THE IMPACT OF WAR INTENSITY ON HOUSEHOLD LIQUIDITY PREFERENCES

by

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Abstract

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This study examines how regional variations in war intensity influence the liquidity preferences of households in Ukraine. Using high-frequency (monthly) regional data and a novel war intensity index derived from the Armed Conflict Location & Event Data Project (ACLED) conflict events database, the analysis employs panel regressions with region and time fixed effects to isolate the impact of war intensity on household liquidity preferences. The results indicate that higher local war intensity leads households to significantly shift their financial portfolios toward liquidity: regions experiencing more intense conflict see a higher share of on-demand deposits and a greater reliance on short-term borrowing. By contrast, standard monetary policy tools – such as changes in the central bank policy rate – have a much weaker impact on these portfolio choices during the conflict period. An event-study around the large-scale invasion of February 2022 further supports the main findings, showing immediate increases in liquidity preference in the most affected regions. These findings have important policy implications, suggesting that monetary authorities should account for war-related shocks when designing policy and that strengthening financial resilience under conflict is crucial.

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ACKNOWLEDGEMENTS

I`m thankful to my mother, who gave everything to make it possible, and to my friends, who gently pushed me to take the first step into the unknown, when I thought I wasn't ready.

LIST OF ABBREVIATIONS

ACLED. Armed Conflict Location & Event Data Project

AR. First-order Autoregressive process (serial correlation)

VIF. Variance Inflation Factor

OLS. Ordinary Least Squares

SE. Standard error

FE. Fixed effects

RE. Random effects

IMF. International Monetary Fund

NBU. National Bank of Ukraine

Chapter 1

INTRODUCTION

Households and firms do not make financial decisions in a vacuum; they continually weigh the returns on their savings and borrowing against the risks posed by the economic, political, and - crucially for Ukraine - security environment that surrounds them. Over the past decade Ukraine has endured an extraordinary sequence of shocks: a sweeping overhaul of the central bank's monetary-policy framework, two major currency crises, the COVID-19 pandemic, and, most important, a war with the Russian Federation that has waxed and waned since 2014 and escalated dramatically in February 2022. These overlapping episodes of uncertainty have forced Ukrainian families to reassess the core trade-off at the heart of liquidity preference: the security of having funds immediately at hand versus the reward of locking money into longer-term, higher-yield contracts.

Classic theories of money demand - from Keynes' precautionary motive to modern portfolio approaches - predict that the greater the perceived risk of future income shortfalls, the stronger the desire to hold liquid assets. Recent empirical works confirm this intuition. Boungou et al. (2023) show that large geopolitical shocks trigger jumps in global financial-stress indices; Gabrusewicz (2022) documents that European households move deposits into on-demand accounts when consumer-sentiment indicators sour; and Agarwal & Mannil (2022) find that uncertainty shocks tilt personal portfolios toward cash-equivalent assets. Yet the vast majority of existing studies are conducted either at a national aggregate level or in contexts where the primary shock is an economic crisis rather than an active war. The few papers that focus directly on the Russian-Ukrainian war take a macro or production-network angle - Korovkin & Makarin (2022) trace supply-chain disruptions, while Korneev et al. (2024) examine the resilience of Ukraine's

banking system as a whole. What remains largely unexplored is how the intensity of conflict experienced by each individual region reshapes the micro-structure of household balance sheets.

This thesis fills that gap by asking a narrow but policy-critical question: How does variation in local war intensity influence households' preference for liquidity?

Operationalization of "liquidity preference" is done through three monthly ratios reported by the National Bank of Ukraine (NBU) for each of the country's 25 administrative regions from January 2014 to October 2024:

- Share of on-demand deposits in total household deposits
- Share of consumption loans in total household credit
- Share of loans with original maturity under one year in total household credit

The first ratio captures the extent to which savings are kept in instantly accessible form; the second and third ratios proxy the tilt of household borrowing toward short-term, flexible finance rather than long-term commitments.

War intensity is measured with a conflict index ranging from 0 to 1, constructed from the Armed Conflict Location & Event Data Project (ACLED) dataset for Ukraine. For each region-month, incidents classified as battles, shelling, or remote violence are counted, then rescaled logarithmically, and normalized using the maximum over the entire sample. Thus a value of 0.6 in a given month implies that the region experienced 60 percent of the worst conflict level observed anywhere in Ukraine between 2014 and 2024. This granular metric picks up both the protracted low-grade fighting in the east during 2014-2021 and the nationwide surge in hostilities after February 2022.

To isolate the causal effect of conflict from broader macro conditions, the empirical strategy employs panel regressions with region fixed effects. Region

dummies absorb all time-invariant heterogeneity - economic structure, culture, historical savings habits - leaving identification to come from within-region variation in war intensity. Time fixed effects are deliberately omitted: applying them would wipe out much of the cross-sectional dispersion in war exposure, because surges in fighting often spill across multiple regions simultaneously. Instead, model controls for the NBU's key policy rate, allowing to separate monetary-policy impulses from security shocks, as well as exchange rate volatility, unemployment and consumer confidence index in extended model. Standard errors are clustered by region to handle serial correlation and cross-sectional dependence.

Complementing the panel model is an event-study design centred on February 2022, which tests whether the large-scale invasion produced a structural break in household behaviour. A set of dummies indicates each month's distance from the invasion (−12 to +12), enabling visual and statistical inspection of pre-trend validity and post-event persistence. This two-pronged methodology continuous variation plus sharp break follows best practice in recent applied-econometric work on shocks (Bell & Jones 2013; Annoni et al. 2019) and guards against spurious correlation.

Preliminary estimates reveal a striking pattern: war intensity is the dominant driver of liquidity preference. Moving from peace (index = 0) to heavy conflict (index = 1) raises the on-demand-deposit share by roughly 59 percentage points, the consumption-loan share by 24 points, and the short-loan share by about 31 points in the base specification. By contrast, a 1-percentage-point hike in the policy rate nudges these ratios by less than half a percentage point in the opposite direction. Once the controls for unemployment, exchange rate volatility and consumer confidence index are added, the coefficients show less drastic effects for war intensity, suggesting that without additional controls the war intensity effect is overestimated due to misspecification. The coefficient for war intensity drops to 15% change for deposits on request, 12.8% for short term loans and 9.4% for

consumption loans. The policy rate effect has nearly no change, suggesting correct specification for both models.

The event study corroborates an immediate and persistent jump in liquid-deposit holdings right after February 2022, whereas shifts in composition loans and short loans materialise more gradually - likely reflecting credit-market frictions and emergency regulations enacted during the invasion's early months.

These findings carry important policy implications. They suggest that interest-rate policy is only a weak lever when existential risk dominates households' calculus; guaranteeing access to cash and shoring up deposit insurance may be far more effective in preventing panic withdrawals. They also highlight the need for targeted credit guarantees or reconstruction loans to restart long-term borrowing in frontline areas once security stabilises. More broadly, the results contribute to the literature on economic resilience by quantifying, at the micro level, how severe violence reshapes financial behaviour - evidence that can inform crisis-management frameworks in other conflict-prone economies.

By combining high-frequency regional banking data with a finely grained conflict index, this study offers the first systematic evidence of how the degree of war exposure reshapes household liquidity management in real time - an insight that is both academically novel and practically urgent.

The remainder of the thesis is organised as follows. Chapter 2 reviews the scholarly work on liquidity preference under uncertainty. Chapter 3 presents the econometric methodology for both the fixed-effects regressions and the invasion-centred event study. Chapter 4 describes the data sources and variable construction. Chapter 5 shows estimation results. Chapter 6 concludes and outlines directions for policy implementation.

Chapter 2

LITERATURE REVIEW

The interplay between war intensity and regional financial decision-making is expected to attract growing academic interest, especially in the context of the ongoing Russian-Ukrainian war, yet there are no found quantitative works that delve into the topic. The possible reason is the absence of data that will catch both well-reported financial indicators and documented military actions, as since second World War Ukraine remains, possibly, the only one country to possess both. Still, research around the topic spans in different dimensions - from the stability of banking systems under martial law in local research, to shifts in household deposit behavior in international research. Some works focus on how large urban financial hubs hold up against shocks at a broad scale, while others examine how regional differences shape the ease or difficulty of adapting to these disturbances. This section represents current research that shows how varying levels of war intensity and financial strain influence financial behavior across regions, alongside other relevant insights.

Recent studies underscore the connection between war-induced shocks and general financial stress in different shapes. Boungou et al. (2023) link the Russian invasion of Ukraine to elevated systemic financial stress globally, using as a reference point the Composite Indicator of Systemic Stress across 28 countries. Financial markets react relatively instantly to war intensification, with consequences that may go beyond regional influence, according to data from late 2021 to early 2022.

Although financial stress shifts with military activity, national banking stability largely stays the same, according to research conducted in Ukraine by Korneev et al. (2024), indicating that central bank actions assist prevent systemic damage.

Similarly, Korovkin and Makarin (2022) find that proximity to the frontline and being part of production networks tied to conflict zones result in more pronounced economic disruptions. Firms and regions further from the conflict experience less direct harm and it is possible in many cases to maintain stable revenues and banking activities. As a main insight, war's impact does not unfold evenly across all areas. Places farther from the frontline seem to have some protective cushion, both economically and financially.

This idea of uneven vulnerability is backed up by a larger body of literature on how conflicts shape economic resilience. Numerous studies confirm that geography and exposure to stress matter when it comes to weathering shocks. Hill et al. (2010) and Annoni et al. (2019) highlight the importance of spatial dependence and spillover effects in determining regional responses to shocks. Although the degree of these spillovers varies based on the region's institutional quality, economic diversity, and market integration, regions that are less vulnerable to direct shocks can preserve stability and even promote beneficial impacts in nearby locations. It is anticipated that there would be both good and negative spillovers in Ukraine, despite the fact that the disturbances described in this literature are not precisely close to the war effects (as the shocks defined in the literature aren't specifically about the war impact).

Gabrusewicz (2022) shows that negative consumer sentiment during financial stress episodes is related to the shift in household preferences, from usual deposits toward more liquid, on-demand deposits. And those effects are pronounced even more in the events of geopolitical crises, such as war. Agarwal and Mannil (2022) illustrate that households deviate from purely rational financial behavior when facing stressful events, as uncertainty and external shocks, including war, drive a precautionary demand for liquidity. Similarly, Priem (2022) documents shifts in investment behavior during the Russian-Ukrainian war, showing that heightened risk aversion leads individuals to adjust their portfolios swiftly - often away from

long-term, illiquid investments and toward assets that can be quickly accessed or sold.

Kichurchak (2024) observed that Ukrainian regions closer to active conflict, such as Donetsk, Luhansk, and Kharkiv, experienced notable declines in deposits. In contrast, regions with lower war intensity, like Lviv and Dnipropetrovsk, displayed relative stability and even increases in deposit levels. Even though financial insights come only from observations, without estimations of potential effects, this paper supports the initial hypothesis of the research. The effect that is expected to be proven for eastern regions was caught by Prytsiuk (2022), who notes that during full-scale war, traditional monetary policy instruments (e.g., adjustments to the National Bank of Ukraine's key policy rate) had minimal influence on deposit behavior, as external war-related shocks overshadowed policy-driven incentives.

Research by Ahir et al. (2023), using an IMF-developed Financial Stress Index, shows that the fallout from financial stress can cut into economic output and linger for as long as five years, reinforcing the notion that such effects are not short-lived. For emerging markets, these prolonged impacts may be even more pronounced. The insights from the IMF study support the general idea that financial stress - particularly when triggered by war - may reshape regional economic trajectories well beyond the immediate conflict period.

Regional heterogeneity is a problem and the opportunity in the research, as it`s not intuitive whether larger and economically more developed regions would be less impacted by the overall stress, or more stable. Studies by Di Caro and Fratesi (2015) and Hill et al. (2010) point to big cities as potential strongholds of resilience, thanks to their economic variety, scale, and resource access. Yet, it's still debated whether these urban centers withstand war-related financial stress better than smaller, less complex areas. On the one hand, larger, complex financial centers have deeper markets and a more diverse investor base that can absorb shocks. On the other

hand, complexity may exacerbate volatility if information asymmetries prevail. Jaiswal (2023) points out that larger, intricate financial systems suffer more acutely from information asymmetry, amplifying market inefficiencies and investor uncertainty, especially during external shocks such as war.

This tension echoes in the work of Annoni et al. (2019), who report that certain regions' resilience may not easily spill over to their neighbors if the underlying economic structures and institutional qualities differ significantly. Meanwhile, Izzeldin et al. (2022) and Priem (2022) show that war can trigger immediate and synchronized responses in global and regional financial markets, though the intensity and duration of these reactions may differ based on local market characteristics. Larger financial hubs might respond more quickly and more strongly to global stress signals, while smaller regions could be insulated initially but remain more vulnerable if the conflict persists

To capture the complexity and regional heterogeneity of financial decisions under conditions of war-related stress, panel data analysis stands out as a suitable methodological tool. Panel methods are well-established in studies that dissect regional variations in economic and financial behavior (e.g., Gabrusewicz, 2022; Agarwal & Mannil, 2022). Bell and Jones (2013) highlight the flexibility of panel data models - both fixed and random effects - in capturing temporal and cross-sectional variation while addressing hierarchical structures and potential omitted variable biases. Such approaches allow researchers to parse out how differences in war intensity translate into varying financial responses across regions and over time.

The studies reviewed provide a strong foundation for the present thesis. There is an empirical consensus that war intensity and consequent financial stress are essential factors shaping financial behavior. In essence, regions closest to the fighting tend to feel the crunch of financial stress more acutely, while distant areas are less shaken. At the same time, large and intricate financial markets could be

either more robust or more vulnerable. To nail down which factors matter most, the study relies on panel data methods - well-documented techniques suited for capturing dynamic, region-specific effects.

Chapter 3

METHODOLOGY

The primary empirical approach of this thesis is a panel regression with region fixed effects, which offers clear advantages for investigating the relationship between war intensity, key policy rates, and household liquidity preferences. First, a panel structure leverages both the cross-sectional variation across multiple Ukrainian regions and the time-series variation over years of observation. This richness in the data makes it possible to control for unobserved, time-invariant regional characteristics - such as historical economic development, cultural factors, or institutional quality - through fixed effects. By differencing out these region-specific factors, the estimation can more precisely isolate the impact of the independent variables (war intensity and central bank policy rate) on the dependent variables (the shares of on-demand deposits, consumption credits, and short-term loans). In addition, panel regressions typically increase statistical power by pooling information from many units, which is particularly helpful when the behavior of households in different regions may respond to war-driven shocks in a non-uniform manner (for example, due to elevated war shocks or specific attitude towards taking safety measures).

Nevertheless, several common issues can arise in panel data analysis. One challenge is the potential for serial correlation and cross-sectional dependence, as conflict intensity in one region can spill over into adjacent areas or persist over multiple periods. To address this, the robust standard errors (clustered at the regional level) are used that account for spatial correlation if necessary. Another potential concern is endogeneity: for instance, the intensity of war events may itself be influenced by regional economic conditions, as there are more possibilities to conduct attacks in the regions with less urbanized and less clustered economically active areas. Despite

these challenges, fixed-effects panel regression remains a powerful and appropriate tool of choice for disentangling the impact of varying war intensity on households' liquidity preferences.

Because each region experiences war differently and at varying intensities, the panel dataset captures substantial within-region variance over time. However, in order to focus on cross-regional heterogeneity - rather than broader nationwide time shocks - the empirical specifications employ only region (entity) fixed effects and omit time fixed effects. This choice is motivated by the aim to highlight differences across regions in how war influences deposit and credit behavior and the possibility that monthly time fixed effects would absorb much of the war-intensity variation—particularly if conflict intensifies or relaxes for multiple regions simultaneously - leading to underestimation of war's actual impact.

The equation (1) represents the basic equation of the thesis.

$$y_{i,t} = \alpha + \beta_1 \cdot \left(WarIntensity_{i,t}\right) + \beta_2 \cdot i_t + \mu_i + \varepsilon_{i,t} \qquad (1)$$

Where:

- $y_{i,t}$ - dependent variables that represents one of the three main measures of liquidity preference in region i at month t: (a) the share of on-demand deposits in total deposits, (b) the share of consumption loans in total household credit, (c) the share of loans maturing within one year in total household credit. Each variable is measured as index from 0 to 1. Takes value 1 if all of the deposits/loans are of a given type, and 0 if no deposits/loans are of a given type.

- $WarIntensity_{i,t}$ - to capture the monthly war intensity effect in region i at time t, measured as an index from 0 to 1. Index represents log-normalized amount of events of the type "remote violence", "explosions/remote violence", or "battles" across the sample. Takes 1 if the amount of events is an absolute maximum across dataset, takes 0 if there are no military events.

- i_t – NBU key policy rate at time t. Empirically, combining the policy rate variable helps isolate whether households' shift toward liquidity is purely conflict-driven or also shaped by changes in national monetary conditions by controlling for changing financial conditions.

- μ_i - Region fixed effects to control for unobserved, time-invariant regional traits

- $\varepsilon_{i,t}$ - the error term, which is clustered by region to correct for potential within-region autocorrelation.

After estimating each fixed-effects model, we examine the residuals to ensure that the regression assumptions are reasonably satisfied. This includes checking for normality, heteroskedasticity, and autocorrelation in the residuals:

- Normality**:** While large sample sizes (25 regions times 130 months = 3250 observations) make normality of residuals less crucial due to the Central Limit Theorem, we still inspect the distribution of residuals. A Jarque–Bera **test** can be applied to formally test if residuals deviate significantly from normal skewness/kurtosis. The Jarque–Bera statistic is $JB = \frac{N}{6}(S^2 + \frac{(K-3)^2}{4})$ where N is the sample size, S is residual skewness, and K is residual kurtosis. A high JB (p-value < 0.05) would indicate non-normal residuals. In our case, the Jarque–Bera statistic JB = 88.3, with significant p-value points to residual non-normality, which is inconsequential given the large

sample size. We also visually inspect Q–Q plots of residuals vs. a normal distribution as a sanity check.

- Heteroskedasticity: We check if residual variance appears constant over time and across regions. Plotting residuals against fitted values and over time can reveal patterns (e.g. an increase in variance after 2022, which could occur if war introduced more volatility in outcomes). We also apply a Breusch–Pagan test for heteroskedasticity (which regresses squared residuals on fitted values) to see if variance depends on the level of the outcome, with the result of $\chi^2=16.5$ with significant p-value. To guard against heteroskedasticity in any case, our use of robust clustered standard errors means the inference is valid even if error variance differs by region or over time. Indeed, the cluster-robust approach implicitly handles certain forms of heteroskedasticity and serial correlation (within clusters), so the coefficient estimates remain unbiased and the standard errors are consistent.
- Serial Correlation: Given the panel's time-series component (monthly data), we expect residuals may be serially correlated (e.g., households' deposit behaviors this month might be similar to last month beyond what the model explains). We conduct the Wooldridge test for autocorrelation in panel data, which involves running an auxiliary regression of residual differences and checking for significant first-order autocorrelation. The test indicated the presence of AR(1) autocorrelation within regions. However, again, our clustered-SE estimation addresses this by not assuming independent errors within a region.

We next assess whether the independent variables are highly collinear, which can inflate standard errors and make coefficient estimates unstable. The two main regressors – war intensity and policy rate – could be correlated, especially since

large war escalations prompted changes in policy rate. Multicollinearity is evaluated by computing Variance Inflation Factors (VIF) for each predictor. The VIF for a given variable is defined as $VIF_j = \frac{1}{1-R_j^2}$, where R_j^2 is the R^2 of regressing X_j onto all other independent variables. A VIF significantly above 10 (a common rule-of-thumb threshold) indicates high multicollinearity. In our data, the policy rate and war intensity index had a moderate positive correlation (especially in 2022, when the war's outbreak coincided with a sharp policy rate hike). The computed VIFs were around ~1-1.1 for these variables, which is well below problematic levels. This indicates that while war intensity and policy rate both trend upward in 2022, they are not so collinear as to prevent disentangling their effects. The low VIFs give us confidence that multicollinearity is not distorting the regression estimates.

We benchmark our panel model against alternative specifications to ensure our findings are not sensitive to modeling choices:

1) Fixed Effects vs. Random Effects: We perform a Hausman test to statistically justify the use of fixed effects over random effects. The null hypothesis of the Hausman test is that the random effects estimator is consistent (i.e., that region effects are uncorrelated with regressors). We estimate a Random Effects model (which assumes μ_i is random and uncorrelated with $X_{i,t}$ and compare its coefficient estimates with the Fixed Effects estimates. The Hausman test involves whether coefficient beta differ significantly beyond what can be explained by sampling error. The test statistic can be computed as

$$H = (\widehat{\beta_1} - \widehat{\beta_0})^T [var(\widehat{\beta_0}) - var(\widehat{\beta_1})]^{\dagger} (\widehat{\beta_1} - \widehat{\beta_0})$$

And is χ^2 distributed under the null. In our analysis, the Hausman test strongly rejected the null ($\chi^2 = 3.23$, $p = 0.04$), indicating that the region-specific factors

(like regional risk tolerance or economic structure) are indeed correlated with our regressors (particularly war intensity, since regions with certain traits – e.g., border regions – experienced higher conflict). This justifies using the fixed-effects model, as the random-effects assumption would be violated and its estimates biased.

2) Pooled OLS vs. Fixed Effects: We also confirm that adding region fixed effects significantly improves the model fit compared to a naive pooled OLS (no fixed effects). An F-test on the joint significance of all region dummies easily rejects the null that all μ_i=0. This suggests substantial heterogeneity across regions that must be accounted for (indeed, ignoring those differences would attribute their influence incorrectly to other variables).

3) To test the robustness of the conflict effect, we also estimate an extended fixed-effects specification (2) that augments the baseline controls with three macro-financial variables that plausibly influence households' desire for liquid assets:

$$y_{i,t} = \alpha + \beta_1 \cdot \left(WarIntensity_{i,t}\right) + \beta_2 \cdot i_t + \beta_3 \cdot Unempl_t + \beta_4 \cdot ConsConfidence_t + \beta_5 \cdot ERvolatility_t + \mu_i + \varepsilon_{i,t} \quad (2)$$

$Unempl_t$ – the registered unemployment rate in region i at month t, taken from the State Statistics Service of Ukraine. It is expressed as a percentage of the labour force (0 to 100). Higher unemployment signals weaker labour-market conditions, which can heighten households' precautionary demand for liquid assets.

$ConsConfidence_t$ – the national Consumer Confidence Index (Info Sapiens monthly survey, 1,000 respondents aged 16+). The index ranges from 0 (extreme pessimism) to 200 (extreme optimism), with 100 denoting neutrality. A lower score

reflects deteriorating expectations about future income and jobs, encouraging a shift toward safety and liquidity.

$ERvolatility_t$ – exchange-rate volatility in month t, measured as the absolute month-over-month percentage change in the NBU official USD/UAH rate. Larger values indicate sharper currency swings and higher perceived financial risk, which can raise the attractiveness of on-demand deposits and short-maturity credit.

Estimating equation (2) serves two goals. First, if β_1 remains significant and of similar magnitude after adding the new regressors, we gain stronger evidence that war intensity itself - not the macro-economic fallout it triggers - is the primary driver of the shift toward liquidity, as well as the coefficient β_2 is expected to be negative even with additional controls. Second, the coefficients β_3 - β_5 reveal the relative importance of unemployment, sentiment, and exchange-rate risk in shaping household balance-sheet decisions. Comparing the fit and explanatory power of (1) and (2) therefore clarifies whether the war channel operates mainly through direct conflict exposure or through its broader economic repercussions, enhancing the credibility and policy relevance of our findings.

To further substantiate these results, an event-study approach (3) is employed around the major escalation date of February 2022, which is treated as a shock. Specifically, a "distance-to-event" variable is constructed, spanning from 12 months before to 12 months after February 2022, and included in the regression model through a series of time-relative indicators that capture the effect of being τ periods away from the escalation reference point. By comparing outcomes in each τ relative to the pre-shock baseline (January 2022 dropped as baseline), this approach identifies any abrupt or gradual structural shifts in households' deposit or credit behavior. In essence, it tests whether, and to what extent, the sudden escalation in conflict intensity led to a significant reorientation toward liquid assets, short maturities, or immediate-use financing.

$$y_{i,t} = \alpha_i + \sum_{\{\tau \neq \tau_{ref}\}} \beta_\tau \, D_{\tau,i,t} + \varepsilon_{i,t} \qquad (3)$$

Where:

- $y_{i,t}$ – the series of interest (same as dependent variables in the equation 1).
- $D_{\tau,i,t}$ - is an indicator (dummy) variable taking the value 1 if month is τ periods away from the reference event date τ_{ref} (in this case, February 2022) for region i, and 0 otherwise.
- β_τ - captures the effect of being τ months before or after the reference date on the dependent variable, relative to the omitted category (pre-event baseline of January 2022).

Chapter 4

DATA

The primary dataset used in this thesis comprises monthly regional financial indicators, spanning from January 2014 to October 2024. This panel covers 24 Ukrainian regions and includes roughly 130 monthly observations for each region. The financial variables come from the National Bank of Ukraine (NBU), which reports deposits and loans denominated in Ukrainian Hryvnia (UAH). Rather than using the absolute amounts, each series is expressed as a share of total (e.g., the share of on-demand deposits in total deposits, as in Figure 1) to highlight the composition changes over time and abstract from the nominal fluctuations driven by inflation or changes in the exchange rate.

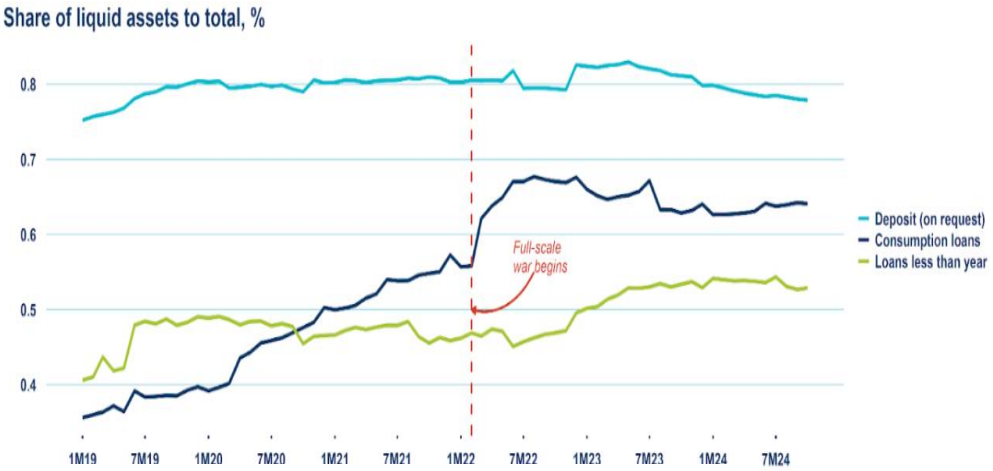

Figure 1. Share of liquid assets of interest in the total assets

First, it sidesteps problems related to inflation or fluctuations in overall banking volumes, which can obscure real behavioral patterns. Second, by standardizing on a common denominator, it becomes easier to compare across regions that may

differ significantly in their absolute banking size, ensuring that variations in these ratios reflect genuine shifts in preferences for liquidity rather than mere scaling effects. Third, it facilitates interpretation in economic terms: an increase in the share of on-demand deposits, for example, more directly implies households' heightened desire for liquidity or near-term access to funds. Consequently, the use of ratios in this study aims to capture the qualitative shift in how people allocate their savings and borrowing, which is precisely the theoretical focus of understanding liquidity preferences in a context of conflict and monetary policy changes. The NBU policy rate, which serves as a proxy for nationwide monetary policy conditions, is also merged into the panel dataset, so that each region-month observation aligns with the prevailing interest rate during that period.

To quantify the level of conflict in each region, data from the Armed Conflict Location & Event Data Project (ACLED) are used. ACLED compiles detailed daily records of conflict events worldwide, drawing from local media, international newswires, and other credible sources. Each event is georeferenced and coded to reflect the type of violence, actors involved, date, and location. For this study, only the most direct combat-related incidents - categorized by ACLED as "remote violence," "explosions/remote violence," or "battles" - are retained. This restriction aims to isolate genuine military engagements from less direct disturbances, such as protests or government crackdowns. After filtering these event types, the data are aggregated to monthly counts at the regional level, and then logarithmized to manage the skewness introduced by having regions with either very few or extremely high numbers of reported events (Figure 2).

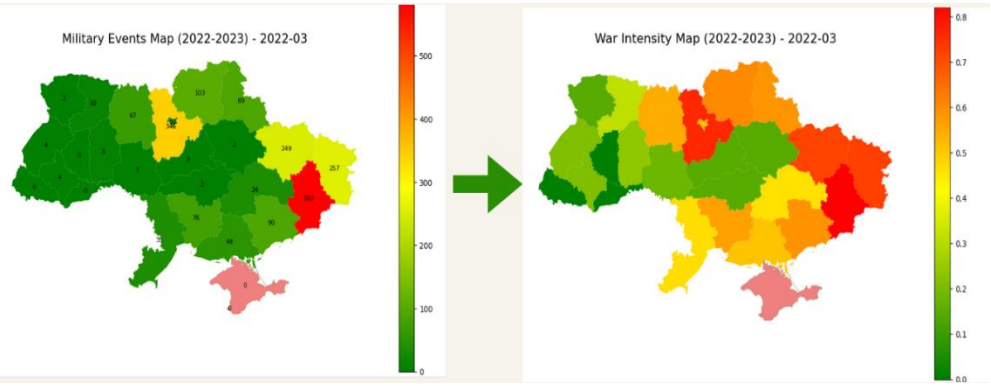

Figure 2. Example of transforming war events count into war intensity index in March 2022

Notably, some eastern regions exhibit sustained conflict as early as 2014, thus the data capture a full spectrum of conflict severity across both time and space.

As an early supporting evidence for our hypothesis, the Figure 3 illustrates the cross-regional relationship between the initial war shock and households' deposit behavior. We plot the change in the war intensity index (horizontal axis) against the change in the share of on-demand (immediately withdrawable) deposits in total deposits (vertical axis) for each region from January 2022 (pre-invasion) to March 2022 (one month into the large-scale invasion). The correlation between the two changes is moderately strong (Pearson $r \approx 0.438$) and statistically significant ($p \approx 0.0284$). The fitted regression line has a slope of about 0.0515, suggesting that for every 10 percentage-point increase in war intensity (on our index scale), the on-demand deposit share rose by roughly 0.5 percentage points on average. While this back-of-the-envelope calculation is based on a short-run shock and a simple bivariate comparison, it provides prima facie evidence consistent with our thesis.

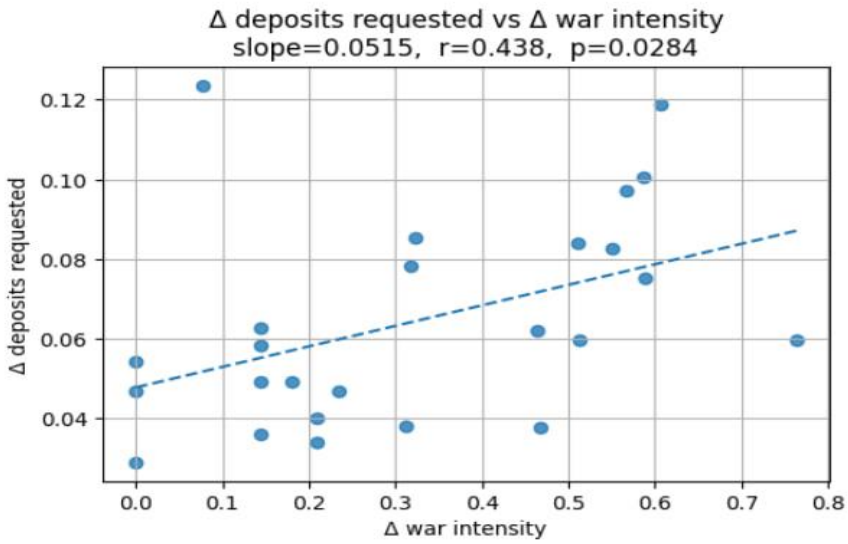

Figure 3. Correlation between changes of share of deposits that could be requested against change in war intensity for 25 regions of Ukraine

Figure 4 plots, for six frontline (at some time) oblasts, monthly conflict intensity (bars) against the share of on-demand deposits (line). Despite differing pre-war baselines, every panel shows the same directional response: higher violence is matched by a higher liquidity ratio. Regions with chronic but lower-level clashes before 2022 (Donetsk, Luhansk) already exhibit elevated liquidity, yet still experience a further uptick when full-scale hostilities resume. Regions that were largely peaceful until the invasion (Kharkiv, Kherson, Kyiv, Mykolaiv) display a step-change in both series beginning February 2022. The figure therefore visualizes the core empirical finding: intensifying conflict consistently triggers a precautionary shift toward cash-like deposits, but the magnitude and timing vary with each region's exposure history.

To capture broader macro-financial conditions, three additional datasets are incorporated. Unemployment rates are taken from the State Statistics Service of

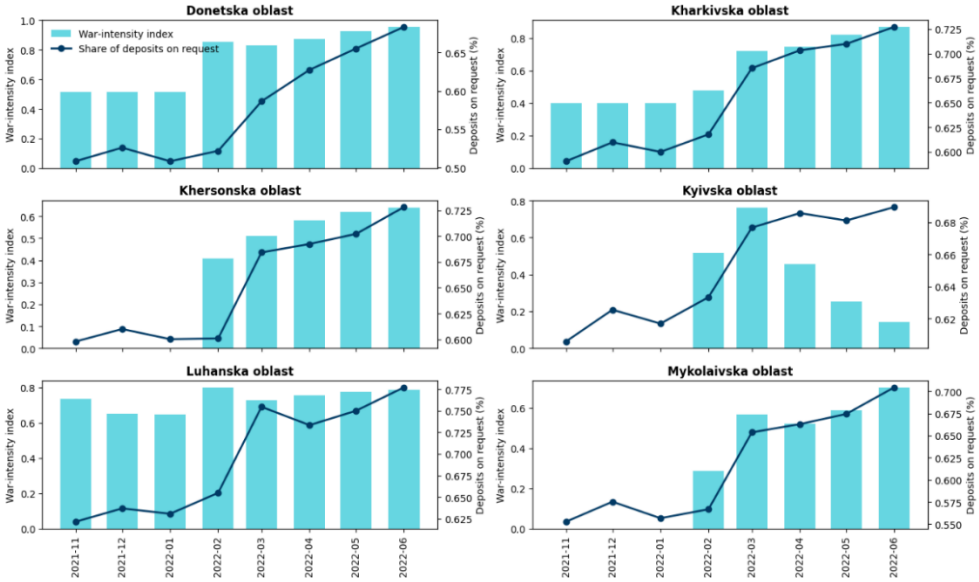

Figure 4. War intensity plotted against deposits requested

Ukraine, which publishes monthly statistics on the share of registered job-seekers; these rates are seasonally unadjusted and expressed as percentages. Consumer sentiment is proxied by the national Consumer Confidence Index (CCI), a monthly survey of 1,000 households conducted by the research agency Info Sapiens; the index ranges from 0 (extreme pessimism) to 200 (extreme optimism), with 100 indicating a neutral outlook. Exchange-rate volatility is derived from the National Bank of Ukraine's end-of-month USD/UAH reference rate: the absolute month-over-month percentage change is computed to quantify currency-market turbulence.

Table 1. Descriptive statistics of the dataset

	count	mean	st. dev.	min	Median	75%	max
Overall							
Deposits requested	3250	0.41	0.172	0.13	0.38	0.58	0.85
Consumption ratio	3250	0.13	0.096	0.37	0.75	0.82	0.92
Short loans ratio	3250	0.4	0.123	0.08	0.42	0.49	0.77
Military events	3098	46.82	0.243	0	0	2	2120
Zakarpatska oblast							
Deposits requested	130	0.44	0.18	0.17	0.4	0.61	0.73
Consumption ratio	130	0.62	0.08	0.5	0.61	0.65	0.77
Short loans ratio	130	0.32	0.169	0.18	0.32	0.36	0.49
Military events	130	0.04	0.19	0	0	0	2
Donetska oblast							
Deposits requested	130	0.44	0.189	0.16	0.38	0.52	0.78
Consumption ratio	130	0.8	0.085	0.63	0.81	0.87	0.92
Short loans ratio	130	0.49	0.169	0.21	0.52	0.66	0.7
Military events	130	449.15	0.189	50	50	462.25	2120
Kyiv city							
Deposits requested	130	0.45	0.15	0.23	0.42	0.62	0.69
Consumption ratio	130	0.78	0.088	0.62	0.8	0.86	0.89
Short loans ratio	130	0.36	0.13	0.17	0.31	0.47	0.57
Military events	130	1.85	0.12	0	0	0	50

Chapter 5

ESTIMATION RESULTS

The panel regression results strongly support the hypothesis that escalating war intensity leads households to favor liquidity and short-term financial commitments. In all specifications, war intensity is positively and significantly associated with a shift toward liquid savings and shorter-duration credit. Conversely, the central bank's key policy rate has a negative (but much smaller) effect on these liquidity preference measures. In other words, regions experiencing more intense conflict see higher shares of on-demand deposits, more consumer-oriented lending, and a greater proportion of short-term loans, even after controlling for regional fixed effects. Higher interest rates partially counteract these tendencies (encouraging slightly less liquidity preference), but the influence of monetary policy is modest compared to the impact of war. All estimated war coefficients are statistically significant at the 1% level, indicating a robust relationship between conflict intensity and household financial behavior across Ukraine's regions.

In terms of magnitude, the effect of war intensity is economically substantial (Table 2). Comparing a region-month with no conflict (war intensity = 0) to one with extreme conflict (war intensity = 1) while holding the policy rate constant, we observe large differences in household financial outcomes:

- On-demand deposit share: About a 59 percentage point higher share of deposits withdrawable on demand (immediate-access accounts) in a high-conflict region than in a peaceful region. This implies that under heavy conflict, roughly over half of all deposits are kept in highly liquid form, reflecting a strong precautionary motive.
- Consumption loan share: Approximately 24 percentage point higher share of consumer (household consumption) loans in total credit during intense

war compared to no war. This suggests that in conflict conditions, a greater portion of the credit extended to households is for consumption purposes, potentially as households borrow for immediate needs while longer-term loans (e.g. mortgages) become less common.

- Short-term credit share: Around a 31 percentage point higher share of short-term loans (maturity less than one year) in total household credit in a high-conflict setting. This indicates a marked shift toward short-duration borrowing in war-affected regions, consistent with both lenders and borrowers preferring shorter commitments amid uncertainty.

Table 2. Estimation results for base model

	Deposits on request	Short loans	Consumption loans
$Intercept$	0.38***	0.42***	0.77***
	(0.01)	(0.0077)	(0.0053)
$WarIntensity$	0.59***	0.31***	0.24***
	(0.05)	(0.0428)	(0.038)
$PolicyRate$	-0.0026**	-0.0033***	-0.0037***
	(0.0005)	(0.0005)	(0.0004)
Region fixed effects	Yes	Yes	Yes
Within R^2	0.34	0.24	0.26
Observations	3250	3250	3250
Clustering	Yes	Yes	Yes

Note: Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '·' 0.1 ' ' 1

These sizable shifts underscore that households in conflict zones reallocate their financial portfolios significantly toward liquidity. Essentially, as war intensifies,

people keep a far greater portion of their savings in forms they can withdraw at any time, and the composition of household borrowing tilts toward quick, short-term credit. This behavior aligns with the notion of heightened precautionary savings and risk aversion under extreme uncertainty: families value immediate access to funds and avoid locking into long-term obligations when the future is perilous.

The NBU policy rate, on the other hand, shows a much more muted impact on these variables. The estimated coefficients on the interest rate are small (an order of magnitude smaller than the war effects) and negative, as expected. For instance, an increase of 1 percentage point in the key policy rate is associated with only about a 0.2–0.3 percentage point decrease in the share of on-demand deposits (and similarly slight decreases in the shares of consumption and short-term loans). These effects are statistically significant but very modest in size. This indicates that while higher interest rates provide some incentive for households to commit money to longer-term deposits (or for banks to shift toward longer-term, secured lending), monetary policy changes were not nearly as influential as war intensity in shaping liquidity preferences. Households under bombardment or severe threat appear far less responsive to interest rate signals, prioritizing safety and flexibility over potential financial returns. In summary, the immediate security context (peace vs. conflict) has a far more dramatic effect on financial behavior than do incremental changes in the cost of money.

To further validate the findings, the equation (2) is estimated with additional controls. The results are detailed in Table 3, with the following dynamics:

- War-intensity effect remains positive and significant, but shrinks.

  Coefficients fall to 0.15 (deposits), 0.13 (short loans) and 0.09 (consumption loans). Roughly half to three-quarters of the raw war effect is now absorbed by unemployment, sentiment, and exchange-rate volatility—yet the conflict variable still clears the 1 % significance bar. This

suggests that part of the earlier estimate was picking up war-induced labour-market stress and currency turmoil, but a sizable direct impact of fighting on household portfolios persists.

- Policy-rate effect is stable (slightly larger for deposits).

  For on-demand deposits the coefficient moves from –0.0026 to –0.0047, implying that once macro controls are present the deterrent effect of higher rates becomes marginally stronger; for short and consumption loans it stays virtually unchanged (≈ -0.0033 / -0.0038). Monetary policy thus remains a secondary - but consistently signed - influence.

- Model fit improves sharply, indicating better specification results.

  Within-R^2 jumps to 0.67–0.81, confirming that the added variables capture much of the residual variation left unexplained in the baseline.

All models include region fixed effects and use clustered standard errors by region, ensuring that the inferences are robust to heteroskedasticity or serial correlation within a given region's observations. The inclusion of region fixed effects means the results are identified by within-region changes over time, controlling for any time-invariant differences across regions (such as economic structure or culture). The goodness-of-fit (within R-squared) of about 0.25–0.35 in base model and 0.67-0.81 in the extended model is reasonable given the parsimonious specification, indicating that a significant portion of the variation in deposit and loan composition is explained by war intensity and the policy rate. A Hausman test (reported in the methodology) confirmed that the fixed-effects approach is appropriate (preferred over a random-effects model), suggesting that unobserved regional characteristics are indeed correlated with the regressors and need to be differenced out. We also conducted standard diagnostic checks: no severe multicollinearity exists between war intensity and interest rate (they are largely independent drivers), and residual plots showed no problematic violations of linear model assumptions. Overall, the

estimation results are consistent and robust, painting a clear picture that war intensity is a dominant driver of shifts in household liquidity preferences, whereas the central bank's policy rate plays a secondary, moderating role.

Table 3. Estimation results for extended model

	Deposits on request	Short loans	Consumption loans
Intercept	-0.0733***	0.119***	0.548***
	(0.01)	(0.015)	(0.015)
War intensity	0.15***	0.128***	0.094***
	(0.02)	(0.037)	(0.036)
Policy rate	-0.0047***	-0.0033***	-0.0038***
	(0.0002)	(0.0004)	(0.0003)
Unemployment	0.02***	0.0005	0.001
	(0.0008)	(0.001)	0.007
Exchange rate volatility	-0.0019***	-0.0011***	-0.0009***
	(0.0001)	(0.0001)	(0.0001)
Consumer confidence index	0.0055***	0.005***	0.0035***
	(0.0001)	(0.0003)	(0.0002)
Region fixed effects	Yes	Yes	Yes
Within R^2	0.81	0.69	0.67
Observations	3250	3250	3250
Clustering	Yes	Yes	Yes

Note: Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '·' 0.1 ' ' 1

Higher unemployment significantly raises the share of on-demand deposits—evidence that job loss drives precautionary saving - while its effect on short-term loans is negligible. Exchange-rate volatility, used as a financial-risk proxy, enters with small but statistically significant negative coefficients across all liquidity measures, implying that sharp UAH/USD swings push households out of formal deposits and credit entirely. By contrast, the consumer-confidence index shows positive, significant effects, suggesting that improving sentiment encourages a tentative return to banking activity, though still in flexible instruments.

To complement the panel regressions, an event study was conducted around the February 2022 invasion, which marked a massive escalation of the war (Figure 5 and 6). This analysis examines how the dependent variables behaved in the months immediately before and after the invasion, aiming to detect any structural breaks or sudden level shifts attributable to this shock. The results from this event-centered approach reinforce the main findings, especially for deposit behavior, while highlighting some differences in the immediacy of loan adjustments.

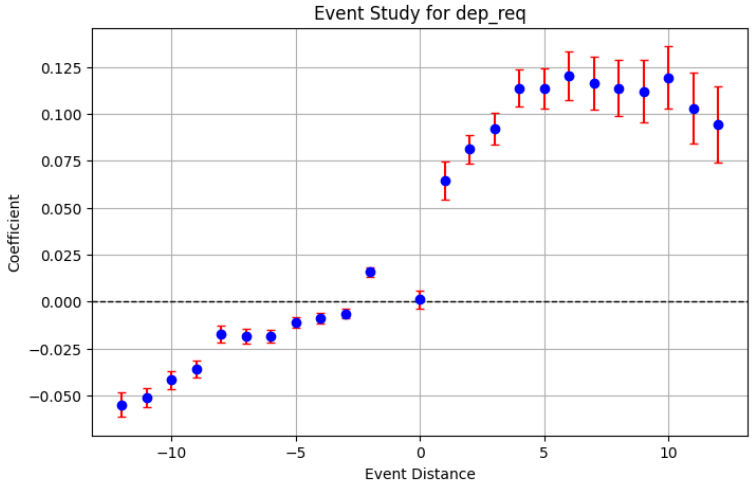

Figure 5. Results of event study analysis for deposits on request structural break

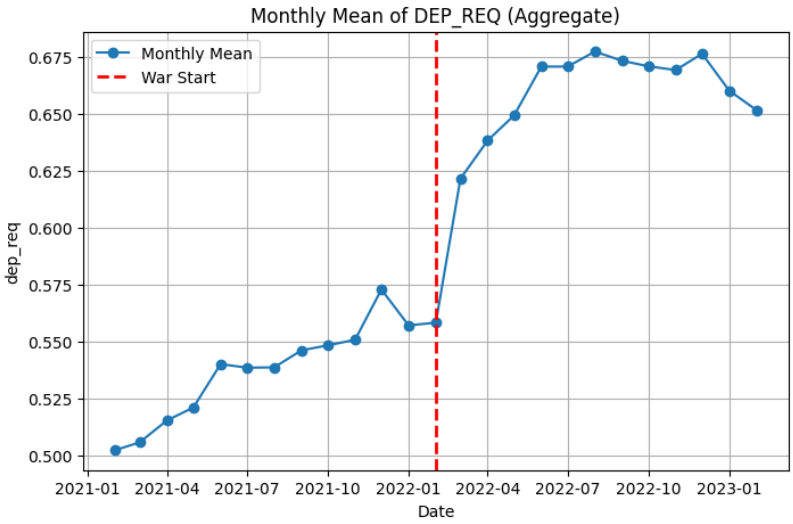

Figure 6. Mean of share of deposits that could be requested across regions, monthly

Focusing first on on-demand deposit shares, the event study reveals a pronounced upward shift in liquid deposits right after February 2022. In the 12-month window before and after the invasion, regions experienced a clear break in trend: the share of deposits held in on-demand accounts jumped in the immediate aftermath of the invasion and remained persistently higher throughout the following year. This structural break is statistically significant, indicating that the invasion itself introduced a level change beyond what prior trends would predict. In fact, the model fit for the deposit share around this event is very high (with an R-squared above 0.9 when including indicators for the post-invasion period), underscoring that a substantial portion of the variation in liquid deposits can be explained by the timing of the invasion (Table 4). The interpretation is that households reacted swiftly to the large-scale war shock by hoarding liquidity - a response consistent with panic behavior and precautionary motives triggered by the sudden increase in existential risk. Even as the initial shock settled, households maintained a higher preference for liquidity in the months after the invasion, suggesting a lasting re-rating of risk or a new normal in financial behavior under the wartime economy.

Table 4. Results of the event study analysis for deposits requested

	count
Dep. Variable	Dep_requested
R-squared	0.76
N. of observations	625
Entities	25
Intercept	0.54***
Post-war start dummy	0.1165***

In contrast, the event-study patterns for loan composition (both consumption loans and short-term loans shares) are less stark and statistically weaker. Neither the share of consumption credit nor the share of short-maturity loans exhibits a clear-cut jump in the immediate post-invasion months that is significant at conventional levels. While there were some increases in these shares around early 2022, the confidence intervals are wide, and the changes cannot be distinguished from pre-existing volatility with high certainty. One explanation could be that household borrowing behavior is influenced by additional frictions or interventions during the wartime emergency. For instance, in the wake of the invasion, banks and the government implemented various measures (loan repayment moratoria, credit guarantee schemes, etc.) that might have stabilized or distorted the normal credit response one would expect. It's also possible that demand for new loans initially froze across the board right after the invasion (as both lenders and borrowers were in shock), muting any immediate observable shift in the composition of loans. Thus, unlike the deposit behavior which showed an immediate and uniform flight to liquidity, the adjustment in credit portfolios may have been more heterogeneous or delayed across regions. Some regions or banks might have curtailed most lending activities temporarily, while others continued

issuing short-term or consumer loans out of necessity, resulting in an overall muddled aggregate effect in the short run.

Despite the ambiguity in the very short-run credit response, the broader trajectory still aligns with our regression results: over the course of the conflict, higher-intensity regions ended up with relatively more consumer and short-term lending. The event study simply suggests that this shift in loans did not occur as an instantaneous break at the invasion date, but rather evolved over time or was overshadowed by emergency measures during the initial shock. In summary, the event study confirms a structural break for deposit preferences coinciding with the February 2022 invasion, providing clear visual and statistical evidence that households increased their liquidity holdings in response to that pivotal event. For loan composition, the evidence of a structural break is weak, implying that those facets of financial behavior adjusted more gradually or were influenced by a mix of war-related factors that cannot be pinned to a single date. These insights from the event analysis complement the panel regression findings, giving a more nuanced understanding: the outbreak of full-scale war had an immediate, sharp impact on savings behavior, while its impact on borrowing behavior, though present, was more nuanced and deferred. All told, both approaches lead to the same general conclusion that war intensity drives a flight to liquidity, with the invasion of 2022 acting as a catalyst for unprecedented shifts especially in how households manage their deposit holdings.

Chapter 6

CONCLUSIONS AND POLICY RECOMENDATIONS

This study provides clear evidence that war intensity has a powerful influence on household financial preferences in Ukraine. Using a unique regional panel dataset spanning a decade of conflict, we found that as the local severity of war increases, households markedly shift toward liquidity and short horizons in their financial decisions. In practical terms, when a region is engulfed in fighting or under serious threat, people tend to keep a much larger portion of their savings in immediately accessible deposits and are less inclined to hold long-term time deposits. Similarly, the structure of household credit moves in favor of quick, short-term borrowing - particularly consumption-oriented loans - while long-term credit (like mortgages or business investments) recedes. These patterns were statistically robust and economically significant: for instance, a jump from peacetime to intense conflict could be associated with the increase of the share of on-demand deposits by 15%, the share of short loans by 12.8% and the share of consumption loans by 9.4% indicating a clear flight-to-liquidity behavior. Notably, the large-scale invasion of February 2022 represented a watershed moment that reinforced these trends. The event effectively caused a structural break in deposit behavior, after which households sustained an even higher preference for liquidity. In contrast, changes in the central bank's policy interest rate played a relatively minor role in affecting deposit or loan compositions. While higher rates slightly nudged households toward less liquid positions (and curbed some short-term borrowing), these effects were an order of magnitude smaller than the impact of war intensity. This contrast underscores that, during periods of extreme uncertainty and danger, immediate security concerns override typical financial trade-offs that households make in response to interest rates or economic conditions.

The implications of these findings are significant for policymakers and financial institutions, especially in countries facing conflict or high instability. First, the pronounced preference for liquidity under duress suggests that households seek safety and flexibility as a form of self-insurance. This behavior can strain banks – for example, if too many depositors suddenly want to hold cash or liquid accounts, banks might face funding pressures. Therefore, policymakers should bolster financial stability measures in conflict times: ensuring deposit insurance credibility, providing emergency liquidity to banks in affected regions, and maintaining trust in the banking system become paramount. Proactive communication and guarantees can help prevent panic-driven bank runs when people rush to liquidate savings. Second, the shift in credit patterns implies that traditional credit markets may falter in war-torn areas – long-term loans dry up as both lenders and borrowers pull back from risk. To address this, targeted credit support programs might be necessary to sustain household and small business financing needs. For instance, authorities could introduce war-zone lending facilities or credit guarantees for longer-term investments to counteract the credit contraction in high-risk regions. However, given that households are understandably cautious, such programs would need to be coupled with broader stability and reconstruction efforts to revive confidence.

Overall, this research highlights the resilience and adaptability of household financial behavior amid crisis, while also pointing out its limits. Households in Ukraine have demonstrably adapted their financial strategies in the face of war - prioritizing liquidity and immediacy as rational responses to uncertainty. This shift is logical from an individual perspective, but collectively it poses challenges for economic recovery and financial intermediation. Recognizing these behavior shifts allows policymakers to better anticipate the financial fallout of conflict. By understanding that "fear trumps interest rates," authorities can design more effective interventions that address the root cause – the insecurity driving the

behavior - rather than relying solely on conventional monetary tools. Further research might introduce corporate finance statistics, as well as business entities, given that the primary focus of this work relies only on studying the households` behavior, thus erasing a large portion of available dataset. In conclusion, the findings serve as a reminder that ensuring financial system resilience in wartime requires accommodating the public's flight-to-liquidity and finding ways to support the economy despite shortened financial horizons. As Ukraine and other conflict-affected nations move forward, such insights will be valuable for rebuilding and for safeguarding financial stability under stress.

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