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How to facilitate corporate lending in Ukraine: causes of stagnation and policy recommendations

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POLICY STUDY UKRAINE

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Content

Executive Summary

Ukraine's corporate lending market has faced significant disruption since Russia's full-scale invasion in 2022. While the banking system has remained broadly stable, corporate credit activity has structurally declined - driven more by heightened war-related uncertainty and risk aversion than by interest rates or liquidity constraints. This study examines Ukraine's lending environment from three perspectives: the cost of borrowing, credit demand, and the supply-side behaviour of banks. Using empirical analysis - national data, surveys, and econometric modelling - it provides evidence-based insights to guide policymakers and donors in supporting a balanced credit recovery.

Key findings include:

- **War-related risks remain the main barrier to lending**, reducing monthly corporate loan volumes by an estimated 0.12-0.21%. Businesses are cautious due to physical risks, unstable demand, and elevated costs, and many prefer grants or internal funds over credit. Interest rate effects, though stronger before the invasion, weakened during 2022-2023, with influence gradually returning as stability improves.

- **Crowding-out from government instruments (OVDPs, CDs) was a temporary wartime effect**. Banks shifted liquidity to safer assets in early 2022, especially amid heightened uncertainty, but this impact faded by 2023. A 1% rise in the spread between loan and OVDP yields reduced new loans by about 0.1% monthly in the early months of the war; CD spreads had a smaller (-0.04 to -0.06%) and short-lived impact.

- **Bank behaviour diverges by ownership**. Foreign banks sharply cut lending and remain detached from domestic conditions. State-owned banks expanded credit somewhat but still prioritise government securities. Private banks were once driven by profitability, but wartime risk aversion weakened this link.

- **Demand for credit is subdued, not because of supply shortages but due to firm-level repayment concerns and risk**. Lending to SMEs rose modestly in 2023-2024, but the overall share of firms planning to borrow remains flat. Microenterprises, in particular, face high rejection rates, especially in high-risk sectors such as construction and real estate.

- **Structural and behavioural barriers persist, including shadow accounting, weak documentation, and sectoral credit concentration**. Most microcredit still flows to trade, while large borrowers dominate in industry and mining.

Policy Recommendations:

1) Mitigate war-related risks by introducing or scaling up government-backed loan guarantees, war risk insurance, and donor-supported de-risking tools, with a focus on frontline and heavily affected regions and viable SMEs.

2) Support SME bankability by improving financial literacy, business planning, and credit readiness; promoting formalisation; and expanding non-bank finance channels like credit unions and leasing.

3) Mobilise bank lending, especially from state-owned by aligning their incentives with productive credit goals (not just government bond holdings) and launching targeted directive lending schemes and guarantee programs for foreign-owned banks to encourage them re-entry into the corporate credit market.

4) Monitor macro-financial conditions to prevent renewed crowding-out from OVDPs and CDs, ensuring monetary - fiscal coordination supports credit growth without undermining stability.

This analysis supports the implementation of the NBU's Lending Strategy and aligns with IMF priorities to expand access to finance, enhance SME inclusion, and unlock Ukraine's private-sector-led recovery.

Introduction

Since the onset of Russia's full-scale invasion, Ukraine's economy has faced unprecedented challenges. Despite the resilience of the banking sector – strengthened by pre-war reforms – corporate lending has been on a steady decline. This trend is driven by a combination of elevated risks, war-related disruptions, and structural barriers on both the demand and supply sides of the credit market.

At the same time, private sector lending is essential to Ukraine's economic recovery. Access to affordable financing will be critical for maintaining business activity during the war and ensuring accelerated post-war reconstruction and growth. Recognizing this, the National Bank of Ukraine (NBU) and international partners such as the IMF have emphasized the importance of restoring lending to viable enterprises as part of broader financial sector strategies.

This paper examines the core factors behind the stagnation in corporate lending and outlines practical steps to improve access to finance. The analysis is grounded in empirical methods and draws on national statistics, survey evidence, and econometric modelling to uncover the drivers of loan demand, supply, and borrowing costs.

The structure of the paper is as follows:

- Chapter 1 provides an overview of Ukraine's financial system, the war's impact on corporate lending, and past lending trends;
- Chapter 2 explores the cost of borrowing, focusing on how high interest rates and competition from government instruments affect corporate credit;
- Chapter 3 investigates demand-side constraints, such as low credit appetite and limited access to finance, and evaluates the effectiveness of state programs like "5-7-9;"
- Chapter 4 addresses supply-side issues, particularly the influence of bank ownership and financial indicators on lending behaviour;
- The final chapters summarize key policy recommendations and present detailed appendices with supporting empirical results.

By bridging analysis with actionable insights, this study contributes to the ongoing dialogue on unlocking credit in Ukraine and supports the design of targeted policies aligned with the NBU Lending Strategy and IMF recommendations.

1. Background

This chapter provides an overview of Ukraine's financial and banking system, focusing on its institutional structure, historical trends, and the impacts of recent challenges, particularly the ongoing war. It serves as the foundation for analysing the drivers of corporate lending activity and informing the policy trade-offs necessary for recovery.

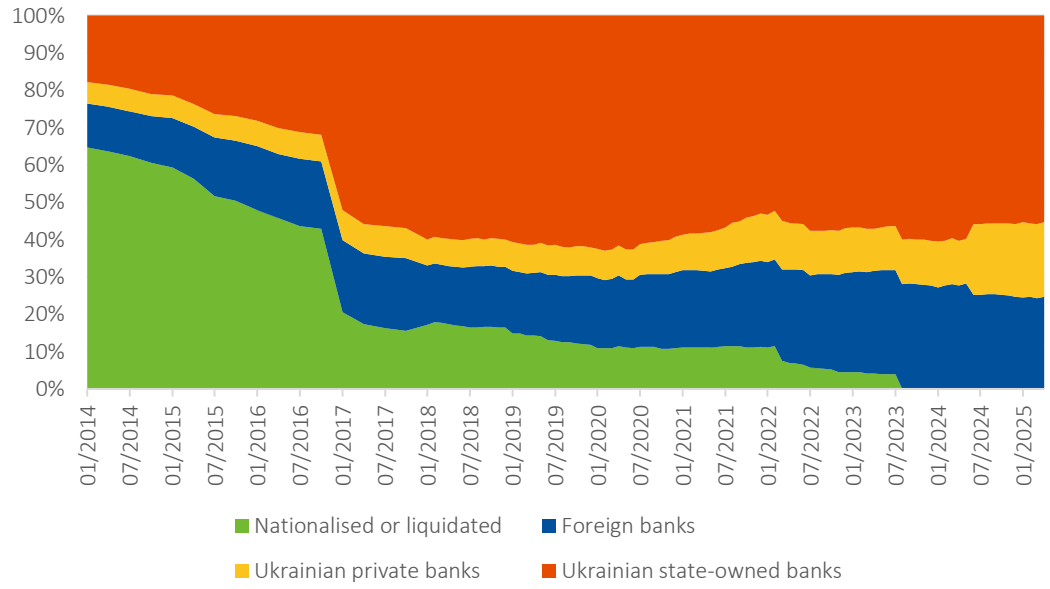
1.1 Institutional Structure of Ukraine's Financial System

The Ukrainian financial system is not big and is dominated by commercial banks with total assets of USD 87 bn or 45% of its GDP (vs over USD 800 bn in Poland in 2024 or 88% of its GDP), with a minor share of the non-banking financial institutions and a negligible role of local capital markets in equity and debt financing. Prior to the war, large corporations accessed global debt markets through Eurobond issuances and bilateral foreign bank funding. However, these channels have become significantly constrained due to the war, leaving domestic bank lending as the primary funding source for corporates, alongside development finance institutions (DFIs).

Currently, state-owned banks dominate Ukraine's banking sector, controlling over 50% of total assets, as shown in Figure 1. This shift follows two waves of nationalization and liquidation: the first in 2014–2016, targeting Ukrainian privately owned banks engaged in related-party lending, and the second in 2022–2023, addressing banks with ties to Russia. As a result, Ukraine's banking sector at the time of the study consists of 60 commercial banks, including seven state-owned banks, 26 with foreign capital (including 19 that are 100% foreign owned).[1]

The sector remains highly concentrated, with the ten largest banks accounting for nearly 80% of gross assets. This concentration poses challenges for corporate lending expansion policies, which, in the short term, must focus on influencing the behaviour of major players. Over the longer term, efforts to diversify the market by empowering smaller institutions could help reduce concentration and enhance competition.

Figure 1. Banking sector assets by ownership type



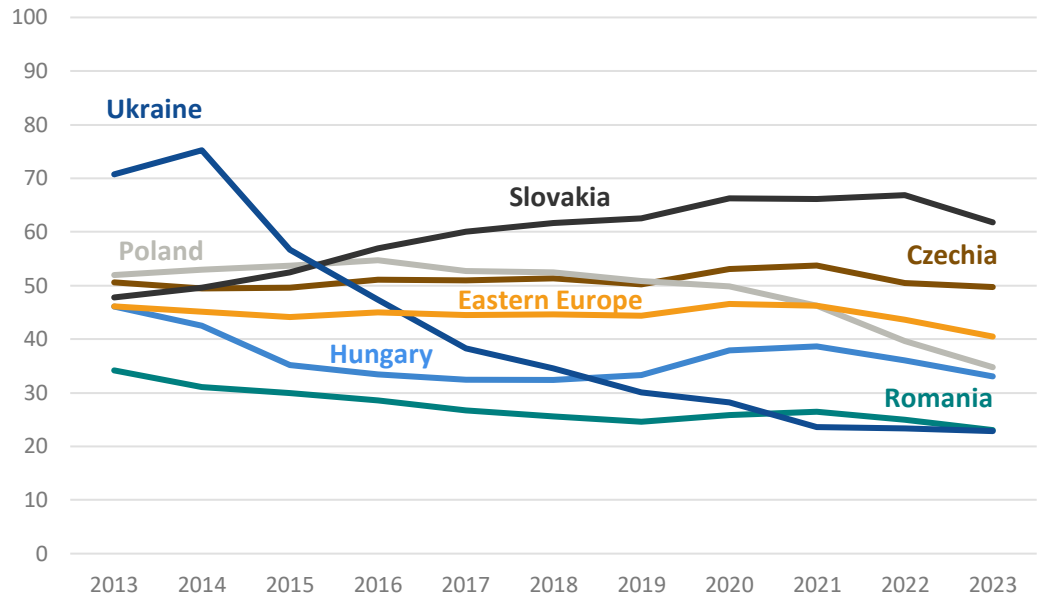
[1] Key performance indicators of the Ukrainian banks as of June 1, 2025. Link.

Source: NBU, Centre for Economic Strategy.
Note: Nationalised or liquidated – banks that were either transferred to the Deposit Guarantee Fund (DGF), ceased operations, or were nationalised due to poor governance. The remaining groups correspond to the NBU classification.

Domestic credit to the private sector as a share of GDP provides insight into the role of the banking sector in an economy. Figure 2 shows this indicator for Ukraine and other Eastern European countries. Before 2015, Ukraine ranked among the highest by this measure, though much of the credit was likely unsustainable (e.g. related party lending) or comprised of unrecognized non-performing loans (NPLs). Furthermore, Ukraine's banking system never developed a strong retail loan portfolio, such as mortgages, limiting its ability to foster stable, long-term credit growth. Following central banking reforms in 2014 and stronger prudential policies, Ukraine successfully reduced the credit share to one of the lowest in the region.

After the nationalization of PrivatBank, Ukraine's largest bank, its assets were reevaluated, revealing an NPL share of nearly 90%, driving the banking system-wide NPL share to a record 56%, the highest globally. While the NPL share has steadily declined over the last seven years, reaching 30.3% in December 2024, these levels still hinder private sector credit development.

Figure 2. Domestic credit to private sector (% of GDP), Ukraine and Eastern Europe



Source: World Bank, Centre for Economic Strategy.
Note: Eastern Europe includes Czech Republic, Hungary, Poland, and Slovak Republic.

The full-scale invasion caused a structural shift in the economy and a severe shock to the credit industry from both supply and demand sides. Monetary and fiscal policies have directed financial institutions toward government bonds and NBU certificates of deposit, but credit demand has also suffered due to lost collateral, higher risk premiums, and a reduced labor supply.

1.2 Impact of the War on Corporate Lending

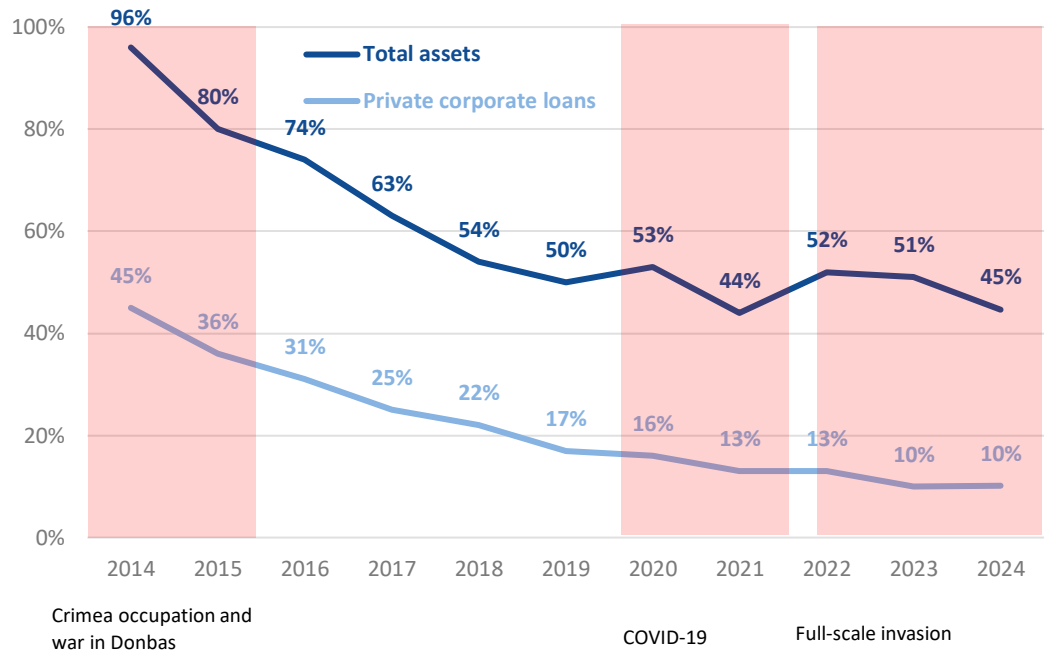
Corporate lending in Ukraine has historically been limited, and its decline accelerated during key periods of economic stress. As shown in Figure 3, before Russia's annexation of Crimea in 2014, corporate loans to private companies constituted approximately 45% of

GDP. By the end of 2021, this figure had fallen to 13% (with an additional 1% for state-owned enterprises). Following the full-scale invasion in 2022, the ratio dropped to 10% by the end of 2023 and stayed at this level in 2024.

It is important to note that this measure does not only reflect bank lending but also includes bonds and other forms of credit. Higher income levels and economic development in the EU are associated with greater financial market penetration, as indicated by the consolidated Debt/ GDP ratio for non-financial corporations in the EU, which stands at 67%. This stark difference highlights Ukraine's constrained credit environment and its limited access to diverse financing options.

The war's effects on corporate lending extend beyond aggregate metrics. Business displacement, infrastructure destruction, and heightened credit risks have fundamentally altered the lending landscape. Borrowers face diminished creditworthiness, while banks contend with increased risk aversion and operational challenges. These war-induced disruptions amplify the structural weaknesses of Ukraine's financial system, complicating recovery efforts.

Figure 3. Corporate lending historical performance to GDP, %



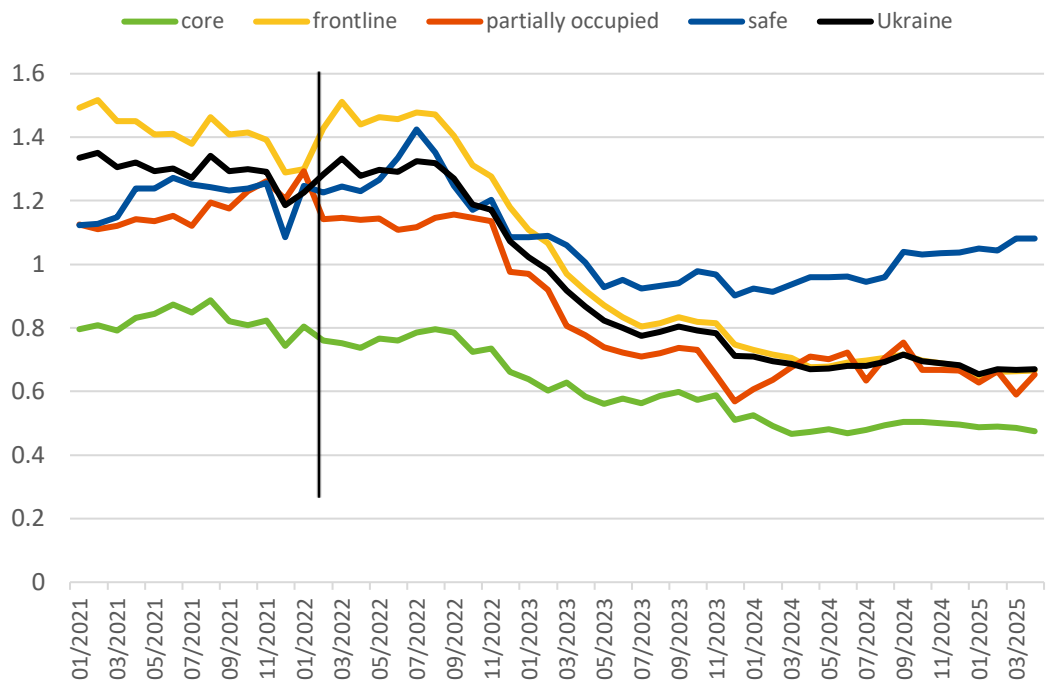
Source: NBU.

Figure 3 shows a decline in new corporate loans as a percentage of GDP starting in 2014, driven by the war and economic downturn. Banking sector reforms—such as closing insolvent banks and addressing non-performing loans—while necessary, also temporarily limited lending. This trend persisted during the COVID-19 pandemic and the full-scale invasion in 2022, as GDP contraction, reduced credit demand, stricter lending standards, and a shift toward safer assets further lowered the share of corporate loans in the economy.

At the same time, the credit shock has had uneven geographic distribution (see Figure 4). The ratio of loans to deposits has suffered significantly less in the relatively safer Western regions or central regions of Ukraine relatively to the pre-invasion levels. This may suggest that business activity in these regions is much more attractive for investment, therefore meaning that enterprises are less eager to bring their liquidity to the banks. In future, it

might also mean that the base for economic recovery will be stronger in these regions fuelling credit demand.

Figure 4. Loans-to-deposits ratio for regions grouped by relative safety



Source: National Bank of Ukraine, Centre for Economic Strategy.
*Note: classification of regions by EasyBusiness; (partially) **occupied** – regions which are fully or partially occupied (Crimea, Kherson, Zaporizhzhia, Donetsk, Luhansk, Kharkiv); **frontline** – regions which are close to the frontline (Odesa, Mykolaiv, Sumy, Chernihiv, Kyiv); **core** – Zhytomyr, Vinnytsia, Kropyvnytskyi, Dnipro, Poltava, Cherkasy); **safe** – Western regions (Zakarpattia, Ivano-Frankivsk, Lviv, Lutsk, Rivne, Ternopil, Khmelnytskyi, Chernivtsi).*

1.3 Historical Episodes in Lending Trends

Over the past decade, lending rates in Ukraine have been shaped by three distinct episodes of economic and policy shifts, each with significant implications for the banking sector.

The First Episode (2014–2018): War and Sector Reforms

The initial period, starting with the war in Donbas in 2014, was marked by geopolitical turmoil and economic shocks that exposed significant vulnerabilities in the banking system. The sector faced high levels of non-performing loans (NPLs), including related-party lending, weak regulatory frameworks, and eroded public trust. To address these challenges, a series of comprehensive reforms were introduced. These included the closure of insolvent banks, strengthened regulatory oversight, and measures to stabilise the financial sector. While these reforms improved resilience, they also constrained lending as banks adopted more cautious and risk-averse lending practices.

During this phase, tight monetary policies aimed at economic stabilisation further pushed lending rates higher, dampening credit demand. However, the impact of interest rates on lending volumes was less pronounced compared to later periods, as structural inefficiencies and reform-driven constraints dominated the lending environment.

The Second Episode (2019–2021): Gradual Stabilisation

In the years leading up to the full-scale invasion, relative macroeconomic stability allowed for some recovery in credit markets. The lending environment normalised to an extent, with

rates responding predictably to policy rate adjustments, indicating the partial restoration of the interest rate transmission mechanism. Nonetheless, structural challenges—such as insufficient access to long-term funding and limited risk-sharing mechanisms—continued to suppress lending volumes.

The Third Episode (2022–Present): Full-Scale Invasion and War Shocks

The most impactful episode began in 2022 with Russia's full-scale invasion of Ukraine. This period introduced unprecedented economic uncertainty, severely disrupting businesses and the financial sector. To preserve macroeconomic stability, the National Bank of Ukraine (NBU) adopted a strict monetary stance, sharply raising the key policy rate. Lending rates soared to near-historical highs, tightening financial conditions across the economy.

The combination of elevated war-related risks, restrictive interest rate levels, and the government's growing reliance on domestic borrowing to finance a widening fiscal deficit led to a pronounced contraction in corporate lending. The volume of new corporate loans declined steeply, reflecting not only the standard transmission of monetary policy but also the compounded shock of war. Compared to past cycles of interest rate tightening, the decline in lending was notably deeper due to the added weight of structural and geopolitical disruptions.

Ukraine's financial system has experienced significant structural shifts over the past decade, with the ongoing war further intensifying existing weaknesses. Key challenges include a high degree of market concentration, subdued corporate lending, and the growing tension between monetary and fiscal policy objectives. These dynamics create a challenging environment for reviving credit activity and supporting economic recovery. The following chapters will explore these issues in detail and present actionable recommendations for policymakers.

2. Expensive loans and crowding out effects: cost of borrowing

This chapter explores the key factors shaping the cost of borrowing for private businesses in Ukraine and their impact on overall lending volumes. Amid wartime disruptions, striking a balance between monetary stability, fiscal needs, and credit growth has become increasingly difficult for the National Bank of Ukraine, the Ministry of Finance, and the banking sector.

To better understand these dynamics, we use econometrics analysis to untangle the effects of lending rates, government borrowing, and certificates of deposit. This approach helps identify how each factor influenced lending behavior across different periods and offers insights for more targeted policy responses.

2.1. The impact of war on the corporate funding costs

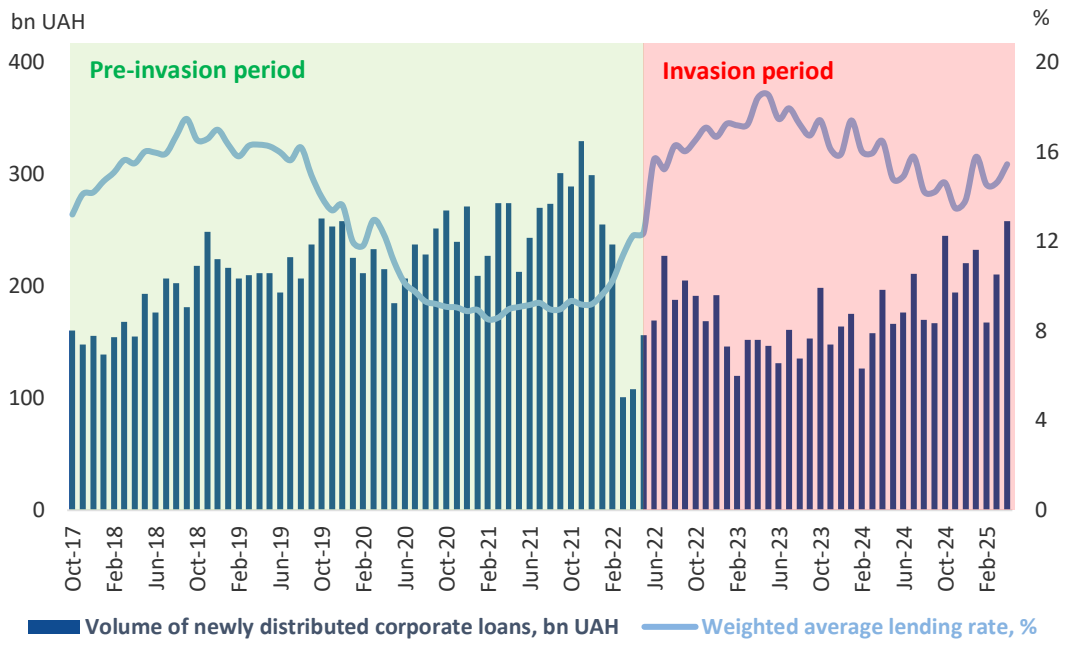
Modeling corporate lending volume is essential for understanding how financial conditions and external shocks affect credit markets – for instance, in Ukraine, such modeling helps assess the impact of wartime disruptions on credit supply and supports the National Bank's Lending Strategy aimed at restoring lending to the real sector under high uncertainty. Figure 5 illustrates the dynamics of corporate lending volume and the weighted average lending rate in Ukraine from October 2017 to April 2025. The shaded area marks the pre-invasion period, during which lending volumes fluctuated but remained relatively stable, while the lending rate gradually declined. However, following the full-scale invasion in early 2022, the lending rate surged sharply – primarily reflecting a spike in risk premiums and market uncertainty, which significantly increased borrowing costs and reduced credit supply.

Already in 2023, the situation started to improve, and with a gradual decrease in the key policy rate, borrowing costs declined, leading to a slight recovery in corporate lending. Increased economic stabilisation, along with government support programs and international financial assistance, contributed to improved credit conditions. In 2024, further monetary easing and economic adaptation to wartime conditions supported lending growth. Banks became more willing to issue loans, particularly to resilient sectors and SMEs, while businesses adapted to operating under uncertainty. However, war-related risks and cautious lending policies continued to limit a full-scale recovery. As a result, the NBU raised the key policy rate from 13.5% in January 2025 to 15.5% in March 2025. However, despite a rate hike, lending continued to grow.

In this section, we will analyse the effect of the weighted average lending rate and the war shock on the volume of newly issued corporate loans since October 2017 till April 2025, which covers lending dynamics before and after the full-scale invasion. All the data was taken from the official website of the National Bank of Ukraine – section "Financial Sector Statistics." The dataset starts from October 2017 due to the availability of monthly data from this time onwards for corporate lending.[2]

[2] https://bank.gov.ua/files/3.3-Loans_e.xlsx

Figure 5. Volume of newly distrubuted corporate loans, bn UAH and weighted average lending rate, %



Source: NBU.

Our hypotheses are the following:

- **H1**: **The full-scale invasion changed how interest rates affect lending.** Before the war, higher rates clearly reduced loan volumes. After the invasion, this link weakened, likely due to war-related uncertainty and disruptions. The war dummy (starting March 2022) reflects these broader effects.
- **H2: Lending became less responsive to interest rates after the invasion.** Even though rates stayed high, they had a smaller effect on lending, likely because of increased risks, lower demand, and credit supply constraints—showing that monetary policy became less effective during the war.

In the following, we provide an overview of the model, giving details on the chosen variables, model specification, and its econometrics results, allowing us to make the conclusions and whether to accept or reject our hypotheses. Details can be seen in Appendix 1: The impact of the cost of money on loan volumes, Table 8.

We use Autoregressive Distributed Lag (ARDL) modeling for the purposes to define the influence of the cost of funding on loan volumes. ARDL is well-suited for analysing the impact of interest rates and war-related shocks on corporate lending in Ukraine. It allows for estimating both short- and long-term relationships without requiring all variables to be of the same integration order. This is crucial given potential structural breaks, such as the full-scale invasion, which may have altered lending dynamics.

By incorporating lags of both dependent and independent variables, ARDL effectively captures delayed effects of monetary policy and external shocks. Its ability to model structural shifts ensures that changes in relationships between lending volume, interest

rates, and war shocks are accurately reflected. This makes ARDL a robust approach for understanding lending behavior across different time periods.

All these pre-modeling tests allowed us to use the following model specification:

$$\log LV_t = \alpha + \sum_{i=0}^{\rho} \beta_i \log LV_{t-i} + \sum_{j=0}^{q} \gamma_i LR_{t-j} + \delta WAR_t + \varepsilon_t,$$

Where (more details on the variables could be found in Table 8):

- $\log LV_t$ – logarithm of the volume of newly distributed loans (dependent variable);
- LR_t – weighted average lending rate;
- WAR_t – war shock dummy variable (1 from March 2022 onward, 0 before);
- α – constant;
- $\beta_i, \gamma_j, \delta$ – estimated coefficients;
- ε_t – error term.

For each ARDL model we chose the number of lags based on the LR (sequential modified LR test statistic), FPE (final prediction error), AIC (Akaike information criterion), SC (Schwarz information criterion), and HQ (Hannan-Quinn information criterion) criteria (see Appendix 1: The impact of the cost of money on loan volumes, Table 13). It is 2 lags based on HQ.

We obtain the **following results** (see Table 1): The ARDL model shows that corporate lending rates negatively affect loan volumes. A 1% increase in the lending rate (with a 2-month lag) lowers lending by 0.02% before the invasion and by 0.04% after. However, the model's explanatory power declined from 87% to 55–66% post-invasion, indicating the lending interest rate become less influential as war-related risks grew. The war had a stronger and longer-lasting effect: it reduces loan volumes by 0.15% per month over the full period. Additionally, all models are statistically valid, with no major issues in residuals (heteroskedasticity, autocorrelation, or normality).

Table 1. ARDL model results

ENDOGENOUS VARIABLE: $\log LV_t$				
PERIOD	Oct-17 – Apr-25	Oct-17 – Jan-22	Feb-22 – Apr-25[3]	Jan-23 – Apr-25
COEFFICIENTS				
$LR_{t-2(1)}$	-0.04***	-0.02**	-0.04***	-0.10***
α	5.93***	5.93***	5.48***	6.71***
WAR_t	-0.15***	—	—	—
GOODNESS OF FIT				

[3] During this period, the lending rate with a one-month lag has a strong effect on loan volumes, while the two-month lag is not significant. This suggests that during the full-scale invasion, the transmission of interest rates to lending became more immediate. However, the sharp drop in R^2 indicates that war-related factors still play a major role in shaping lending dynamics.

R^2	0.72	0.87	0.55	0.66
N. OBS	87	39	38	28
DEGREES OF FREEDOM	84	37	36	26
F-STATISTIC	29.18***	11.36***	3.61***	8.59***
F-BOUND TEST	6.81***	16.07***	7.07***	5.25**
RESIDUAL DIAGNOSTICS				
BREUSCH-PAGAN°	0.78***	1.06***	1.15***	0.87***
BREUSCH-GODFREY°	0.93***	1.19***	2.65***	0.23***
JARQUE BERA	2.77***	1.48***	0.27***	0.60***

***<10%, **<5%, ***<1%**

Source: own display.

Based on the empirical results, both hypotheses are broadly supported:

H1: The ARDL model confirms a structural break in the relationship between lending volumes and interest rates after the full-scale invasion. While corporate lending rates continued to reduce loan volumes across all periods (with a two-month lag), their impact became relatively weaker compared to the effect of the war. The strongest interest rate effect was observed in 2023–2025, yet it was still smaller than the war's influence. The war shock had a stronger and more persistent impact, lowering lending by 0.15% per month over the full period. This suggests that wartime uncertainty and risk aversion became the dominant constraints on lending, overtaking the role of interest rates.

H2: The sensitivity of lending to interest rates declined in the post-invasion period. Although lending rates continued to reduce loan volumes, the model's explanatory power dropped notably (R^2 fell from 0.87 to 0.55–0.66), indicating that other factors became more influential. This shift reflects increased uncertainty, heightened risk aversion, and greater bank investment in risk-free instruments, which weakened the effectiveness of traditional interest rate policy.

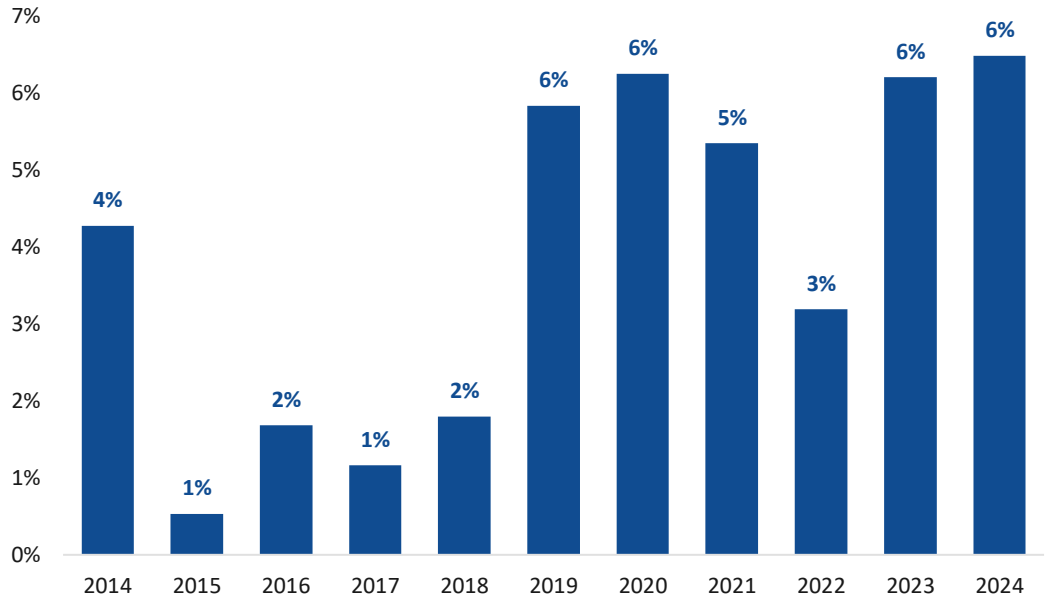
2.2. Have government borrowings and certificates of deposit crowded out corporate lending?

The crowding-out effect occurs when increased government borrowing reduces private sector lending. When the government issues bonds or the central bank issues certificates of deposit, banks tend to invest in these relatively safe and liquid assets, diverting funds from private sector loans. As banks allocate more resources to government bonds, their capacity to lend to businesses and individuals declines. This shift can lead to higher interest

rates for private borrowers and limited access to credit, potentially stifling economic growth and investment.[4]

Government borrowings were elevated as shown in Figure 6, in times of COVID and after 2023 to cope with the surging budget deficit caused by the full-scale invasion.

Figure 6. Government local bond placements (% of GDP)



Source: NBU.

Figure 7 illustrates the dynamics of newly issued loans, changes in government bond volumes, and interest rates in Ukraine across two periods: pre-invasion and invasion. Before the invasion, loan volumes were relatively high but declined from 2019 onward, while government bond interest rates fluctuated. Following the invasion, lending rates and bond yields spiked, coinciding with a sharp drop in loan issuance. Despite some recovery, lending remained subdued, reflecting tighter monetary conditions and increased risk perception. The chart highlights the shift in financial conditions and the crowding-out effect of rising government bond yields on corporate lending.

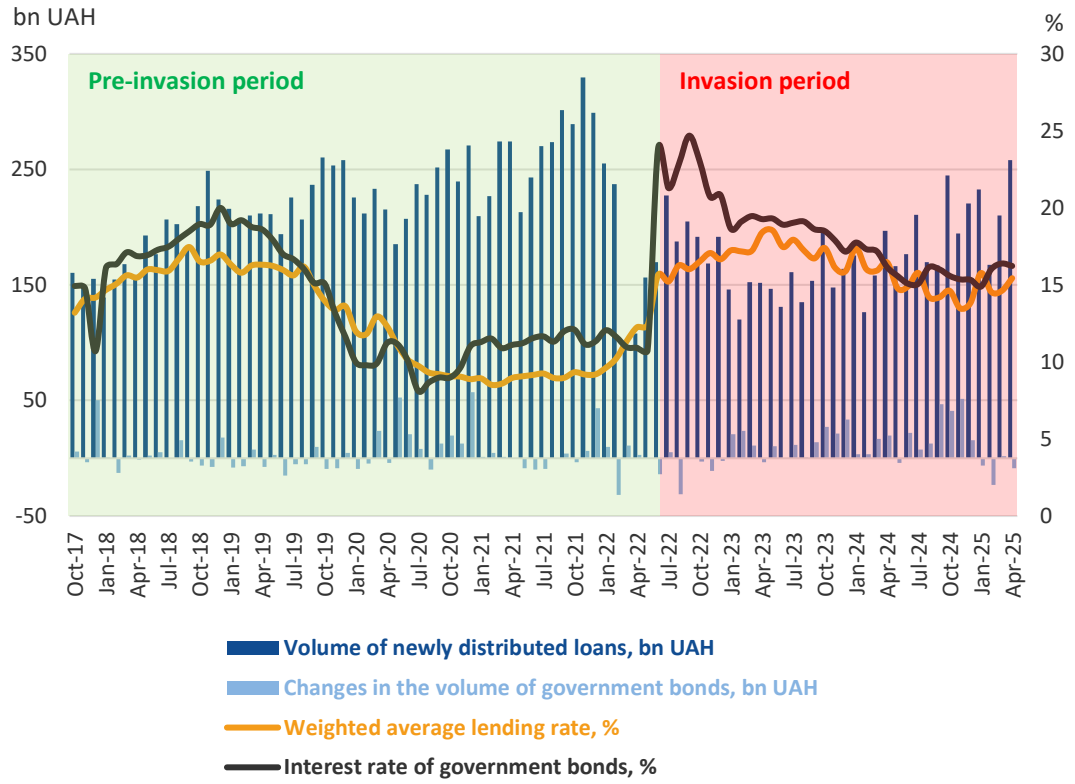
In this section, we will analyse the effect of the government bond's interest spread and war shock on the volume of newly distributed corporate loans from October 2017 to April 2025. The interest rate spread is defined as the difference between the weighted average lending rate and the government bond interest rate.

The data was taken from the official website of the National Bank of Ukraine – section "Financial Sector Statistics." The dataset starts from October 2017 due to the availability of monthly data from this time one for the corporate lending. Our hypothesis is the following:

H1: The full-scale invasion changed how government bond rates affect corporate lending. Before the war, lending followed normal market patterns, driven mainly by borrowing costs. After the invasion, higher government bond yields and wartime uncertainty led banks to invest more in safer government securities, limiting funds for business loans and increasing the crowding-out effect.

[4] Emran, M. S. and Farazi, S. "Lazy banks? Government borrowing and private credit in developing countries." Institute for International Economic Policy Working Paper 2009-9. Link.

Figure 7. Comparison of the interest rates and the volume of newly issued loans vs the changes in government bonds owned by banks



Source: NBU.

Later, we provide the overview of the model, give details on the chosen variables, model specification, and its econometrics results, allowing us to make the conclusions and whether to accept or reject our hypotheses. Details can be seen in the Appendix 1: The impact of the cost of money on loan volumes**.** In this section, we also use Autoregressive Distributed Lag (ARDL) modelling for the purposes to define the influence of the potential crowding-out effect on loan volumes.

All these pre-modelling tests allowed us to define the following model specification:

$$\log LV_t = \alpha + \sum_{i=0}^{\rho} \beta_i \log LV_{t-i} + \sum_{j=0}^{q} \gamma_i OVDP\ IR\ spread_{t-j} + \delta WAR_t + \varepsilon_t,$$

Where (more details on the variables could be found in Table 14):

- $\log LV_t$ – logarithm of the volume of newly distributed loans (dependent variable);
- $OVDP\ IR\ spread_t$ – government bond interest rate spread;
- WAR_t – war shock dummy variable (1 from March 2022 onward, 0 before);
- α – constant;
- $\beta_i, \gamma_j, \delta$ – estimated coefficients;
- ε_t – error term.

To build the model, we used the **logarithm of the volume of newly distributed loans to stabilise variance**, **improve model interpretability**, and capture relative rather than absolute changes in lending dynamics. The **government bond interest spread** is shown with a two-month lag to reflect the delayed impact of interest rate changes on borrowing

decisions, as banks typically take time to adjust their financing strategies in response to monetary policy shifts. We assume that the transmission of government bond interest rates follows the same pattern as lending rates. **The war shock is included as a dummy variable with an instant effect**, as the full-scale invasion immediately altered risk perceptions, economic stability, and credit supply conditions.

We obtain the following results (see Table 2): the ARDL model confirms a temporary crowding-out effect from government bonds, but only during the 2022 wartime period, highlighting the market's sensitivity to war-related risks. Also, in the beginning of the full-scale invasion, lending activity declined due to multiple factors – including elevated risks, disrupted business operations, and weakened demand for credit. In this environment, banks redirected resources into government bonds (OVDPs) not only due to their relative safety but also to maintain asset levels amid shrinking loan portfolios.

In the full sample (2017–2025), a higher government bond interest rate spread (with a two-month lag) significantly reduced loan volumes, indicating that safer state instruments pulled bank resources away from lending. This effect was not present before the full-scale invasion but became significant immediately after, with a 1% spread increase linked to a 0.1% drop in new loans. However, the effect disappeared again in 2023–2025 as the spread lost statistical significance. The war variable remains strongly negative and significant in the full-period model (–0.2% monthly), confirming the broader economic impact of the invasion on credit. Residual diagnostics show no major issues.

Table 2. ARDL model results

ENDOGENOUS VARIABLE: $\log LV_t$				
PERIOD	Oct-17 – Apr-25	Oct-17 – Jan-22	Feb-22 – Apr-25	Jan-23 – Aprl-25
COEFFICIENTS				
$OVDP\ IR\ spread_{t-2(3)}$	**-0.02**	**0.03**	**-0.10*** **	**0.21**
WAR_t	-0.21***	—	—	—
α	5.45***	5.42***	5.35***	4.88***
GOODNESS OF FIT				
R²	0.65	0.65	0.53	0.88
N. OBS	89	50	38	28
DEGREES OF FREEDOM	86	48	36	26
F-STATISTIC	41.71***	46.58***	2.91***	8.93**
F-BOUND TEST	5.80***	2.75	7.17***	4.72**
RESIDUAL DIAGNOSTICS				
BREUSCH-PAGAN°	3.51	0.03***	0.42***	0.48***
BREUSCH-GODFREY°	4.74	1.51***	0.64***	1.16***

JARQUE BERA	0.96***	2.41***	3.54***	0.19***

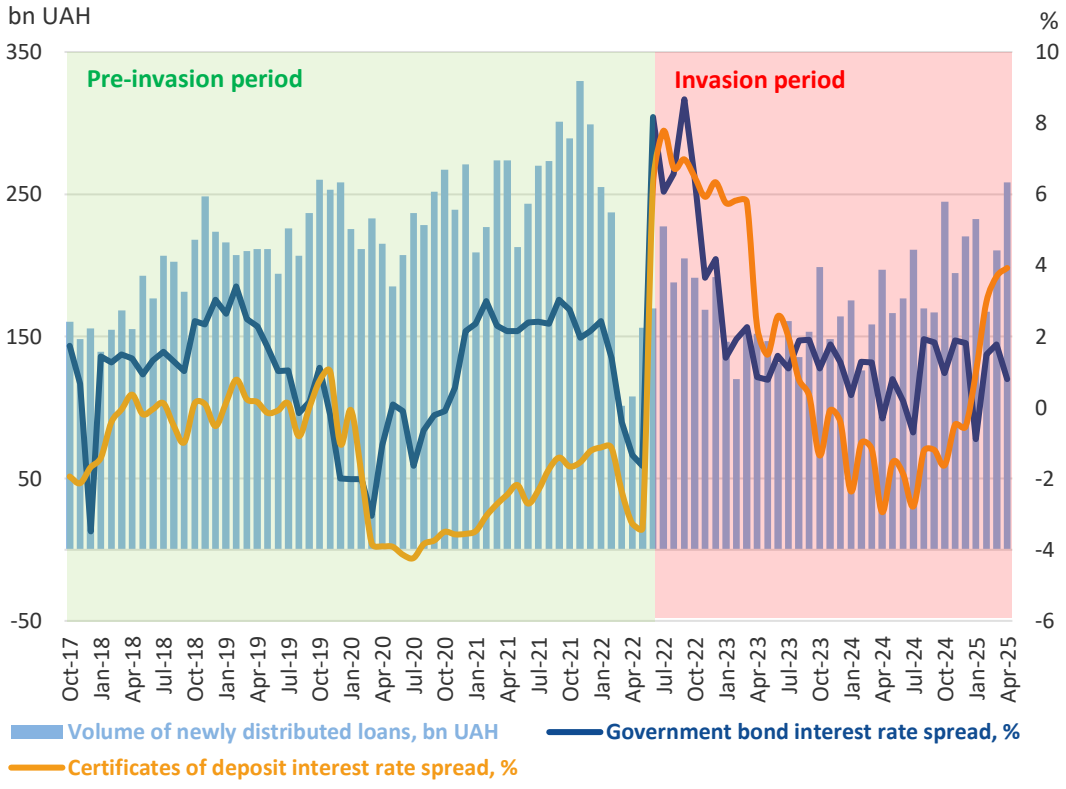
***<10%, **<5%, ***<1%**

Source: own display.

H1 is supported: the full-scale invasion caused a structural break in how government bond rates affect corporate lending. Before the war, lending was shaped mainly by borrowing costs and typical market dynamics. After the invasion, rising government bond yields and wartime uncertainty made government securities more attractive to banks. As a result, a temporary crowding-out effect emerged – from 2022 to 2023, a 1% rise in the bond–lending rate spread reduced loan volumes by 0.1%. However, this effect faded in 2023–2025, suggesting that the crowding-out impact was short-lived. Overall, wartime instability changed banks' investment behavior, weakening the traditional influence of interest rate spreads on lending.

If we analyse the impact of the certificates of deposit (CD) issued by the NBU, they can also cause crowding-out effects due to attractive rates which encourage banks to allocate liquidity toward risk-free instruments rather than corporate lending. When CD rates are high relative to lending rates, banks may prefer placing funds in CDs rather than extending loans, reducing credit availability for businesses. This effect is particularly strong in periods of tight monetary policy when the NBU raises CD rates to absorb excess liquidity and control inflation.

Figure 8. Government bonds and CDs interest rate spread, % and volume of newly distributed loans, bn UAH



Source: NBU.

Figure 8 shows the trends in government bond and certificate of deposit (CD) interest rate spreads alongside the volume of new corporate loans from 2017 to 2025. Before the full-scale invasion, both spreads were relatively stable, while loan volumes steadily increased. In early 2022, the war triggered a sharp spike in both spreads as monetary tightening and heightened risks redirected bank resources toward safer assets. This coincided with a collapse in lending. From 2023 onward, both spreads gradually declined, and loan volumes partially recovered, suggesting a shift toward monetary easing and reduced financial stress. The figure highlights how war-related risk and policy rates shaped bank preferences between lending and investment in government instruments.

Later, we analyse the effect of the certificates of deposit's interest spread and war shock on the volume of newly distributed corporate loans from October 2017 to April 2025. The interest rate spread is measured as the gap between the weighted average lending rate and the certificate of deposit interest rate, highlighting variations in borrowing costs over time. The data was taken from the official website of the National Bank of Ukraine – section "Financial Sector Statistics." The dataset starts from October 2017 due to the availability of monthly data from this time one for the corporate lending.

Our hypothesis is the following:

H1: The full-scale invasion changed how banks allocate money, weakening the link between interest rates and business lending. Before the full-scale invasion, corporate lending mostly followed market rules and was driven by borrowing costs. After the invasion, high risks and better returns on safe assets like NBU deposit certificates led banks to invest less in business loans, limiting credit access for companies.

Later, we provide the overview of the model, give details on the chosen variables, model specification, and its econometrics results, allowing us to make the conclusions and whether to accept or reject our hypotheses. Details can be seen in the Appendix 1: The impact of the cost of money on loan volumes, Table 20**.**

In this section, we also use Autoregressive Distributed Lag (ARDL) modelling for the purposes to define the influence of the potential crowding-out effect on loan volumes. **The war shock is included as a dummy variable with an instant effect**, as the full-scale invasion immediately altered risk perceptions, economic stability, and credit supply conditions.

All these pre-modelling tests allowed us to define the following model specification:

$$\log LV_t = \alpha + \sum_{i=0}^{\rho} \beta_i \log LV_{t-i} + \sum_{j=0}^{q} \gamma_i CD\ IR\ spread_{t-j} + \delta WAR_t + \varepsilon_t,$$

Where (more details on the variables could be found in Table 8):

- $\log LV_t$ – logarithm of the volume of newly distributed loans (dependent variable);
- $CD\ IR\ spread_t$ – certificates of deposit interest rate spread;
- WAR_t – war shock dummy variable (1 from March 2022 onward, 0 before);
- α – constant;
- $\beta_i, \gamma_j, \delta$ – estimated coefficients;
- ε_t – error term.

To construct the model, we applied a logarithmic transformation to the **volume of newly issued loans** to stabilise variance, enhance interpretability, and emphasize relative rather than absolute changes in lending dynamics. The **certificate of deposit interest rate spread** is incorporated with a two-month lag to account for the delayed effect of interest rate

changes on borrowing behavior, as banks typically adjust their financing strategies gradually in response to monetary policy shifts. We assume that the transmission of CD interest rates follows a similar pattern to lending rates. The **war shock** is represented as a dummy variable with an immediate effect, reflecting the full-scale invasion's direct impact on risk perception, economic stability, and credit supply conditions.

We obtain the following results (see Table 3): the ARDL model confirms a modest but consistent crowding-out effect from NBU certificates of deposit (CDs) on corporate lending before and early months of the full-scale invasion. Before the full-scale invasion, a 1% rise in the CD interest rate spread was linked to a 0.05% monthly decline in loan volumes. After the invasion, this effect remained similar at 0.04%, but since early 2023, it lost statistical significance. In contrast, the war had a much stronger and sustained impact, reducing lending by 0.12% per month over the full period. The model fit remained solid across periods (R^2 = 0.81 pre-war, 0.66 post-war), though explanatory power dropped in the latest phase as other factors gained importance. Residual diagnostics confirm the models are robust, with no major issues.

Table 3. ARDL model results

ENDOGENOUS VARIABLE: $\mathrm{LOG}\ LV_t$				
PERIOD	Oct-17 – Apr-25	Oct-17 – Jan-22	Feb-22 – Apr-25	Jan-23 – Apr-25
COEFFICIENTS				
$CD\ IR\ spread_{t-2}$	**-0.06*** **	**-0.05*** **	**-0.04*** **	**-0.32**
WAR_t	-0.12***	—	—	—
α	5.43***	5.48***	5.19***	5.61**
GOODNESS OF FIT				
R^2	0.88	0.81	0.66	0.97
N. OBS	77	38	38	28
DEGREES OF FREEDOM	74	36	36	26
F-STATISTIC	15.82***	7.18***	3.86*	31.69**
F-BOUND TEST	6.78***	8.33***	10.83***	11.97***
RESIDUAL DIAGNOSTICS				
BREUSCH-PAGAN°	0.59***	0.88***	0.69***	0.25***

BREUSCH-GODFREY°	0.46***	0.30***	4.26***	178.98*
JARQUE BERA	8.65	0.31***	1.47***	0.57***

***<10%, **<5%, ***<1%**

Source: own display.

Based on the provided results, H1 is supported: the ARDL model confirms that NBU certificates of deposit (CDs) contributed to a modest crowding-out effect on corporate lending during the early phase of the full-scale invasion. A 1% increase in the CD interest rate spread reduced loan volumes by 0.05% before the war and by 0.04% afterward. However, this effect became statistically insignificant from early 2023, while the impact of war-related risks grew stronger, reducing lending by 0.12% per month over the full period. This suggests that although CDs initially limited credit availability, the full-scale invasion shifted lending constraints from interest rate spreads to broader uncertainty and risk aversion.

The results show that both government bonds and NBU certificates of deposit (CDs) had a modest crowding-out effect on business lending shortly after the invasion. A 1% increase in their interest rate spreads reduced loan volumes by 0.04–0.1% per month. **Since 2023, these effects weakened and lost significance. In contrast, the war had a stronger and longer-lasting impact**, cutting lending by 0.12–0.2% monthly. This suggests that wartime risks, not high interest rates of government bonds and CDs, became the main constraint on lending, reducing the effectiveness of traditional monetary tools.

2.3. Conclusions and policy implications

Overall, the results show that lending dynamics in Ukraine shifted more due to the war-related risks than to changes in interest rates.

ARDL model estimates confirm that while lending rates negatively influenced loan volumes before the full-scale invasion, this effect weakened afterward. War-related shocks became the dominant constraint on credit activity, with estimated monthly impacts ranging from –0.12% to –0.21%. By late 2024, as macroeconomic conditions began to stabilise, the influence of lending rates started to strengthen again.

In 2024, lower policy rates and improved borrower creditworthiness supported the recovery of loan volumes, especially for market-based loans. This reflects a gradual normalisation in bank lending behaviour as risks eased. At the same time, banks continued to allocate resources into government securities and NBU certificates of deposit, attracted by their safety and returns. However, the crowding-out effect from government bond rates was temporary: it was statistically significant in early 2022–2023 (–0.10% monthly) but became insignificant after January 2023. CD rate spreads had a modest impact (–0.04% to –0.06%) and lost statistical significance since January 2023 as well.

Policy implications:

- **Focus on reducing war-related risks:** War remains the most powerful constraint on lending. Policies such as government-backed loan insurance, war risk insurance,

stronger borrower support, credit guarantees, and donor-funded risk-sharing tools could help restore confidence and ease credit access.

- **While the crowding-out effect from government bonds and certificates of deposit (CDs) has weakened – becoming statistically insignificant since early 2023 – it remains important to monitor their influence on credit activity**. The careful coordination of monetary and fiscal policies is essential to ensure that government borrowing does not unintentionally constrain access to credit, particularly for the private sector.

3. Understanding Capital Needs and Borrowing Behaviours of Ukrainian Businesses: demand side

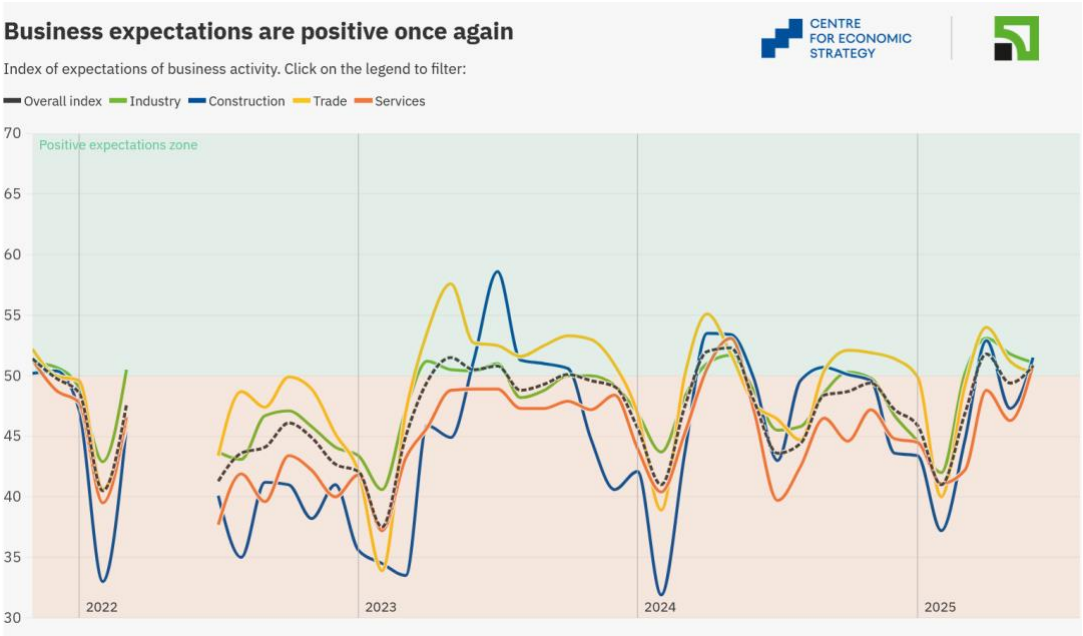
This chapter investigates the demand side of lending – corporates' need for financial resources, their choice of funding providers, and their 'bankability,' or ability to meet stringent bank lending criteria. First, we provide an overview the capital needs of the Ukrainian business and their funds-seeking behaviour. Then, we investigate banks' concerns over borrowers' credit quality and whether the businesses can easily get loans from Ukrainian banks, and finally we examine the role of the large subsidised "5-7-9 Affordable Lending" program.

3.1. Do Ukrainian companies need banking credit?

To understand the motivations behind business decisions, as well as the constraints and incentives faced by Ukrainian enterprises in their investment and borrowing behavior, we first examined their investment patterns and then their borrowing practices, drawing on business surveys conducted by the central bank and civil society organizations.

In the long run the Ukrainian corporate sector's capital needs remain substantial, particularly in the context of war-induced destruction and economic disruption. E.g. the total annual business reconstruction needs are estimated at a sizeable $11 bn.[5] Lack of qualified labor, caused by migration and hostilities, will likely be the second long-term trend defining heightened capital demand - businesses will likely be trying to adapt by substituting labor with capital.

Figure 9. Business Expectations Index



Source: NBU, Ukraine War Economy Tracker, Centre for Economic Strategy.

But for now, their investment propensity and, therefore, credit demand at the time of war is understandably low: only 16% of companies plan significant investments in 2025.[6] This

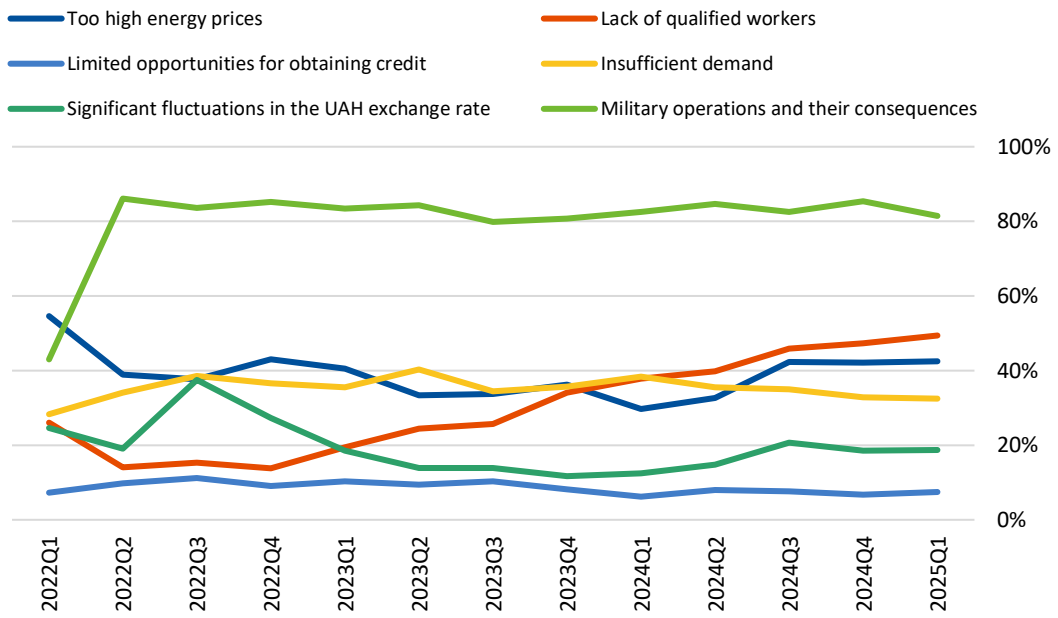
[5] RDNA3, 2024.

[6] Business Forecasts for 2025. European Business Association. Link.

could be explained by several factors – war-related physical risks for assets and goods alongside the extreme uncertainty in terms of future demand, supply chains, human capital, - all captured by the NBU's business expectations index, which most of the time remains below the neutral 50 points level (Figure 9Figure 11.).

Investment appetite of businesses is limited by unmanageable risks such as massive shelling, power outages, labour shortages, and decreased consumer activity (Figure 10). Limited opportunities for obtaining credit according to these data, are not among the biggest concerns.

Figure 10. Businesses' assessment of some of the most influential factors limiting the ability of their enterprises to increase production



Note: 2022Q1 covers pre-invasion period only.

Source: National Bank of Ukraine.

Companies are also worried about their ability to redeem the loan (36% of companies)[7]. The corporate sales shaken in many industries, and the fixed assets became damaged, supply chains frequently disrupted. These conditions create obstacles to long-term planning and as the aftermath, companies, especially SMEs, are hesitant to obtain banking loans in a fear of losing collateral and reputation of a decent borrower.

As for those who indeed decides to invest and looking for the source of funding, banks are often not the first choice. According to the Small Business Sentiment Index survey , 62% of SMEs expressed intentions to raise additional funds for their businesses, yet only 10% considered bank lending as a viable option for financing operations. Instead, most Ukrainian businesses prefer relying on self-generated resources rather than external loans or grants.[8]

The findings from the April 2025 NBU Business Expectation Survey, which includes larger companies, further emphasize this trend. The survey reveals that in Q1 2025, the proportion of businesses anticipating the need for borrowed funds raised to 38.1% (up from 33.5% in Q4 2024). Despite this, the percentage of companies planning to take bank loans remained

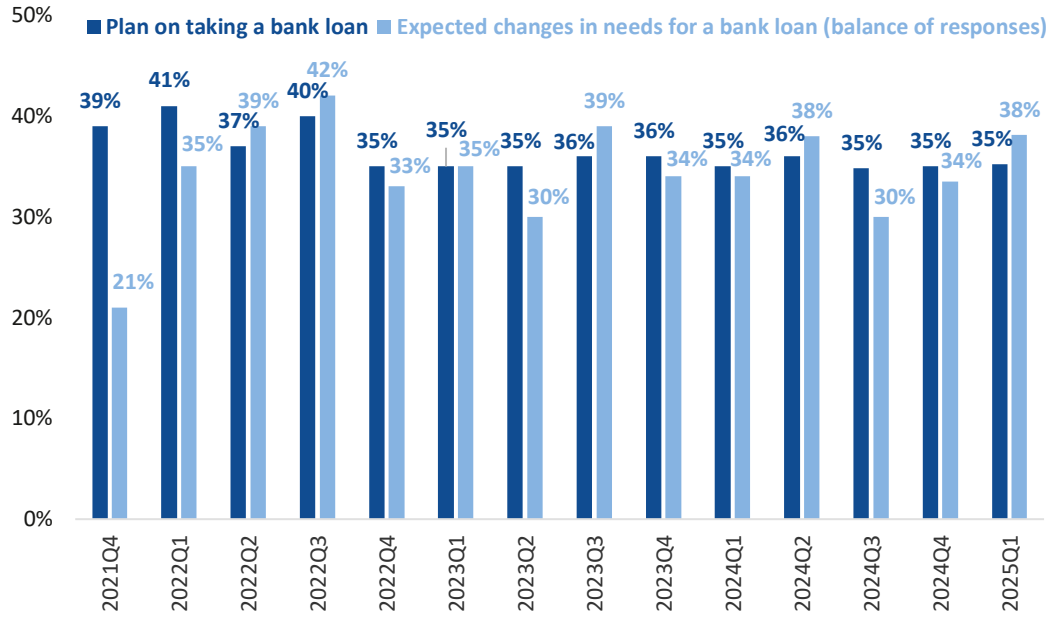
[7] Survey of the Business Needs in Ukraine. May 2024. Link

[8] Small Business Sentiment Index Survey. European Business Association. 2025. Link.

largely unchanged from the previous quarter (35.2% - up from 35% in Q4 2024). Companies continued to favour hryvnia loans, while respondents noted tighter lending conditions. Key deterrents included high loan rates, alternative funding options, and collateral demands.[9]

Investment demand remains low, and bank lending is not the main funding source for businesses. Companies usually seek loans only after using cheaper alternatives like grants or owners' funds, meaning many bankable firms never apply due to high rates, strict conditions, or better options elsewhere.

Figure 11. Business expectations regarding changes in the need for borrowed funds in the near future (balance of responses) and plans for the next bank loan



Source: Business Expectations Survey, NBU.

As war risks decline, businesses are expected to shift from survival to growth, increasing their need for bank loans, especially to fund reconstruction and capital-intensive production. This transition will require effective de-risking tools and policies that improve safety, predictability, and investment incentives, such as insurance mechanisms.

3.2. Can those who need capital easily access it?

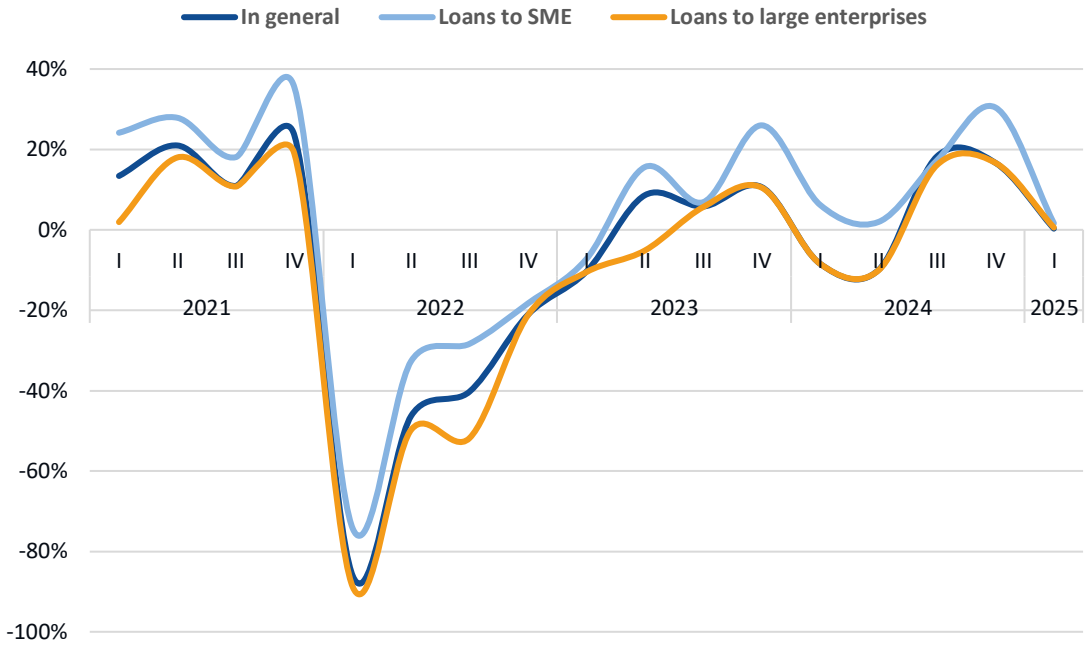
This section explores recent trends and challenges in business access to financing, focusing on loan approvals and reasons for rejection. Data from the Bank Lending Survey shows that credit access improved by Q2 2023 after the initial shock of the full-scale invasion, with modest growth driven by interest rates (Figure 12). [10] SMEs benefited from smaller funding needs and lower war-related risks, while large firms faced challenges such as asset devaluation and stricter bank risk policies. Using statistics, surveys, and interviews, we assess loan accessibility for firms willing to invest, aiming to identify ways to improve access while maintaining financial stability.

[9] Business Expectation Survey, Q1 2025. National Bank of Ukraine. Link.

[10] Banking Lending Survey. NBU. Q2 2025. Link.

Shadow practices often render companies unbankable, [11] forcing them to rely on personal funds or peer-to-peer lending due to inadequate reporting or business plans. Credit rationing arises from asymmetric information, leading banks to tighten collateral requirements or limit loans despite high interest rates. [12] Surveys confirm stricter lending conditions, reflecting banks' risk management strategies.

Figure 12. Change of loans' approval rate to the corporate sector



Source: Banking Lending Survey, NBU.

3.2.1. The industry and company size implications

Loan distribution in Ukraine remains uneven across industries and business sizes. Trade, processing, and agriculture account for the largest shares of outstanding loans – 38%, 18%, and 13% respectively (Table 4). However, sectors like real estate and construction face extremely high NPL ratios (74.2% and 69.9%), limiting their access to credit. Over half of loans are concentrated in large and medium-sized businesses, while smaller firms, especially microenterprises, remain underserved. NPL rates among microenterprises range from 53% to 84%, compared to just 16% for large businesses (Table 5), deterring banks from lending despite the critical role these firms play in the economy.

In 2024, 35% of businesses had outstanding loans, ranging regionally from 22% in the East to 41% in the West. Manufacturing, energy, and trade had the highest loan share among small businesses, while marketing, consulting, and IT had the lowest. Most loans were under $300,000. [13]

[11] Access to financing for small and medium enterprises in Ukraine. 2024. Centre for Economic Strategy. Link.

[12] Stiglitz, Joseph E., and Andrew Weiss. "Credit Rationing in Markets with Imperfect Information." *The American Economic Review* 71, no. 3 (1981): 393–410. http://www.jstor.org/stable/1802787.

[13] Survey on the State of Business in Ukraine. Link.

Loan distribution in Ukraine shows clear disparities by industry and business size. Trade and processing dominate lending but still face high NPLs, while construction and real estate receive little credit and suffer from extremely high NPL ratios. Smaller businesses, especially microenterprises, carry much higher NPLs (up to 81%) than large firms (15%), limiting their access to financing. These imbalances highlight the need for targeted policies to address risk perceptions and support more equitable credit access.

Table 4. Outstanding loans to non-financial corporations by type of economic activity, March 2025

Sector	***Share of outstanding loans***	***% NPL***
Trade	38%	49.8%
Processing industry	18%	8.3%
Agriculture	13%	4.5%
Real estate	10%	9.9%
Electricity, gas, steam, conditioned air supply	7%	6.1%
Transport, logistics, postal and courier services	6%	13.3%
Construction	3%	3.7%
Mining and quarrying	2%	3.9%
Other industries	2%	0.5%
All industries	**100%**	**33.2%**

Source: NBU, Centre for Economic Strategy.

Table 5. Breakdown of loans granted to businesses by size, March 2025

Size of Business entities	***Share of outstanding loans***	***% NPL***
Large business	24.4%	15%
Medium-sized business	33.3%	32%
Small business	9.7%	22%
Larger microenterprises	5.4%	53%
Medium microenterprises	3.1%	55%
Smaller microenterprises	9.0%	81%
Other	15.0%	30%

Source: NBU, Centre for Economic Strategy.
Note: Larger microenterprises: annual revenue from 500 thousand to 2 million USD; Medium microenterprises: annual revenue from 50 thousand to 500 thousand USD; Smaller microenterprises: annual revenue below 50 thousand USD. Other – non-residents and individual entrepreneurs.

Table 6 shows the distribution of outstanding loans by enterprise size within each industry, where each row sums to 100%. Medium-sized businesses dominate borrowing in most sectors, particularly in health care, education, and transport. However, some industries stand out – large enterprises account for the majority of loans in mining and quarrying (73.5%) and science and technology (61.5 %). In contrast, construction – one of the highest-risk sectors with elevated NPLs – is heavily reliant on microenterprises, which hold over 48% of the sector's loans. Given their high default rates, this concentration significantly increases credit risk in the construction industry.

Table 6. Distribution of outstanding loans by the size of enterprise within each industry, March 2025

Industry	Large business	Medium business	Small business	Larger microen-terprises	Medium microen-terprises	Smaller microen-terprises	Other	Total
Agriculture	12.29%	37.92%	20.69%	9.98%	6.01%	3.13%	9.97%	100.00%
Mining and quarrying	73.46%	9.60%	0.98%	0.36%	0.03%	0.01%	15.56%	100.00%
Processing industry	30.74%	44.64%	8.40%	1.79%	0.78%	1.00%	12.66%	100.00%
Electricity, gas, steam, conditioned air supply	39.38%	25.94%	5.94%	5.65%	2.08%	1.89%	19.13%	100.00%
Water, sewerage, waste management	0.22%	14.47%	5.49%	1.23%	1.02%	1.33%	76.23%	100.00%
Construction	15.19%	15.02%	15.58%	3.10%	2.98%	37.61%	10.52%	100.00%
Trade	27.29%	31.62%	8.12%	4.49%	4.17%	16.30%	8.01%	100.00%
Transport, logistics, postal and courier services	16.77%	45.79%	12.51%	3.25%	1.90%	9.75%	10.04%	100.00%
IT	23.64%	19.93%	14.03%	0.70%	6.74%	8.78%	26.17%	100.00%
Finance and insurance	5.18%	48.10%	9.92%	5.50%	2.59%	2.04%	26.68%	100.00%
Real estate	10.49%	32.94%	11.96%	13.38%	2.58%	9.55%	19.10%	100.00%
Science and technology	61.47%	18.70%	3.49%	0.69%	1.36%	4.67%	9.62%	100.00%
Administrative and support services	1.32%	25.54%	9.13%	49.27%	5.09%	3.27%	6.37%	100.00%
Health care and social services	14.42%	45.02%	12.31%	1.52%	3.91%	4.91%	17.90%	100.00%
Temporary accommodation and catering	0.06%	67.48%	1.59%	0.41%	2.39%	8.81%	19.27%	100.00%
Public administration and defence	0.00%	99.52%	0.00%	0.00%	0.00%	0.29%	0.19%	100.00%
Education	0.00%	66.58%	6.69%	0.45%	1.68%	12.11%	12.50%	100.00%
Art, sports, entertainment	0.00%	12.88%	13.34%	0.00%	2.14%	38.90%	32.74%	100.00%
Other services	0.00%	2.64%	3.85%	1.07%	6.99%	45.52%	39.93%	100.00%
Household activities	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	100.00%
Individual entrepreneurs and non-residents	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00 %	100.00%
Total	24.36%	33.35%	9.74%	5.44%	3.14%	8.98%	14.99%	100.00%

Source: NBU, Centre for Economic Strategy.
Note: rows sum up to 100 percent.

shows a strong concentration of loans by industry, especially among microenterprises. Nearly 70% of loans to smaller microenterprises are concentrated in Trade alone. In contrast, large businesses have a more diversified loan distribution but still focus heavily on Trade and Processing. This pattern reflects both the structure of the economy and sector-specific risks, including high NPLs. Such concentration poses a diversification risk for banks.

To mitigate this, expanding alternative finance channels – like credit unions, leasing, and factoring – could support underserved sectors and improve system resilience. Meanwhile, ongoing efforts to reduce NPLs must be complemented by businesses improving transparency, planning, and financial discipline to reduce lending risks.

Table 7 shows a strong concentration of loans by industry, especially among microenterprises. Nearly 70% of loans to smaller microenterprises are concentrated in Trade alone. In contrast, large businesses have a more diversified loan distribution but still

focus heavily on Trade and Processing. This pattern reflects both the structure of the economy and sector-specific risks, including high NPLs. Such concentration poses a diversification risk for banks.

To mitigate this, expanding alternative finance channels – like credit unions, leasing, and factoring – could support underserved sectors and improve system resilience. Meanwhile, ongoing efforts to reduce NPLs must be complemented by businesses improving transparency, planning, and financial discipline to reduce lending risks.

Table 7. Distribution of outstanding loans by industry within each size group, March 2025

Industry	Large business	Medium business	Small business	Larger microen-terprises	Medium microen-terprises	Smaller microen-terprises	Other	Total
Agriculture	6.6%	14.8%	27.6%	23.8%	24.9%	4.5%	8.6%	13.0%
Mining and quarrying	6.8%	0.6%	0.2%	0.1%	0.0%	0.0%	2.3%	2.2%
Processing industry	22.8%	24.2%	15.6%	5.9%	4.5%	2.0%	15.3%	18.1%
Electricity, gas, steam, conditioned air supply	11.3%	5.4%	4.3%	7.3%	4.6%	1.5%	8.9%	7.0%
Water, sewerage, waste management	0.0%	0.1%	0.1%	0.1%	0.1%	0.0%	1.2%	0.2%
Construction	1.5%	1.1%	3.7%	1.3%	2.2%	9.8%	1.6%	2.3%
Trade	42.6%	36.1%	31.7%	31.4%	50.5%	69.0%	20.3%	38.0%
Transport, logistics, postal and courier services	2.3%	4.6%	4.3%	2.0%	2.0%	3.6%	2.2%	3.3%
IT	0.3%	0.2%	0.4%	0.0%	0.6%	0.3%	0.5%	0.3%
Finance and insurance	0.5%	3.5%	2.5%	2.4%	2.0%	0.5%	4.3%	2.4%
Real estate	2.6%	5.9%	7.3%	14.6%	4.9%	6.3%	7.6%	5.9%
Science and technology	2.5%	0.6%	0.4%	0.1%	0.4%	0.5%	0.6%	1.0%
Administrative and support services	0.1%	0.9%	1.1%	10.6%	1.9%	0.4%	0.5%	1.2%
Health care and social services	0.3%	0.8%	0.7%	0.2%	0.7%	0.3%	0.7%	0.6%
Temporary accommodation and catering	0.0%	1.2%	0.1%	0.0%	0.5%	0.6%	0.8%	0.6%
Public administration and defence	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Education	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
Art, sports, entertainment	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%
Other services	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	0.2%	0.1%
Household activities	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Individual entrepreneurs and non-residents	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	24.3%	3.6%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: NBU, Centre for Economic Strategy.
Note: rows sum up to 100 percent.

3.2.2. The reasons for applications rejections and ways to improve the situation

Loan applications in Ukraine face significant hurdles due to a mismatch between banks' requirements and businesses' ability to meet them – especially regarding collateral, financial indicators, and documentation. Standardised lending guidelines could help reduce information asymmetry and clarify approval conditions. Expanding access to alternative finance providers like leasing or factoring companies could also better meet diverse business needs.

Survey data shows that 40% of businesses applied for loans: 14% had all applications approved, 10% partially approved, and 16% fully rejected. Most applications came from agriculture, healthcare, trade, and manufacturing, while IT had the lowest demand. Among applicants, 48% were approved, while others were rejected due to insufficient collateral, poor financials, risky projects, or operating in restricted sectors.[14]

Common rejection reasons include excessive debt, weak financials, unrealistic business plans, tax evasion, or poor-quality collateral.[15] Banks' lending criteria vary by program but typically require:

- Compliance with sector, size, and region-specific criteria;
- Transparent ownership and operations;
- Exclusion from restricted sectors (e.g., weapons, gambling);
- Strong credit history and compliance with financial monitoring rules.

Although banks are willing to lend, nearly half of applicants fail to meet basic bankability standards, highlighting the need for improved financial practices and clearer credit frameworks.[16]

3.3. 5-7-9 Affordable Lending Program

A significant government support for SMEs is the **Affordable Loans 5-7-9%** program. By the end of 2024, the share of "5-7-9" net loans are 35% of all the hryvnia credit portfolio, down from the 40% at the end of 2023.[17] The program is aimed at reducing the cost of loans for small (including micro-) and medium-sized enterprises. The program provides for the state to allocate funds from the Entrepreneurship Development Fund for:

- partial compensation of interest rates on SME loans;
- providing guarantees to banks that issue loans to ensure fulfilment of their obligations under these loans.

Under this program, banks provide loans to SMEs using their own credit resources for investment purposes (construction, acquisition or modernization of fixed assets, purchase of real estate, vehicles, intellectual property, etc.) and working capital financing.[18]

[14] Survey on the state of business in Ukraine. Link.

[15] Access to financing for small and medium enterprises in Ukraine. 2024. Centre for Economic Strategy. Link.

[16] Access to financing for small and medium enterprises in Ukraine. 2024. Centre for Economic Strategy. Link.

[17] Financial Stability Report, Q4 2024. National Bank of Ukraine. Link.

[18] Affordable Loans 5-7-9% Programme. Link.

According to the Entrepreneurship Development Fund, as of the end-2024, over 100,000 loans totalling UAH 360 bn were issued. Of these, the largest share was issued in agriculture – 45%; trade - 24%, industry - 21%, and services - 7%.[19]

At the same time, there are significant delays in the payment of compensation for preferential lending rates to banks. At the beginning of 2024, the amount of debt was UAH 7 bn.[20] By the end of 2024, it reached UAH 10 bn.[21] Difficulties in paying compensation to banks and uncertainty reduce the willingness of banks to issue loans under the 5-7-9 program.

While the program makes the credit more accessible, it creates large fiscal costs. The program is useful for addressing the needs of the vulnerable businesses during crises. Therefore, as emphasized by the National Bank of Ukraine, this government program should be limited even more focusing on the businesses with the most critical needs.[22]

3.4. Conclusions and policy recommendations

Overall, given that it is the unpredictable environment, which limits the investment and growth, the government and the NBU's policies should be stable, predictable and tackle the uncertainty in these most uncertain times. While the NBU seems to be well-equipped to do that, the governmental policies, especially tax policy and military drafting policy predictability, have substantial room for improvement. Introduction of subsidized de-risking instruments can also help to ease the uncertainty causing investments freeze. Banking system can absorb additional demand for loans from high-quality borrowers - it is important for this demand to emerge.

To support non-bankable but credit-hungry businesses, several steps can help. First, improving SME skills through financial literacy, business planning, and loan application training – supported by the government and international partners – can make firms more bankable. Second, reducing the shadow economy and misuse of simplified tax regimes can encourage small businesses to formalize, boosting their access to official credit. Greater transparency would also reduce information gaps in lending, improving approval rates and financial inclusion. Third, the regulator's policies should be supportive of development of alternative financial institutions such as credit unions, which can provide better flexibility and stability to the financial system overall and improve the access to funding for smaller local businesses.

Finally, companies in war-affected areas are less likely to apply for loans and face higher rejection rates. [23] Targeted support through preferential lending – such as lower rates, extended terms, or guarantees – can aid recovery and boost regional stability. The "5-7-9 Affordable Loans" program should prioritize vulnerable businesses in frontline regions, while gradually transitioning others to market-based lending.

[19] Information on the results of the state program 'Affordable Loans 5-7-9'. Link.

[20] Forbes. Link.

[21] Financial Stability Report. December 2024. NBU. Link.

[22] Financial Stability Report. December 2024. NBU. Link.

[23] Survey on the state of business in Ukraine. Link.

4. To Lend or Not to Lend: supply side

This chapter investigates the determinants of corporate lending in Ukraine between 2014 and 2025, with particular attention to the transformative impact of the 2022 full-scale Russian invasion. The primary objective is to examine how bank-level financial indicators – liquidity, capital adequacy, and profitability – have shaped lending behaviour in an evolving macroeconomic and regulatory environment. Recognising that Ukraine's banking system underwent major structural reforms, institutional shifts, and crisis responses over this period, we assess whether and how these changes altered the sensitivity of bank lending to internal financial conditions.

To capture heterogeneity in commercial banks' response to the wartime challenges, the analysis distinguishes between corporate lending dynamics of state-owned, privately owned, and foreign banks[24]. We employ a Bayesian regression framework that enables flexible estimation and rigorous uncertainty quantification, while also allowing for time-varying effects through interaction terms with policy periods. This modelling strategy is particularly well-suited to the Ukrainian context, where structural breaks, uneven data quality, and evolving supervisory standards demand a robust and adaptable inference approach.

4.1. Corporate lending by commercial banks: the role of ownership structure

The war-related macroeconomic shock of 2022 marked a major turning point in Ukraine's banking landscape, leading to an overall decline and stagnation in corporate lending. On the supply side, banks exhibited divergent lending behaviours, largely shaped by their ownership structure. Foreign, state-owned, and private domestic banks responded differently to heightened uncertainty and regulatory constraints, revealing notable contrasts in risk tolerance and strategic priorities.

The dynamics of corporate lending propensity across these groups evolved significantly over time. Between 2014 and 2017, Ukrainian private banks maintained the highest ratio of corporate loans to total assets, while state-owned banks lagged behind. By 2018-2019, foreign banks had taken the lead, reflecting renewed confidence and stability in the sector. This trend, however, sharply reversed in early 2022. Foreign banks scaled back corporate lending, whereas state-owned banks expanded their lending to the real sector. Private banks, meanwhile, maintained a relatively steady ratio of corporate lending to assets, though a gradual decline has been observed since the third quarter of 2022.

The remainder of this section presents a disaggregated analysis of corporate lending behaviour by ownership type (foreign banks, domestic private banks, and state-owned banks) highlighting how each group adjusted its lending strategy in response to evolving macro-financial conditions, regulatory interventions, and wartime uncertainty.

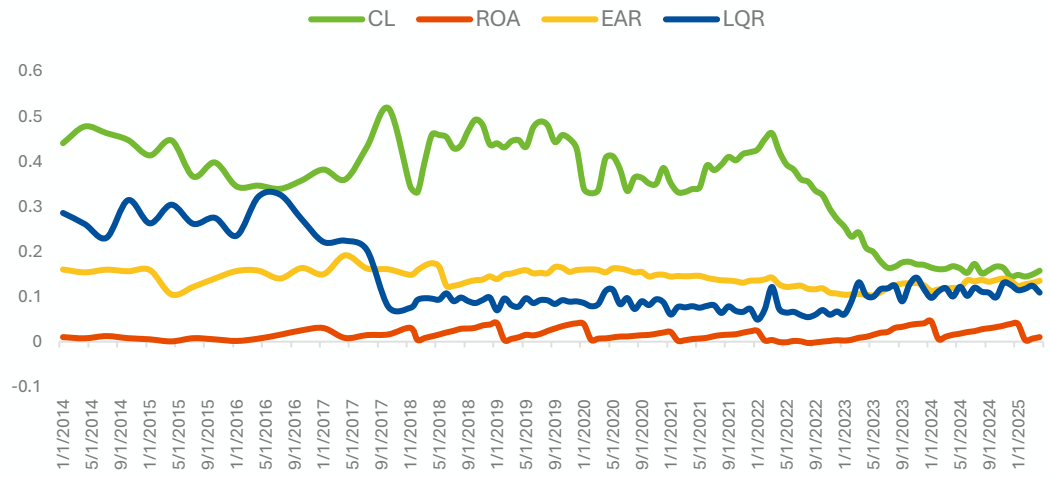
[24] We follow the National Bank of Ukraine (NBU) classification of banks and categorise institutions into three main groups: foreign banks (those belonging to international banking groups), state-owned banks, and Ukrainian private banks (banks without state or foreign ownership). Banks that have been liquidated or declared insolvent are deliberately excluded from the analysis due to their atypical and unrepresentative behaviour. However, banks that were nationalised are included in the sample as state-owned banks, starting from the quarter in which nationalisation occurred.

4.1.1. Foreign banks

Since 2014, **foreign banks**[25] demonstrated relatively stable corporate loans-to-assets ratio, which reached around 30% at the end of 2021. In the first quarter of 2022, corporate lending to total assets in foreign banks share dropped substantially (see Figure 13): their assets remained stable, and the volume of corporate lending was significantly reduced. The aforementioned decline in the volume of corporate loans issued by foreign banks against the background of stable assets size was primarily attributed to the restrictions on capital mobility imposed by the NBU in March 2022 (and, perhaps, to the higher degree of risk aversion of foreign banks). The indicator stabilised by the third quarter of 2023 but has not fully recovered.

The liquidity indicator has remained relatively stable post-2022, suggesting a preference for maintaining high levels of liquid reserves amid market uncertainty. Financial soundness has also remained steady, implying cautious balance sheet management.

Figure 13. The median of the corporate lending propensity, profitability, financial soundness, and liquidity indicators among foreign banks in 2014-2025



Source: CES calculations and visualisation based on NBU data.

Note: CL (Corporate Lending) is measured as corporate lending divided by the total assets; LQR (Liquidity Ratio) is measured as the ratio of cash and cash equivalents to customer accounts; ROA (Profitability or Return on Assets) is measured as the ratio of profit/(loss) before tax to total assets; EAR (Equity to Assets Ratio) is a proxy for financial soundness and is calculated as total equity divided by total assets.

5.1.1. Ukrainian state-owned banks

Ukrainian state-owned banks[26] have increased the volume of loans to enterprises since the first quarter of 2022 (see Figure 14); however, their total assets have increased by a greater proportion. In other words, although state-owned banks started to lend more to businesses during the full-scale invasion, they still have the capacity to increase this indicator further.

Considering the relative size of Ukrainian state-owned banks, their propensity for corporate lending substantially affects the entire market. “PrivatBank” (the largest Ukrainian

[25] Based on the NBU classification – banks belonging to the international banking groups.

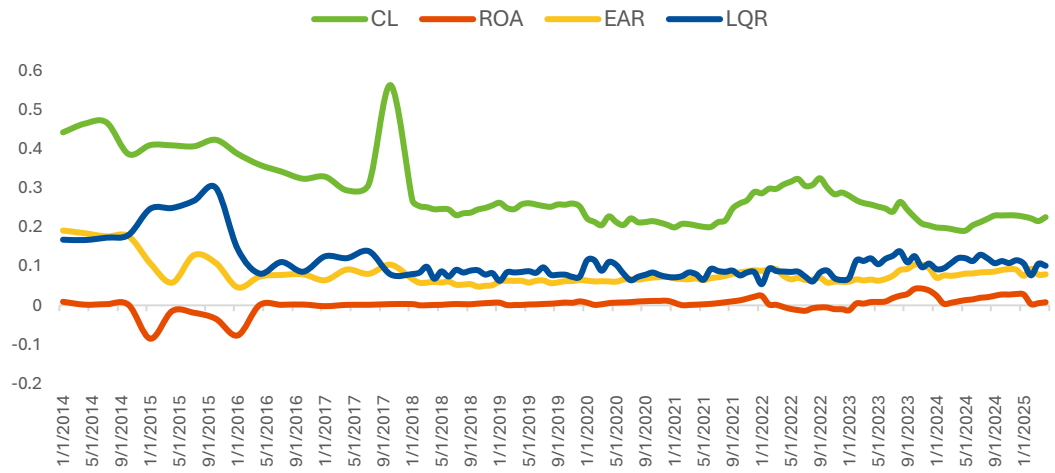
[26] According to the NBU classification.

commercial bank) exhibits a lower corporate loan to total assets ratio compared to the remaining banks.

The liquidity ratio among state-owned banks has remained relatively stable and moderately elevated, indicating sound short-term solvency. Profitability has improved in recent years, reflecting stronger financial performance.

In summary, state-owned banks have responded to the wartime challenges with a cautious expansion in corporate lending, but their growing asset base and systemic role suggest untapped potential for broader credit support to the real sector.

Figure 15. The median of the corporate lending propensity, profitability, financial soundness, and liquidity indicators among Ukrainian state-owned banks in 2014-2025



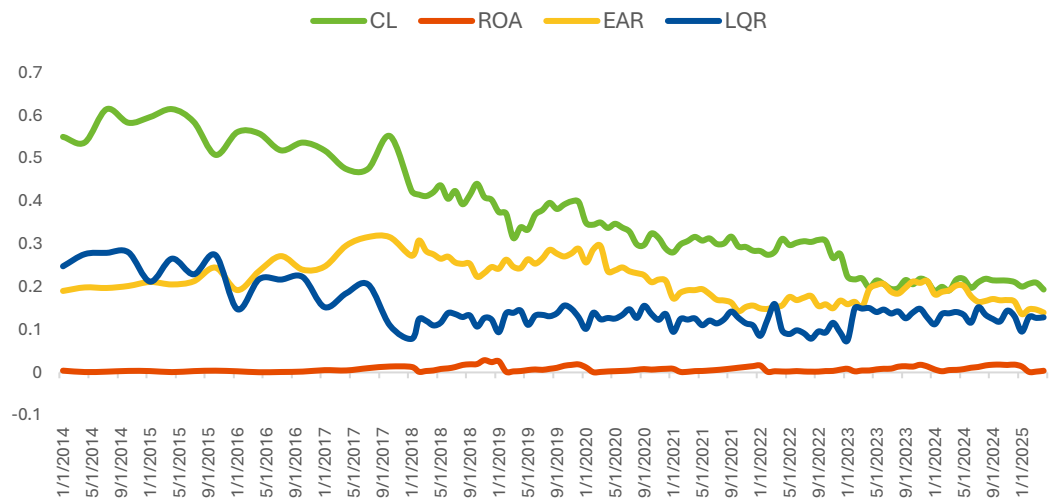
Source: CES calculations and visualisation based on NBU data.
Note: CL (Corporate Lending) is measured as corporate lending divided by the total assets; LQR (Liquidity Ratio) is measured as the ratio of cash and cash equivalents to customer accounts; ROA (Profitability or Return on Assets) is measured as the ratio of profit/(loss) before tax to total assets; EAR (Equity to Assets Ratio) is a proxy for financial soundness and is calculated as total equity divided by total assets.

5.1.2. Ukrainian private banks

Among **Ukrainian private banks**[27], the propensity to lend to enterprises remained stable just after the full-scale invasion but has been declining since the third quarter of 2022 (see Figure 16). The indicator stabilised by early 2023 but has not fully recovered to the pre-war levels yet, in spite of stable financial performance.

[27] According to the NBU classification – banks with no state or foreign control.

Figure 16. The median of the corporate lending propensity, profitability, financial soundness, and liquidity indicators among private banks in 2014-2025



Source: CES calculations and visualisation based on NBU data.
Note: CL (Corporate Lending) is measured as corporate lending divided by the total assets; LQR (Liquidity Ratio) is measured as the ratio of cash and cash equivalents to customer accounts; ROA (Profitability or Return on Assets) is measured as the ratio of profit/(loss) before tax to total assets; EAR (Equity to Assets Ratio) is a proxy for financial soundness and is calculated as total equity divided by total assets.

4.2. Corporate lending: the role of profitability, liquidity, and financial soundness (evidence from econometric analysis)

During the preliminary research, we noticed a substantial difference in the response of commercial banks to the beginning of the full-scale invasion at the beginning of 2022. We tested several approaches to classifying banks, including classification by the ownership structure, size, profitability level etc. Among various classification schemes, ownership structure offered the most explanatory power in accounting for differences in banks' corporate lending behaviour.

We use regression models to estimate the effect of critical liquidity, financial soundness, and profitability of banks on their propensity on corporate lending. The underlying idea of the econometric regression was to explore how three main types of commercial banks in Ukraine shaped their corporate lending policies while responding to changes key financial indicators.

Besides, we account for the role of the shift in macroeconomic policy and banking prudential regulations. Each regression specification incorporates interaction effects between explanatory variables and major phases of the NBU's policy implementation. This approach makes it possible to examine how the effect of key variables (liquidity, profitability, and the level of capitalisation) on corporate lending has changed over time.

To ensure robust inference in the face of structural shifts, small sample sizes, and other biases related to data, we employ a Bayesian regression framework. This approach enables more flexible estimation of parameter distributions and provides richer insights into causal links compared to conventional methods.

4.2.1. Data and variables

The dataset is constructed using balance sheet and income statement data from all commercial banks operating in Ukraine between 2014 and 2025. Over this period, the commercial banking reporting standards underwent multiple revisions, requiring substantial data harmonization to ensure consistency across time. Initially reported on a quarterly basis, bank data transitioned to monthly frequency beginning in 2018; therefore, monthly data were averaged to quarterly intervals during preprocessing.

Due to the unavailability of standardised prudential indicators for the 2014–2017 period, the analysis focuses on core financial metrics capturing liquidity, capital sufficiency, and profitability. Liquidity (LQR) is proxied by the ratio of cash and cash equivalents to customer accounts; capital sufficiency is measured using the equity-to-assets ratio (EAR); and profitability is assessed via the return on assets (ROA), defined as pre-tax profit over total assets. Detailed definitions and constructions of the variables are provided in Table 26 (Appendix 2).

To reflect the transformation of the banking sector and its policy context, the study period is segmented into three distinct phases that correspond to key economic disruptions and major reforms initiated by the National Bank of Ukraine (NBU). These phases represent shifts in supervisory intensity, systemic stability, and credit conditions, all of which are hypothesised to influence the role of internal financial conditions in shaping lending behaviour:

- 2014–2018 (Early Period): Prudential Reforms and Market Cleansing.
- 2019–2021 (Mid Period): Stabilisation and Institutional Strengthening.
- 2022–2025 (Late Period): Wartime Banking and Emergency Measures.

The descriptive statistics (see Table 27 in Appendix 2) hint that bank's financial performance indicators played a key role in shaping banks' corporate lending strategies, with differences becoming more pronounced in response to evolving regulatory and macroeconomic conditions.

4.2.2. Methodology description

To analyse how bank-level financial indicators have shaped the corporate lending behaviour of different types of Ukrainian banks, we apply a **Bayesian linear models** estimated separately for three groups of banks: state-owned (USB), private (UPB), and foreign (FB).

To capture the evolving regulatory and macro-financial environment in Ukraine, we divide the study period into **three analytically distinct phases** that reflect major policy shifts initiated by the NBU. These phases align with waves of prudential reform, market consolidation, and crisis response, which are expected to have influenced bank behaviour, particularly with regard to corporate lending.

- **2014–2018 (Early Period): Prudential Reforms and Market Cleansing.** This phase marked a major overhaul of Ukraine's banking sector. In response to the 2014 crisis, the NBU enforced stricter capital and risk standards, leading to massive liquidation of commercial banks.

- **2019–2021 (Mid Period): Stabilisation and Institutional Strengthening.** Reforms continued with Basel-aligned regulation, inflation targeting, and cautious credit recovery. Banking activity stabilised amid improved transparency and macroeconomic normalisation.

- **2022–2025 (Late Period): Wartime Banking and Emergency Measures.** Following the 2022 invasion, the NBU introduced emergency controls to protect stability. Lending became more selective, especially to corporates, as banks responded to heightened uncertainty and capital restrictions.

The periodisation is integrated into the regression models through interactions between key bank-level financial indicators and the three phases of policy. This approach allows for assessing how banks' responses to changes in liquidity, capital adequacy, and profitability have evolved in the context of shifting prudential standards and economic shocks..

The core econometric model is defined as follows:

$$DCL_{it} = \beta_0 + \beta_1 \cdot LQR_{it} + \beta_2 \cdot EAR_{it} + \beta_3 \cdot ROA_{it}$$

$$+ \gamma_1 \cdot 1(period\_group\_t = mid) + \gamma_2 \cdot 1(period\_group\_t = late)$$

$$+ \delta_1 \cdot LQR_{it} \cdot 1(period\_group\_t = mid) + \delta_2 \cdot LQR_{it} \cdot 1(period\_group\_t = late)$$

$$+ \theta_1 \cdot EAR_{it} \cdot 1(period\_group\_t = mid) + \theta_2 \cdot EAR_{it} \cdot 1(period\_group\_t = late)$$

$$+ \varphi_1 \cdot ROA_{it} \cdot 1(period\_group\_t = mid) + \varphi_2 \cdot ROA_{it} \cdot 1(period\_group\_t = late)$$

$$+ \varepsilon_{it}$$

Where:

- DCL_{it} – Change in the ratio of corporate loans to total assets of bank i between periods $t-1$ and t;
- LQR_{it} – Liquidity ratio of bank i in period t;
- EAR_{it} – Equity-to-assets ratio of bank i in period t;
- ROA_{it} – Return on assets of bank i in period t;
- $1(period\_group\_t = j)$ – Dummy variable equal to 1 if time t falls into period group j (where $j \in \{mid, late\}$; "$early$" is the reference category);
- β_0 – Intercept (baseline level in the "early" period);
- $\beta_1, \beta_2, \beta_3$ – Effects of LQR, EAR, and ROA during the "early" period;
- γ_1, γ_2 – Shifts in intercept for the "mid" and "late" periods;
- δ_1, δ_2– Differential effect of liquidity during the "mid" and "late" periods;
- θ_1, θ_2 – Differential effect of equity during the "mid" and "late" periods;
- φ_1, φ_2– Differential effect of profitability during the "mid" and "late" periods;
- ε_{it}– Gaussian error term.

Each regression coefficient (e.g., β_k) is assigned a prior distribution, reflecting our initial beliefs before observing the data. For regularisation, we use a Gaussian prior centered at zero: $\beta_k \sim N(0, \tau^2)$, where $\tau = 1$. This choice reflects weakly informative priors: they are strong enough to prevent extreme or implausible parameter values due to noise, but loose enough to let the data speak when the signal is clear. Therefore, we manage to balance two key goals of Bayesian modelling: stability in estimation and flexibility in inference.

Each Bayesian regression model is estimated using four parallel MCMC (Markov Chain Monte Carlo) chains with 4,000 iterations each. This setup ensures stable and reliable posterior estimates by verifying convergence across chains. When chains produce similar

results, it indicates that the model's posterior has been thoroughly explored. Half of the iterations (2,000) are used for "warm-up", where the algorithm adapts its settings. These are discarded to prevent bias. The remaining samples are used to estimate posterior means and credible intervals, with enough iterations retained to ensure precision even with multiple predictors and interactions.

4.2.3. Results and discussion

This section summarises how key financial indicators – liquidity (LQR), equity-to-assets ratio (EAR), and return on assets (ROA) – influenced changes in the corporate lending-to-assets ratio (DCL) across different bank ownership structures in Ukraine over three distinct periods. The credibility and reliability of the model estimates are well-supported: all parameters demonstrate excellent convergence diagnostics ($\hat{R} = 1.0$), indicating that the MCMC chains have successfully converged to the target posterior distributions. Moreover, the effective sample sizes ($n\_eff > 1{,}000$) are sufficiently large across all parameters, ensuring that inference is based on stable and representative posterior draws. The residual standard deviations ($\sigma = 0.1$) and negligible posterior predictive errors ($mean\_PPD \approx 0.0$) further confirm the good in-sample fit of each model. These diagnostics collectively validate the internal consistency of the estimation process and provide a strong basis for interpreting the substantive results that follow.

Table 8. Posterior estimates from Bayesian Linear Models (dependent variable: DCL)

Sample: FB		
Coefficient	**Posterior mean**	**90% credible interval**
Intercept	0.0	[0.0; 0.0]
Middle period	0.0	[0.0; 0.0]
Late period	0.0	[0.0; 0.0]
LQR: early period	0.0	[0.0; 0.0]
Δ LQR effect (middle vs. early)	0.0	[–0.2; 0.1]
Δ LQR effect (late vs. early)	0.0	[0.0; 0.0]
EAR: early period	**–0.1**	**[–0.1; 0.0]**
Δ EAR effect (middle vs. early)	0.0	[–0.1; 0.1]
Δ EAR effect (late vs. early)	**0.0**	**[0.0; 0.1]**
ROA: early period	**–0.1**	**[–0.3; 0.0]**
Δ ROA effect (middle vs. early)	–0.1	[–0.5; 0.3]
Δ ROA effect (late vs. early)	**0.1**	**[0.0; 0.3]**
Sigma = 0.1	Residual std dev: small → good fit	
mean_PPD = 0.0	Posterior predictive error is negligible	
Rhat = 1.0	All parameters converged (no issues)	
n_eff > 1000	Effective samples → reliable estimates	
Observations	783	
Sample: USB		
Coefficient	**Posterior mean**	**90% credible interval**
Intercept	0.0	[–0.1; 0.0]
Middle period	0.0	[–0.1; 0.1]
Late period	**0.0**	**[0.0; 0.1]**
LQR: early period	0.2	[–0.4; 0.7]
Δ LQR effect (middle vs. early)	–0.1	[–1.1; 0.9]
Δ LQR effect (late vs. early)	0.1	[–0.5; 0.6]
EAR: early period	–0.1	[–0.6; 0.3]
Δ EAR effect (middle vs. early)	0.0	[–0.9; 1.0]

Δ EAR effect (late vs. early)	**–0.8**	**[–1.3; –0.2]**
ROA: early period	0.2	[–0.7; 1.0]
Δ ROA effect (middle vs. early)	–0.1	[–1.1; 1.0]
Δ ROA effect (late vs. early)	0.0	[–0.8; 0.8]
Sigma = 0.1	Residual std dev: small → good fit	
mean_PPD = 0.0	Posterior predictive error is negligible	
Rhat = 1.0	All parameters converged (no issues)	
n_eff > 1000	Effective samples → reliable estimates	
Observations	175	
Sample: UPB		
Coefficient	**Posterior mean**	**90% credible interval**
Intercept	0.0	[0.0; 0.0]
Middle period	0.0	[0.0; 0.0]
Late period	0.0	[0.0; 0.0]
LQR: early period	0.0	[0.0; 0.0]
Δ LQR effect (middle vs. early)	**0.0**	**[–0.1; 0.0]**
Δ LQR effect (late vs. early)	0.0	[0.0; 0.0]
EAR: early period	**0.0**	**[–0.1; 0.0]**
Δ EAR effect (middle vs. early)	**0.0**	**[0.0; 0.1]**
Δ EAR effect (late vs. early)	**0.0**	**[–0.1; 0.0]**
ROA: early period	**0.3**	**[0.1; 0.6]**
Δ ROA effect (middle vs. early)	–0.3	[–0.7; 0.2]
Δ ROA effect (late vs. early)	**–0.3**	**[–0.5; 0.0]**
Sigma = 0.1	Residual std dev: small → good fit	
mean_PPD = 0.0	Posterior predictive error is negligible	
Rhat = 1.0	All parameters converged (no issues)	
n_eff > 1000	Effective samples → reliable estimates	
Observations	1413	

In the case of **foreign banks (FBs)** only few coefficients exhibit credible associations with lending behavior. Most notably, capital adequacy (EAR) has a consistent negative effect in the early period (–0.1, [–0.1; 0.0]), indicating that better-capitalized foreign banks were more reluctant to extend credit during the post-crisis adjustment phase. This effect moderates by the late period, as the differential effect becomes credibly positive (0.0, [0.0; 0.1]), suggesting a softening of the initial capital constraint. A similar dynamic is observed with profitability (ROA): initially, higher ROA is negatively associated with lending (–0.1, [–0.3; 0.0]), potentially reflecting a cautious stance among more profitable institutions. However, this effect also reverses over time, with a credible positive shift in the late period (0.1, [0.0; 0.3]). These patterns suggest that while foreign banks' corporate lending policy typically remained insulated from domestic financial conditions, capital and profitability did exert modest influence, particularly as crisis conditions evolved.

For **state-owned banks (USBs)**, capital adequacy (EAR) emerges as the only consistent driver of lending. While there is no credible impact of EAR in the early or middle periods, the late-period differential effect becomes strongly negative (–0.8, [–1.3; –0.2]). This suggests that well-capitalised USBs became more conservative during the war. At the same time, the late-period intercept is credibly positive (0.0, [0.0; 0.1]), implying a generalised shift toward increased lending (possibly in response to the govergment policy priorities). The contrast between a systemic uplift in lending levels and growing capital constraints highlights a tension between policy-driven expansion and balance-sheet conservatism.

Other indicators, including liquidity and profitability, do not exhibit statistically credible effects on corporate lending volumes.

Among **Ukrainian private banks (UPBs)**, the clearest and strongest result relates to profitability (ROA). In the early period, ROA is positively and credibly associated with lending (0.3, [0.1; 0.6]), indicating that better-performing banks were more likely to extend credit during the prudential reforms stage. However, this effect reverses by the late period, with a credibly negative shift (–0.3, [–0.5; 0.0]). These opposing dynamics suggest that profitability initially encouraged lending, but later became aligned with heightened risk sensitivity or a shift toward safer portfolio allocations. In addition, the differential effect of EAR in the middle period is statistically credible (0.0, [0.0; 0.1]), implying a modest easing бяof capital constraints during stabilisation stage.

4.3. Conclusions and policy recommendations

Our results confirm that liquidity and financial soundness exert limited and selective influence on corporate lending by foreign and, to a lesser extent, Ukrainian private banks. For foreign banks, most coefficients remain insignificant, indicating lending being largely detached from internal factors. However, we find evidence of a negative capital adequacy effect (EAR) and a negative profitability effect (ROA) in the early period, both of which reverse over time. Overall, foreign banks' lending is predominantly shaped by external constraints (such as home-country regulation, group-level policies, and global risk sentiment). Yet, foreign banks are not entirely immune to domestic financial conditions. Nevertheless, domestic regulatory changes alone are unlikely to meaningfully shift their corporate lending policy.

Private banks display clearer (but still modest) responsiveness to domestic factors. Liquidity and capital do not exhibit statistically credible effects. Instead, profitability (ROA) emerges as the main driver, with a positive and significant influence on lending in the early period, followed by a reversal in the late period, where higher returns coincide with declining credit. This shift may reflect increased wartime risk aversion or a strategic pivot toward safer asset classes.

In contrast, state-owned banks (USBs) exhibit more dynamic responses, especially to capital adequacy. Liquidity plays no credible role in any period, and while capital was neutral at the outset, it becomes a clear constraint in the late period, with consistently negative effects on lending. This suggests growing conservatism in capital deployment under systemic stress. Profitability remains marginal and statistically inconsistent throughout. Despite holding a growing share of the banking system assets, USBs' lending response has remained modest, revealing an untapped capacity to support the real economy.

Given that USBs account for more than half of total banking assets and approximately 50% of corporate lending volumes, any policy that excludes them will likely be ineffective in the short term. These banks continue to prioritise solvency and capital preservation, requiring a consistent government policy to scale up enterprise lending. Strategic instruments – such as directive lending linked to reconstruction, export promotion, or public investment – may be particularly effective. As majority shareholder, the state has the leverage to align USBs' commercial activities with national defence and recovery goals. An urgent area for reform is portfolio composition: USBs still heavily favour low-risk government securities over

corporate lending. Without creating proper incentives (for instance, via risk-adjusted returns or lending quotas) USBs may continue to underinvest in essential sectors.

5. Summary of policy recommendations

To revive corporate lending in wartime conditions and support economic recovery, a mix of targeted financial, institutional, and regulatory measures is needed. The following recommendations address the key constraints identified in the analysis, including war-related risks, temporary crowding-out effects, and limited access to credit for priority sectors:

- Reduce war-related risks and strengthen target lending support: war remains the most significant drag on credit, reducing loan volumes by –0.12% to –0.21% monthly.
    - Policy measures such as government-back loan insurance, war risk insurance credit guarantees, and targeted support for borrowers can more effectively revive lending than rate cuts alone;
    - Special focus should be placed on de-risking tools to SMEs and innovative firms, targeting the "5-7-9" programme at frontline regions, and offering preferential loans in war-affected areas to support recovery.
- Improve Enterprise Bankability: provide SME training in finance and credit applications with donor support, address tax evasion to incentivise formalisation and credit access, and promote credit unions and non-bank lenders for small businesses.
- Mobilise State and Foreign Banks: launch targeted loan schemes for state-owned banks, shift USBs from government bonds to productive lending and extend guarantee programs to foreign banks to restart corporate lending.
- Monitor financial market conditions: The crowding-out effect from OVDP rates was temporary, seen only in early 2022–2023 (–0.10% monthly) and became insignificant thereafter. CD rates had a modest and short-lived impact (–0.04% to –0.06%). While these are not currently major constraints, it is important to keep monitoring them to ensure balanced credit market development.

These efforts align with IMF recommendations to improve credit access for SMEs and diversify financial instruments to support recovery.

6. Appendix 1: The impact of the cost of money on loan volumes

To build the model, we used the **logarithm of the volume of newly distributed loans to stabilise variance**, **improve model interpretability**, and capture relative rather than absolute changes in lending dynamics. The **weighted average lending rate is presented with a lag of 2 months** to account for the delayed effect of interest rate changes on borrowing decisions since businesses typically require time to adjust their financing strategies in response to monetary policy shifts. This lag was defined by the researchers in the paper "The Ukrainian Interest Rate Pass-Through in the Post-1999 Era and the Effectiveness of the Countercyclical Monetary Policy."[28] This study investigated the nature of the Ukrainian interest rate pass-through from January 2000 to November 2018-the post-1999 era. As part of the study, Autoregressive Distributed Lag model was developed to investigate the nature of interest rate pass-through in the Ukrainian banking sector. Estimation results suggested that, based on the Hannah-Quinn information criterion, the ARDL (2, **2**, 2) model best fitted the data. Estimation results of the ARDL (2, 2, 2) model revealed that the Ukrainian short-run rates of pass-through (0.72) is relatively high, meaning that it takes on average 2 month to impact the banking lending with the interest rate. **The war shock is included as a dummy variable with an instant effect**, as the full-scale invasion immediately altered risk perceptions, economic stability, and credit supply conditions.

Table 8. Variables description

VARIABLE	DESCRIPTION	TYPE OF VARIABLE	COMMENT
LV_t	The volume of newly distributed corporate loans by all types of banks in Ukraine to non-financial corporations and individual entrepreneurs in all currencies. It also accounts loans via the program "Affordable loans 5-7-9%." The data is presented in nominal value.	Dependent variable	-
LR_t	The weighted average lending rate on newly distributed corporate loans account loans given to non-financial corporations and individual entrepreneurs in all currencies. It also accounts loans via the program "Affordable loans 5-7-9%."	Independent variable	The variable's value is oppositely proportional to the volume of newly distributed loans: the higher rate, the lower should be the volume of loans.

[28] Nguyen Chu V. and Anna Kravchuck. „The Ukrainian Interest Rate Pass-Through in the Post-1999 Era and the Effectiveness of the Countercyclical Monetary Policy." Journal of Eastern European and Central Asian Research. Vol.6 No.2 (2019). http://dx.doi.org/10.15549/jeecar.v6i2.309.

	The data is presented as percentage.		
WAR_t	Dummy variable: • 0 - when there is no war shock (since October 2017 till January 2022) • 1 - when war shock is present (since March 2022 till April 2025) The dummy variable presents the influence of war on economy disruptions, including the monetary policy.	Independent variable	The variable's value is oppositely proportional to the level volume of newly distributed loans.
α	Intercept term, which captures the baseline level of lending volume when all independent variables (lending rate and war shock) are equal to zero.	Constant variable	It reflects the average level of lending volume that would exist in the absence of changes in the lending rate and war-related shocks.

Table 9. Correlation of variables

	LV_t	LR_t	WAR_t
LV_t	1	-0.60	-0.54
LR_t	-0.60	1	0.50
WAR_t	-0.54	0.50	1

The correlation matrix (see Table 9) shows negative relationships between loan volume (LV_t) and both lending rates (LR_t, -0.60) and war shocks (WAR_t, -0.54), indicating higher rates and war-related factors constrain lending. A positive correlation (0.50) between LR_t and WAR_t reflects war-driven monetary policy tightening. Stationarity tests confirm LV_t is stable, while LR_t and WAR_t stabilize after first differencing, supporting the use of the ARDL method (see Table 10 and Table 11).

Table 10. Results of the Im, Persan and Shin Unit Root Test in level

TEST FOR UNIT ROOT IN LEVEL (SCHWARZ INFO CRITERION)		
	t-Stat	**Prob.**
LV_t	-3.56	0.04
LR_t	-1.82	0.69
WAR_t	-2.10	0.54

IM, PESARAN AND SHIN W-STAT	**-0.71**	**0.24**

Table 11. Results of the Im, Persan and Shin Unit Root Test in 1st difference

TEST FOR UNIT ROOT IN 1ST DIFFERENCE (SCHWARZ INFO CRITERION)		
	t-Stat	**Prob.**
LV_t	-6.10	0.00
LR_t	-3.36	0.03
WAR_t	-9.43	0.00
IM, PESARAN AND SHIN W-STAT	**-9.53**	**0.00**

Table 12. Results of Ramsey RESET test

MODEL	VALUE
F-STATISTIC	0.21***

The ARDL models show robust results, indicating well-specified relationships between lending volume, interest rates, and war-related shocks. The Ramsey RESET test (Table **12**Table 13) rejects the null hypothesis of model misspecification, confirming the models' accuracy.

Table 13. Lag Order Selection Criteria

LAG	LOGL	LR	FPE	AIC	SC	HQ
0	-213.51	NA	0.06	5.62	5.71	5.66
1	19.42	441.66	0.00	-0.19	**0.17***	-0.05
2	33.28	25.20	0.00	-0.32	0.32	**-0.06***
3	37.38	7.14	0.00	-0.19	0.72	0.17
4	57.94	34.18	0.00	-0.49	0.70	-0.02
5	62.17	6.69	0.00	-0.37	1.09	0.22
6	77.45	23.02	**0.00***	**-0.53***	1.20	0.16
7	80.93	4.97	0.00	-0.38	1.62	0.42
8	87.75	9.21	0.00	-0.33	1.95	0.58
9	99.29	14.68	0.00	-0.40	2.16	0.63

10	102.54	3.89	0.00	-0.25	2.58	0.88
11	111.86	10.41	0.00	-0.26	2.85	0.99
12	131.09	**19.98***	0.00	-0.52	2.86	0.83

*indicates lag order selected by the criterion

Table 14. Variables description

VARIABLE	DESCRIPTION	TYPE OF VARIABLE	COMMENT
LV_t	The volume of newly distributed corporate loans by all types of banks in Ukraine to non-financial corporations and individual entrepreneurs in all currencies. It also accounts loans via the program "Affordable loans 5-7-9%." The data is presented in nominal value.	Dependent variable	-
$OVDP\ IR\ spread_t$	The difference between the weighted average lending rate and the interest rate of government bonds. This variable reflects the relative attractiveness of lending to businesses compared to investing in government bonds	Independent variable	A narrower spread suggests that bank lending and government bonds offer similar returns, potentially reducing banks' incentive to issue loans and contributing to a crowding-out effect. Conversely, a wider spread indicates that lending remains more profitable, encouraging credit expansion. The spread is presented with a lag to account for the delayed transmission of interest rate changes into lending decisions
WAR_t	Dummy variable: • 0 - when there is no war shock (since October 2017 till January 2022)	Independent variable	The variable's value is oppositely proportional to the level volume of newly distributed loans

	• 1 - when war shock is present (since March 2022 till April 2025) The dummy variable presents the influence of war on economy disruptions, including the monetary policy.		
α	Intercept term, which captures the baseline level of lending volume when all independent variables (lending rate and war shock) are equal to zero.	Constant variable	It reflects the average level of lending volume that would exist in the absence of changes in the lending rate and war-related shocks.

Table 15. Correlation of variables

	LV_t	$OVDP\ IR\ spread_t$	WAR_t
LV_t	1.00	0.05	-0.54
$OVDP\ IR\ spread_t$	0.05	1.00	0.21
WAR_t	-0.54	0.21	1.00

Correlation analysis (Table 15) shows a weak positive relationship (0.05) between loan volume (LV) and government bond interest rate spread (OVDP IR spread), indicating minimal impact of the spread on loan issuance. In contrast, a moderate negative correlation (-0.54) between LV and WAR suggests that WAR has a stronger influence on loan volume. Stability tests confirm that LV and OVDP IR spread are stable, while WAR stabilizes after taking first differences, making the ARDL method suitable for analysis (see Table 16 and Table 17 for detailed results).

Table 16. Results of the Im, Persan and Shin Unit Root Test in level

TEST FOR UNIT ROOT IN LEVEL (SCHWARZ INFO CRITERION)		
	t-Stat	**Prob.**
LV_t	-3.56	0.04
$OVDP\ IR\ spread_t$	-4.12	0.01
WAR_t	-2.10	0.54
IM, PESARAN AND SHIN W-STAT	**-2.42**	**0.01**

Table 17. Results of the Im, Persan and Shin Unit Root Test in 1st difference

TEST FOR UNIT ROOT IN 1ST DIFFERENCE (SCHWARZ INFO CRITERION)

	t-Stat	Prob.
LV_t	-6.10	0.00
$OVDP\ IR\ spread_t$	-11.73	0.00
WAR_t	-9.43	0.00
IM, PESARAN AND SHIN W-STAT	**-15.17**	**0.00**

Table 18. Results of Ramsey RESET test

MODEL	VALUE
F-STATISTIC	0.44***

The ARDL models show robust results, indicating well-specified relationships between lending volume and government bond interest rate spread. The Ramsey RESET test (Table **18**) rejects the null hypothesis of model misspecification, confirming the models' accuracy.

Table 19. Lag Order Selection Criteria

LAG	LOGL	LR	FPE	AIC	SC	HQ
0	-195.98	NA	0.04	5.17	5.26	5.20
1	- 30.99	312.81	0.00	1.12	**1.48***	1.26
2	-27.63	6.12	0.00	1.26	1.90	1.52
3	-20.06	13.18	0.00	1.30	2.21	1.67
4	-7.53	20.82	0.00	1.21	2.40	1.68
5	4.62	19.26	0.00	1.13	2.59	1.71
6	49.33	**67.35***	**0.00***	**0.20***	1.93	**0.89***
7	55.06	8.19	0.00	0.28	2.29	1.09
8	58.45	4.57	0.00	0.43	2.71	1.34
9	68.32	12.57	0.00	0.41	2.96	1.43
10	75.54	8.62	0.00	0.45	3.28	1.59
11	85.14	10.73	0.00	0.44	3.54	1.69
12	97.75	13.10	0.00	0.34	3.72	1.69

*indicates lag order selected by the criterion

Table 20. Variables description

VARIABLE	DESCRIPTION	TYPE OF VARIABLE	COMMENT
LV_t	The volume of newly distributed corporate loans by all types of banks in Ukraine to non-financial corporations and individual entrepreneurs in all currencies. It also accounts loans via the program "Affordable loans 5-7-9%." The data is presented in nominal value.	Dependent variable	-
$CD\ IR\ spread_t$	The difference between the weighted average lending rate and the interest rate of certificates of deposit. This variable reflects the relative attractiveness of lending to businesses compared to investing in certificates of deposit	Independent variable	A narrower spread suggests that bank lending and certificates of deposit offer similar returns, potentially reducing banks' incentive to issue loans and contributing to a crowding-out effect. Conversely, a wider spread indicates that lending remains more profitable, encouraging credit expansion. The spread is presented with a lag to account for the delayed transmission of interest rate changes into lending decisions
α	Intercept term, which captures the baseline level of lending volume when all independent variables (lending rate and war shock) are equal to zero.	Constant variable	It reflects the average level of lending volume that would exist in the absence of changes in the lending rate and war-related shocks.

Table 21. Correlation of variables

	LV_t	$CD\ IR\ spread_t$	WAR_t
LV_t	1	-0.26	-0.54
$CD\ IR\ spread_t$	-0.26	1	0.49
WAR_t	-0.54	0.49	1

Correlation analysis (Table 21) reveals a moderate negative relationship (-0.26) between loan volume (LV) and certificate of deposit interest rate spread (CD IR spread), suggesting higher spreads reduce loan issuance. LV also shows a strong negative correlation (-0.54) with war-related factors, highlighting the impact of war on lending. Stationarity tests confirm LV is stable, while CD IR spread and WAR stabilize after first differences, supporting the use of the ARDL method for analysis (see Table 22 and Table 23 for detailed results).

Table 22. Results of the Im, Persan and Shin Unit Root Test in level

TEST FOR UNIT ROOT IN LEVEL (SCHWARZ INFO CRITERION)		
	t-Stat	**Prob.**
LV_t	-3.56	0.04
$CD\ IR\ spread_t$	-2.19	0.49
WAR_t	-2.10	0.54
IM, PESARAN AND SHIN W-STAT	**-0.98**	**0.16**

Table 23. Results of the Im, Persan and Shin Unit Root Test in 1st difference

TEST FOR UNIT ROOT IN 1ST DIFFERENCE (SCHWARZ INFO CRITERION)		
	t-Stat	**Prob.**
LV_t	-6.10	0.00
$CD\ IR\ spread_t$	-8.72	0.00
WAR_t	-9.43	0.00
IM, PESARAN AND SHIN W-STAT	**-13.15**	**0.00**

Table 24. Results of Ramsey RESET test

MODEL	VALUE
F-STATISTIC	1.03***

The ARDL models show robust results, indicating well-specified relationships between lending volume and government bond interest rate spread. The Ramsey RESET test (Table 24) rejects the null hypothesis of model misspecification, confirming the models' accuracy.

Table 25. Lag Order Selection Criteria for Full Sample Model

LAG	LOGL	LR	FPE	AIC	SC	HQ

0	-216.52	NA	0.06	5.70	5.79	5.74
1	-24.83	363.46	0.00	0.96	**1.32***	1.10
2	-20.06	8.67	0.00	1.07	1.71	1.32
3	-9.46	18.46	0.00	1.03	1.94	1.39
4	1.14	17.62	0.00	0.98	2.17	1.46
5	9.84	13.78	0.00	0.99	2.45	1.58
6	52.58	64.39	0.00	0.11	1.85	**0.81***
7	61.25	12.39	0.00	0.12	2.13	0.93
8	64.88	4.90	0.00	0.26	2.55	1.28
9	80.46	19.83	0.00	0.09	2.65	1.11
10	91.05	12.65	0.99	0.05	2.88	1.18
11	100.01	10.01	0.00	0.05	3.16	1.29
12	126.93	**27.97***	**0.00***	**-0.41***	2.97	0.94

*indicates lag order selected by the criterion

7. Appendix 2. Supplementary materials on the factors affecting the supply of corporate loans

Table 26. Description of the variables

Variable	Comment	Formula
DCL	The change in the corporate lending share in total assets between the two periods t1 and t0.	CL - Share of loans and advances to legal entities in total assets. DCL - Change in the share between the period's beginning and end.
LQR	Liquidity indicator in the current period.	The ratio of cash and cash equivalents to customer accounts.
EAR	Financial soundness/capital adequacy Indicator In the current period.	The ratio of equity to the total value of assets.
ROA	Profitability indicator in the current period.	The ratio of profit/(loss) before tax to total assets (return on assets)

Table 27. Descriptive statistics across sub-samples (based on quarterly data)

Sample	Period	Variable	Mean	Median	Standard error	Minimum value	Maximum value
Foreign banks (FB)	2014-2025	CL	0.36	0.35	0.01	0.00	0.89
		EAR	0.20	0.14	0.01	-0.10	0.95
		LQR	0.38	0.11	0.08	0.02	36.51
		ROA	-0.01	0.01	0.02	-14.55	0.15
	Early (2014-2018)	CL	0.43	0.45	0.02	0.00	0.86
		EAR	0.21	0.16	0.01	0.08	0.92
		LQR	0.98	0.16	0.38	0.03	36.51
		ROA	0.02	0.02	0.00	-0.12	0.14
	Middle (2019-2021)	CL	0.39	0.41	0.02	0.00	0.82
		EAR	0.20	0.15	0.01	0.07	0.63
		LQR	0.09	0.08	0.00	0.03	0.39
		ROA	0.02	0.02	0.00	-0.08	0.07
	Late (2022-2025)	CL	0.33	0.31	0.01	0.00	0.89
		EAR	0.19	0.13	0.01	-0.10	0.95
		LQR	0.29	0.12	0.07	0.02	35.63
		ROA	-0.02	0.01	0.03	-14.55	0.15
State-owned	2014-2025	CL	0.26	0.27	0.01	0.02	0.77
		EAR	0.08	0.08	0.00	-0.02	0.21
		LQR	0.12	0.09	0.00	0.04	0.38
		ROA	0.00	0.00	0.00	-0.62	0.07
	Ear	CL	0.32	0.34	0.03	0.02	0.55

		EAR	0.11	0.08	0.01	0.04	0.21
		LQR	0.12	0.10	0.01	0.06	0.24
		ROA	0.00	0.00	0.00	-0.03	0.04
	Middle (2019-2021)	CL	0.22	0.22	0.02	0.03	0.43
		EAR	0.07	0.06	0.00	0.04	0.10
		LQR	0.08	0.08	0.00	0.05	0.12
		ROA	0.01	0.00	0.00	-0.01	0.05
	Late (2022-2025)	CL	0.27	0.26	0.01	0.03	0.77
		EAR	0.08	0.08	0.00	-0.02	0.18
		LQR	0.13	0.10	0.01	0.04	0.38
		ROA	0.00	0.01	0.01	-0.62	0.07
Private banks (UPB)	2014-2025	CL	0.35	0.32	0.01	0.00	1.32
		EAR	0.25	0.21	0.00	0.00	0.96
		LQR	0.23	0.14	0.01	0.00	10.84
		ROA	0.01	0.01	0.00	-1.20	0.40
	Early (2014-2018)	CL	0.45	0.49	0.01	0.00	0.93
		EAR	0.26	0.22	0.01	0.03	0.96
		LQR	0.26	0.17	0.02	0.00	2.36
		ROA	0.01	0.00	0.00	-0.19	0.09
	Middle (2019-2021)	CL	0.32	0.31	0.01	0.00	0.71
		EAR	0.25	0.23	0.01	0.03	0.81
		LQR	0.16	0.12	0.01	0.02	1.18
		ROA	0.01	0.01	0.00	-0.02	0.09
	Late (2022-2025)	CL	0.33	0.29	0.01	0.00	1.32
		EAR	0.25	0.20	0.01	0.00	0.90
		LQR	0.24	0.14	0.01	0.00	10.84
		ROA	0.01	0.01	0.00	-1.20	0.40