current (family) income every year for life. You are given the opportunity to take a new and equally good job, with a 50-50 chance it will double your (family) income and a 50-50 chance that it will cut your (family) income by a third. Would you take the new job?
    – Yes
    – No
25. If the answer to the first question is "Yes": Suppose the chances were 50-50 that it would double your (family) income, and 50-50 that it would cut it in half. Would you still take the new job?
    – Yes
    – No
26. If the answer to the first question is "No": Suppose that the chances were 50-50 that it would double your (family) income and 50-50 that it would cut it by 20 percent. Would you then take the new job?
    – Yes
    – No

V **Time preference, intertemporal substitution: Hypothetical scenario**

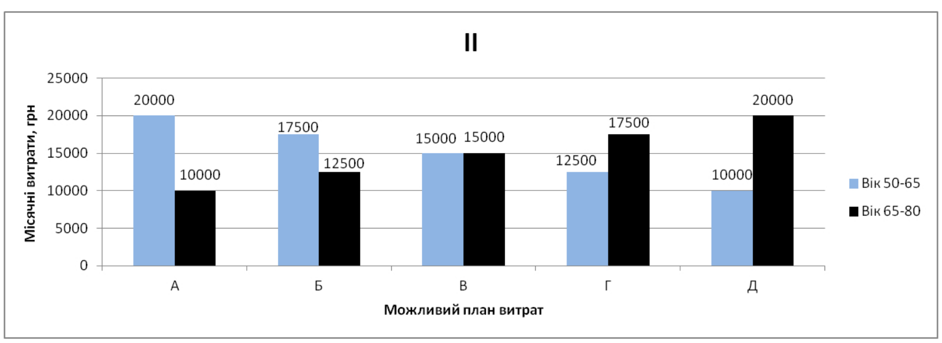
Let's suppose that you are now 50 years old and that your partner will live to be 80. Further, suppose that future health care costs are fully covered by insurance, that there will be no inflation, the interest rate is zero, and the income after taxes is guaranteed to be 15,000 UAH each month from age 50 to age 80.

27. Figure I contains several possible patterns of monthly spending before retirement (light bars) and after retirement (dark bars). By saving part of your income before retirement, you can have more to spend after retirement, as in the third choice. Or you could borrow and spend more before retirement, spending less and repaying the loan after retirement, as in the first choice. Or you could just spend your income each month, as in the middle choice. Thus, you can afford any of the spending patterns shown. Which pattern do you like the most?



- A
- B
- C

28. Figure II shows the same patterns as before, with two additional choices. Which do you prefer?

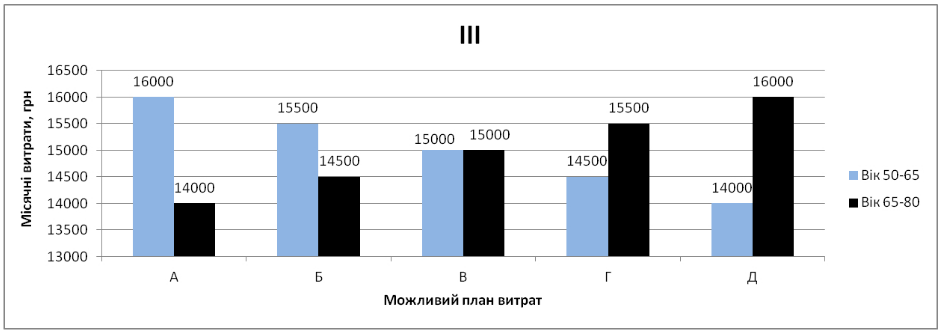


- A
- B
- C

– D

– E

29. If you chose 15,000/15,000, look at Figure III (otherwise skip this question). Which choice do you prefer?



– A

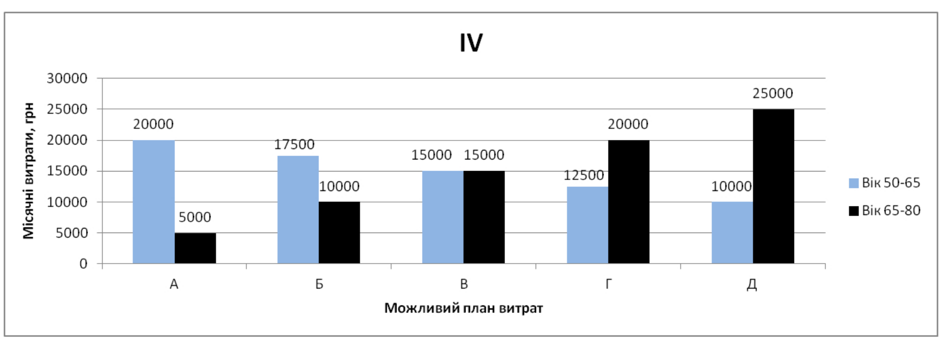
– B

– C

– D

– E

30. Up until now we have assumed zero interest rate. **Here assume the interest rate is positive.** Figure IV has five more spending patterns for before and after retirement. As before, by saving part of your income before retirement, you can have more to spend after retirement. Assuming that you can afford any of the spending patterns, which pattern do you like the most?



– A

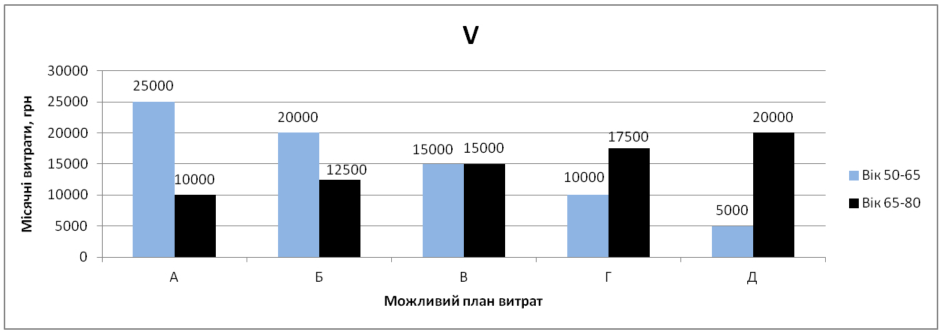
– B

– C

– D

– E

31. Of these five choices in Figure V, which pattern do you like the most? (*Attention check question.*)



– A
– B
– C
– D
– E

VI **Personal experience since the beginning of the full-scale invasion**

32. Are you internally displaced? Choose one.
   – No
   – Yes, my previous residence is located at the currently occupied territories.
   – Yes, my previous residence is located near the front line.
   – Yes, my previous residence is located neither in the currently occupied territories nor near the frontline.

33. Was your property damaged or destroyed as a result of the war? Choose all that apply.
   – No, nothing is destroyed
   – Residence damaged
   – Residence destroyed
   – Business damaged
   – Business destroyed
   – Other personal belongings damaged or destroyed
   – Some insignificant damages

34. Did you lose a job during the war? Choose one.
    - No
    - Yes, was out of work for less than 6 months
    - Yes, was out of work for more than 6 months

VII **Economic situation prior to February 2022**
These questions concern the period prior to the full-scale invasion. Consider December 2021 and answer the questions below.

35. What activity did you spend the most hours on last week? Choose one.
    - Working full-time (for someone)
    - Working part-time (for someone)
    - Self-employed
    - Not working and seeking employment
    - In school, not working and not seeking employment
    - Taking care of children and other family members, not working and not looking for work
    - Taking care of children and other family members, not working and looking for work
    - Retired, not working and not looking for work
36. What was your occupation?
37. What was your industry?
38. What was the source of income for your household? Please choose everything that applies.
    - Full-time work (for someone)
    - Part-time work (for someone)
    - Freelance work
    - Self-employment
    - Income from garden, land
    - Retirement pension
    - Social services payments
    - Rental income
    - Income from investment activity
    - Financial help from family/friends

– Other

39. How much income did your household normally earn in a month in 2021, including all sources mentioned in the question above? Choose one.
    - <5,000 UAH
    - 5,001-10,000
    - 10,001-20,000
    - 20,001-30,000
    - 30,001-40,000
    - 40,001-50,000
    - 50,001-75,000
    - 75,001-100,000
    - 100,001-200,000
    - >200,000
40. What percentage of total household income did you save?
    - I do not save
    - <5%
    - 5-10%
    - 11-20%
    - 21-30%
    - 31-40%
    - 41-50%
    - 51-60%
    - 61-75%
    - >75%
41. What was your most important reason for saving? Choose all that apply.
    - I do not save
    - Education (for yourself, child, grandchild, or other family members)
    - Buy a car or other vehicle
    - Emergencies or unexpected needs
    - Buy a home
    - Home improvements/repairs
    - Buy household goods, appliances, home furnishings

- Travel/vacation
- Financial protection during retirement
- Start a business
- Medical treatment
- Pay off debt
- Other (please specify)

42. What did you do with the money left after consumption? Choose all that apply.
    - No money is left after current spending
    - Saving at home in the national currency
    - Saving at home in foreign currency
    - Saving at the bank, debit card, national currency
    - Saving at the bank, debit card, foreign currency
    - Saving at the bank, deposit account
    - Invest in crypto
    - Buying real estate
    - Buying land
    - Buying other bonds or stocks
    - Buying precious metals
    - Other

43. Where did the largest share of your money after consumption go? Choose one.
    - No money is left after current spending
    - Saving at home in the national currency
    - Saving at home in foreign currency
    - Saving at the bank, debit card, national currency
    - Saving at the bank, debit card, foreign currency
    - Saving at the bank, deposit account, national currency
    - Saving at the bank, deposit account, foreign currency
    - Invest in crypto
    - Buying real estate
    - Buying land
    - Buying other bonds or stocks
    - Buying precious metals

- Other

44. What fraction of your savings went towards high-risk assets?
    - 0%
    - <10%
    - 11-20%
    - 21-30%
    - 31-40%
    - 41-50%
    - >50%
45. Did you or your family have medical insurance?
    - Yes, paid by employer
    - Yes, self-pay or private insurance
    - No
46. If you borrowed (took credit) before the full-scale invasion in February 2022, what was the purpose of the credit?
    - I did not borrow
    - For ongoing needs
    - To buy a home
    - To buy a car
    - Used credit limit on my credit card
    - For education
    - For medical treatment
    - For home repairs
    - Other
47. If you borrowed, where did you borrow?
    - I did not borrow
    - Bank
    - Credit union
    - Lombard
    - Microfinancing organization
    - Extended family

- Friends
- Acquaintances
- Other

48. Did you pay your debts on time?
    - I do not have debt
    - Yes
    - No

VIII Willingness to relocate: Hypothetical scenario

49. Suppose that your employer (even if you do not work right now) offers you to move to Kharkiv for 1 year to do the same job and offers you a wage premium. Please specify the lowest percent premium to your salary given which you would move to Kharkiv. Choose one.
    - I work in Kharkiv
    - 25%
    - 50%
    - 100%
    - Would not accept the offer under any circumstances
    - Other
50. Suppose that your employer (even if you do not work right now) offers you to move to Kyiv for 1 year to do the same job and offers you a wage premium. Please specify the lowest percent premium to your salary given which you would move to Kyiv. Choose one.
    - I work in Kyiv
    - 25%
    - 50%
    - 100%
    - Would not accept the offer under any circumstances
    - Other
51. What percent of your household's monthly income would you be willing to pay for an insurance policy for 1 year to cover your property and belongings as a result of missiles or other war-related destruction?
    - 0

- 1-10%
- 11-20%
- 21-30%
- >30%

52. What percent of your household's monthly income would you be willing to pay to create some protection for your town from missiles or other war-related destruction until the end of the war?
    - 0
    - 1-10%
    - 11-20%
    - 21-30%
    - >30%

IX **Expectations**

53. How easy is it to find a job in your oblast? Choose one.
    - Easy
    - Possible
    - Difficult
    - Impossible

54. What will inflation be in 2024? Choose one.
    - <5%
    - 5-10%
    - 11-15%
    - 16-25%
    - 26-30%
    - >30%

55. How much longer will the war in Ukraine last?
    - <6 months
    - 6-12 months
    - 1-2 years
    - 3-5 years
    - >5 years

B Derivation of CRRA Risk Aversion Bounds

The following is a brief description of how the upper and lower bounds for the relative risk aversion parameter under the CRRA utility function are derived, as in Table I of Barsky et al. (1997).

The utility function under constant relative risk aversion is

$$u(c) = \begin{cases} \dfrac{c^{1-\gamma}}{1-\gamma} & \text{if } \gamma > 0,\ \gamma \neq 1, \\ \ln(c) & \text{if } \gamma = 1, \end{cases} \tag{3}$$

where γ is the coefficient of relative risk aversion (we use γ throughout to avoid confusion with the subjective discount rate ρ in Section 7).

Below is an example of how the upper and lower bounds are derived for Choice II (reject the one-third gamble but accept the one-fifth gamble). The same process applies to the remaining three choices.

Choice II: Reject one-third, accept one-fifth. *Lower bound* (reject one-third): The individual rejects a gamble with a 50% chance of doubling income and a 50% chance of losing one-third ($\lambda = 2/3$):

$$\tfrac{1}{2}\,u(2c) + \tfrac{1}{2}\,u(\tfrac{2}{3}c) < u(c).$$

Substituting the CRRA utility function (assuming $\gamma > 1$):

$$\begin{aligned} \tfrac{1}{2}\,\frac{(2c)^{1-\gamma}}{1-\gamma} + \tfrac{1}{2}\,\frac{(\frac{2}{3}c)^{1-\gamma}}{1-\gamma} &< \frac{c^{1-\gamma}}{1-\gamma} \\ (2c)^{1-\gamma} + (\tfrac{2}{3}c)^{1-\gamma} &> 2\,c^{1-\gamma} \\ 2^{1-\gamma} + (\tfrac{2}{3})^{1-\gamma} &> 2 \\ \implies \quad \gamma &> 2. \end{aligned} \tag{4}$$

Upper bound (accept one-fifth): The individual accepts a gamble with a 50% chance of doubling income and a 50% chance of losing one-fifth ($\lambda = 4/5$):

$$\tfrac{1}{2}\,u(2c) + \tfrac{1}{2}\,u(\tfrac{4}{5}c) \geq u(c).$$

Substituting the CRRA utility function (assuming $\gamma > 1$):

$$\begin{aligned}
\tfrac{1}{2}\,\frac{(2c)^{1-\gamma}}{1-\gamma} + \tfrac{1}{2}\,\frac{(\frac{4}{5}c)^{1-\gamma}}{1-\gamma} &\geq \frac{c^{1-\gamma}}{1-\gamma} \\
(2c)^{1-\gamma} + (\tfrac{4}{5}c)^{1-\gamma} &\leq 2\,c^{1-\gamma} \\
2^{1-\gamma} + (\tfrac{4}{5})^{1-\gamma} &\leq 2 \\
\implies \quad \gamma &< 3.76.
\end{aligned} \tag{5}$$

Thus, individuals in Choice II have relative risk aversion $\gamma \in (2, 3.76)$.

Table B1 summarizes the gamble structure, the implied CRRA bounds, and the empirical distribution from our survey.

Table B1: Risk Preference Survey Design and the Empirical Distribution

		Relative Risk Aversion		Relative Risk Tolerance		Mean	Our Sample
	Gamble	Upper	Lower	Lower	Upper	Tolerance	Share
I	Reject one-third and one-fifth	∞	3.76	0	0.27	0.11	38%
II	Reject one-third, accept one-fifth	3.76	2	0.27	0.50	0.36	17%
III	Accept one-third, reject one-half	2	1	0.50	1.00	0.68	18%
IV	Accept one-third and one-half	1	0	1.00	∞	1.61	28%

Notes: All gambles have a 50% probability of doubling lifetime income and a 50% probability of losing one-half, one-third, or one-fifth of lifetime income. The bounds on relative risk aversion and risk tolerance follow Barsky et al. (1997), Table 1, assuming CRRA utility (see derivation above). "Mean tolerance" is the expected value of relative risk tolerance conditional on the parameter lying between the lower and upper bounds. The last column reports the empirical distribution from our survey (N = 1,275 respondents with valid gamble responses).

C Sample Restrictions for the Elasticity of Intertemporal Substitution

This appendix details the sample restrictions applied in Section 7. Because some responses to the consumption-path questions are either uninformative about the elasticity of intertemporal substitution or inconsistent with utility maximization, we follow Barsky et al. (1997) and impose three restrictions.

Restriction 1: Corner choices. We eliminate respondents who chose corner options in Figures II, IV, and V of the questionnaire (Appendix A, Block V), because these choices are uninformative—such respondents could have any elasticity of substitution. We do not eliminate corner choices in Figure I (a warm-up question) or Figure III (a subset of Figure II). Figures II, IV, and V eliminate, respectively, 232, 172, and 166 respondents out of 1,256 (the 30-observation difference from the full sample of 1,286 reflects item non-response on the consumption-path questions). After combining corner choices across all three figures, 957 responses remain.

Restriction 2: Inconsistent reversions. We eliminate respondents who chose a non-middle option in Figure I but reverted to the middle option when presented with the expanded choice set in Figure II: 57 cases. The reversion rate is roughly equal between those who initially chose corner A and corner C.

Restriction 3: Negative implied EIS. Following Barsky et al. (1997), we eliminate responses where the respondent changes the slope of the desired consumption path in the direction *opposite* the change in the interest rate, implying a negative elasticity of intertemporal substitution. Between 0 and 4.6% interest rate, 487 cases (out of total 1,286, before any other restrictions) had such a perverse response; between 0 and −4.6%, 385 cases; and between 4.6% and −4.6%, 581 cases.

Cumulative effect. The full sample consists of 1,286 observations. Applying Restriction 2 alone eliminates 57; combined with Restriction 1, 369; adding the non-negative EIS restriction from the 0 vs. 4.6% pair eliminates 671; and adding all three interest-rate pairs eliminates 873 observations. The final sample for the EIS calculation therefore consists of 413 observations. Of these, 334 have an EIS of exactly zero, leaving 79 cases for the calculation of the subjective discount rate.