

Beyond Banks: Lender Heterogeneity in Monetary Policy Pass-Through¹

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¹The views expressed in this paper are those of the authors and do not necessarily reflect those of the Central Bank of Ireland or the European System of Central Banks.

Research Question

- ▶ The **bank lending channel** is well understood and documented using loan-level **bank** data.
- ▶ Yet the share of **Non-Bank lenders (NBLs)** has been rising, while comprehensive loan-level data on NBLs remains scarce.
- ▶ Using a universe of loan-level data covering **all lending in Ireland**, we ask:

Q1 Do NBLs pass through monetary policy differently (stronger or weaker) than Banks?

Q2 If so, what explains these differences?

Motivation

- ▶ Monetary policy affects all intermediaries, but **transmission can be asymmetric**.
- ▶ **Banks** are “special”: they fund themselves largely through **insured retail deposits** — cheap, stable, and **insensitive** to policy rate changes.
- ▶ This **deposit franchise** cushions banks from monetary shocks, but comes with **strict regulation**.
- ▶ **NBLs** lack access to deposits and instead rely on **wholesale / institutional funding** that can **reprice quickly** with policy rates making them potentially more sensitive to monetary policy changes.
- ▶ At the same time, they face **lighter regulation** potentially allowing for more flexibility in response to monetary contraction.

Main findings

Q1 Do NBLs pass through monetary policy more than Banks?

A1 **Yes — NBLs are more sensitive to monetary policy.**

- ▶ With 1pp increase in the policy rate, **NBLs raise loan rates by 0.15–0.17pp more** than Banks.
- ▶ Monetary policy propagates mainly through **prices**, with only mild adjustments on the intensive margin.
- ▶ **Extensive margin response is sizable**: on average, with 1pp increase in policy rate, NBLs contract lending by 6% by volume and by 9% by loan count more than Banks.
- ▶ We also document credit reallocation shifts toward Banks.

After monetary contraction, NBLs issue more expensive loans and lose market share to Banks.

Main findings (Cont.)

Q2 If differences exist, what explains them?

A2 **Funding structure differences** are the key mechanism.

- ▶ Banks and NBLs rely on fundamentally different funding sources.
- ▶ NBLs with **short-term funding** exhibit stronger pass-through; NBLs with **long-term funding** show muted sensitivity.
- ▶ Banks funded exclusively by deposits (credit unions) have **lower pass-through** than other Banks.
- ▶ Results hold across different NBL types.

Policy implication: given their higher sensitivity, NBLs must be explicitly incorporated into monetary policy assessment.

Data Description

▶ **Irish Central Credit Register (CCR)**

- ▶ Universe of all credit contracts above €500
- ▶ 2022–2024 (tightening cycle)

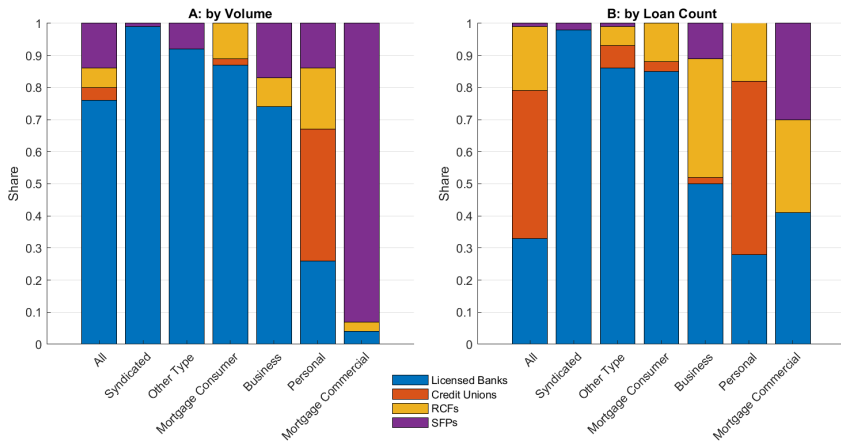
▶ **Coverage**

- ▶ Nearly **3 million** newly issued loans
- ▶ Over **300 lenders** across **16 loan categories**
- ▶ Includes both consumer and non-consumer lending

▶ **Lender Types**

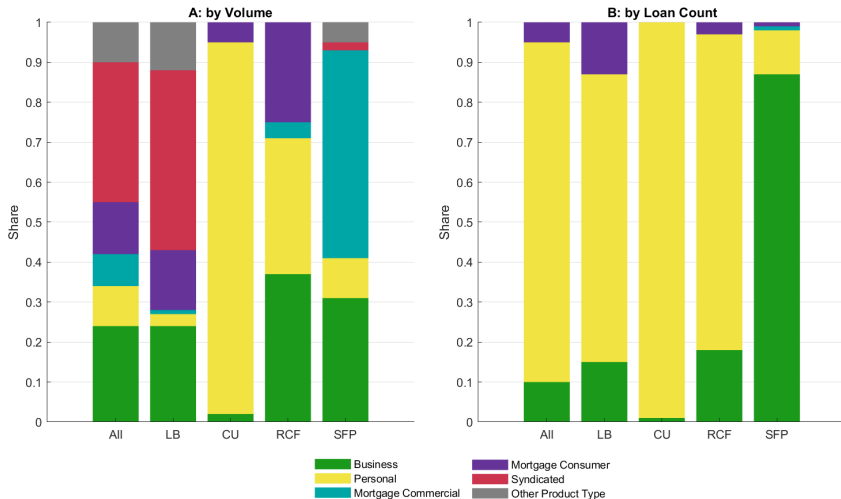
- ▶ **Banks** (70–80%): licensed banks, credit unions
- ▶ **NBLs** (20–30%): retail credit firms (RCFs), specialised finance providers (SFPs)

Loan Market Segments by Lender Type



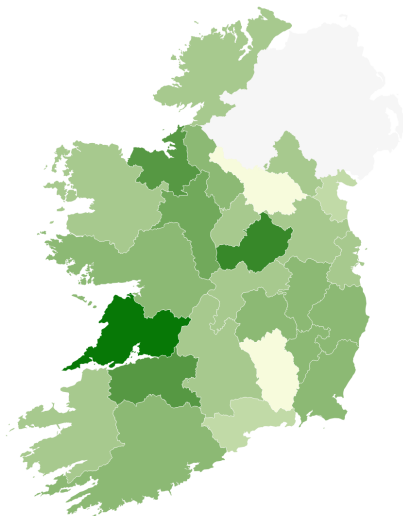
NBLs are important for Irish loan markets, they are present in nearly all loan market segments (except syndicated loans), together with Banks.

Lender Types by Loan Market Segment



Both Banks and NBLs are comparable in terms of their activities across loan market segments (except syndicated loans).

Non-bank lending share by County: All loans



NBLs lend across Ireland.

Created with Datawrapper

► Consumer and Non-Consumer lending by NBLs by County

Methodology

- ▶ **Heterogeneity analysis:**

$$y_{b,i,l,t} = \alpha_{b,t} + \alpha_i + \beta D_i(\text{NBL}) \times \text{MPRate}_{t-1} + \gamma' Z_l + \varepsilon_{b,i,l,t}$$

- ▶ **Outcome** $y_{b,i,l,t}$: interest rate at origination (or log loan size)

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- ▶ **Outcome** $y_{b,i,l,t}$: interest rate at origination (or log loan size)
- ▶ **Monetary policy**, MPRate: lagged ECB deposit facility rate
- ▶ $D_i(\text{NBL}) = 1$ if lender i is an NBL

Methodology

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$$y_{b,i,l,t} = \alpha_{b,t} + \alpha_i + \beta D_i(\text{NBL}) \times \text{MPRate}_{t-1} + \gamma' Z_l + \varepsilon_{b,i,l,t}$$

- **Outcome** $y_{b,i,l,t}$: interest rate at origination (or log loan size)
- **Monetary policy**, MPRate: lagged ECB deposit facility rate
- $D_i(\text{NBL}) = 1$ if lender i is an NBL
- **Controls**:
 - **Demand effects**: borrower–time FE (Khwaja–Mian, 2008) or industry–location–size–time FE (Degryse et al., 2019)
 - **Lender controls**: time-invariant business model
 - **Loan controls**: interest-rate type, maturity, segment

Methodology

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$$y_{b,i,l,t} = \alpha_{b,t} + \alpha_i + \beta D_i(\text{NBL}) \times \text{MPRate}_{t-1} + \gamma' Z_l + \varepsilon_{b,i,l,t}$$

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 - **Loan controls:** interest-rate type, maturity, segment

β = differential effect for NBLs relative to Banks

Loan Level Regression – NBLs Lending Relative to Banks

Variable	(1)	(2)	(3)	(4)	(5)
A: Outcome variable: Interest rate					
$D_i(\text{NBL}) \times \text{MPRate}_{t-1}$	0.21*** (0.01)	0.28*** (0.03)	0.17*** (0.01)	0.15*** (0.03)	0.17*** (0.01)
Observations	3,189,778	3,189,778	3,189,778	3,189,778	3,189,778
R^2	0.57	0.92	0.91	0.97	0.58
B: Outcome variable: Log loan size					
$D_i(\text{NBL}) \times \text{MPRate}_{t-1}$	-0.01** (0.003)	-0.02*** (0.01)	-0.01** (0.005)	-0.01** (0.005)	-0.02*** (0.004)
Observations	3,189,778	3,189,778	3,189,778	3,189,778	3,189,778
R^2	0.72	0.95	0.95	0.98	0.72
Quarter FE	Y	Y	Y		
Lender FE	Y		Y	Y	Y
Lender-Borr. FE		Y			
Borrower-Year FE			Y		
Borrower-Quarter FE				Y	
Segment-Quarter-Borrower_Type-County FE					Y
Loan controls	Y	Y	Y	Y	Y

Note: *** $p < 0.01$, ** $p < 0.05$.

Cluster-robust standard errors in parentheses.

Consumer Loan Level Regression - Non-bank Lending Relative to Banks

Variable	(1)	(2)	(3)	(4)	(5)
A: Outcome variable: Interest rate					
$D_i(\text{NBL}) \times \text{MPRate}_{t-1}$	0.18*** (0.01)	0.17*** (0.01)	0.17*** (0.01)	0.16*** (0.03)	0.19*** (0.01)
Observations	2,858,919	2,858,919	2,858,919	2,858,919	2,858,919
R^2	0.55	0.92	0.91	0.97	0.56
B: Outcome variable: Log loan size					
$D_i(\text{NBL}) \times \text{MPRate}_{t-1}$	-0.01*** (0.003)	-0.02*** (0.002)	-0.01** (0.004)	-0.01** (0.004)	-0.02*** (0.004)
Observations	2,858,919	2,858,919	2,858,919	2,858,919	2,858,919
R^2	0.72	0.95	0.96	0.98	0.72
Quarter FE	Y	Y	Y		
Lender FE	Y		Y	Y	Y
Lender-Borr. FE		Y			
Borrower-Year FE			Y		
Borrower-Quarter FE				Y	
Segment-Quarter-Borrower-Type-County FE					Y
Loan controls	Y	Y	Y	Y	Y

Note: *** $p < 0.01$, ** $p < 0.05$.

Cluster-robust standard errors in parentheses.

Non-Consumer Loan Level Regression – Non-bank Lending Relative to Banks

Variable	(1)	(2)	(3)	(4)	(5)
A: Outcome variable: Interest rate					
$D_i(\text{NBL}) \times \text{MPRate}_{t-1}$	0.11*** (0.02)	0.20*** (0.03)	0.12*** (0.03)	0.11*** (0.03)	0.13*** (0.01)
Observations	330,859	330,859	330,859	330,859	209,018
R^2	0.65	0.89	0.91	0.96	0.70
B: Outcome variable: Log loan debt					
$D_i(\text{NBL}) \times \text{MPRate}_{t-1}$	0.00 (0.00)	-0.02** (0.006)	-0.01*** (0.003)	-0.00** (0.002)	-0.01*** (0.004)
Observations	208,823	208,823	208,823	208,823	113,346
R^2	0.30	0.91	0.91	0.97	0.43
Quarter FE	Y	Y	Y		
Lender FE	Y		Y	Y	Y
Lender-Borr. FE		Y			
Borrower-Year FE			Y		
Borrower-Quarter FE				Y	
Industry-Location-Size-Quarter FE					Y
Loan controls	Y	Y	Y	Y	Y

Note: *** $p < 0.01$, ** $p < 0.05$.

Cluster-robust standard errors in parentheses.

Extensive Margin – Lender–County Level

► **Extensive-margin specification:**

$$y_{i,c,t} = \alpha_{i,\text{year}(t)} + \alpha_{c,t} + \beta D_i(\text{NBL}) \times \text{MPRate}_{t-1} + \varepsilon_{i,c,t},$$

where $y_{i,c,t}$ is the logarithm of new loan **volume** or **count** originated by lender i in county c and quarter t .

Extensive Margin – Lender–County Level

► Extensive-margin specification:

$$y_{i,c,t} = \alpha_{i,\text{year}(t)} + \alpha_{c,t} + \beta D_i(\text{NBL}) \times \text{MPRate}_{t-1} + \varepsilon_{i,c,t},$$

where $y_{i,c,t}$ is the logarithm of new loan **volume** or **count** originated by lender i in county c and quarter t .

	(1)	(2)
Dependent variable, $\ln(\cdot)$	New Loans Volume $_{i,c,t}$	New Loans Number $_{i,c,t}$
$D_i(\text{NBL}) \times \text{MPRate}_{t-1}$	-0.06*** (0.01)	-0.09*** (0.02)
Observations	31,840	31,840
R ²	0.55	0.46
County–Quarter FE	Y	Y
Lender–Year FE	Y	Y

Note: *** $p < 0.01$, ** $p < 0.05$.

- New lending by NBLs falls 6% in volume and 9% in number relative to Banks.

Extensive Margin - Credit Availability

- ▶ We examine how loan availability to non-consumers (firms and traders) from Banks versus NBLs changes with monetary policy.
- ▶ **Estimate Credit Availability to non-consumers:**

$$D_{b,j,t}(\text{Loan}) = \alpha_{b,t} + \beta_0 D_j(\text{NBL}) + \beta D_j(\text{NBL}) \times \text{MPRate}_{t-1} + \epsilon_{b,j,t},$$

where the dependent variable $D_{b,j,t}(\text{Loan})$ is the probability of obtaining a loan.

Extensive Margin - Credit Availability

	(1)	(2)	(3)	(4)
Variable	$D_{b,t}(\text{Loan})$	$D_{b,t}(\text{Bank})$	$D_{b,t}(\text{NBL})$	$D_{b,j,t}(\text{Loan})$
MPRate_{t-1}	-0.005*** (0.001)	0.002*** (0.000)	-0.007*** (0.000)	
$D_j(\text{NBL})$				-0.028*** (0.001)
$D_j(\text{NBL}) \times \text{MPRate}_{t-1}$				-0.004*** (0.000)
Constant	0.152*** (0.001)	0.092*** (0.001)	0.064*** (0.001)	0.085*** (0.000)
Observations	1,503,540	1,503,540	1,503,540	3,007,080
R^2	0.26	0.27	0.32	0.50
Borrower-Quarter FE	N	N	N	Y
Borrower-Year FE	Y	Y	Y	N

Note: *** $p < 0.01$, ** $p < 0.05$.

- Firms are less likely to borrow from NBLs after a policy rate hike.

Substitution Between Banks and NBLs

- ▶ We examine whether borrowers tend to *substitute* NBL credit with that provided by Banks following monetary policy tightening.
- ▶ **Measure firms' pre-tightening exposure to NBLs:**

$$\text{NBLExposure}_{b,2020-21} = \frac{\text{Tot. borrowing of firm } b \text{ from NBLs in 2020-21}}{\text{Tot. borrowing of firm } b \text{ in 2020-21}}$$

- ▶ **Estimate probability that the loan is obtained from an NBL:**

$$D_{b,l,t}(\text{NBL}) = \alpha_t + \alpha_{b,\text{year}(t)} + \beta \text{NBLExposure}_{b,2020-21} \times \text{MPRate}_{t-1} + \gamma' Z_l + \epsilon_{b,l,t},$$

where $D_{b,l,t}(\text{NBL})$ is the probability of obtaining a loan from an NBL relative to Bank.

Substitution Between Banks and NBLs

Variable	(1)	(2)	(3)	(4)
Outcome variable: $D_{l,b,t}(\text{NBL})$				
NBExposure _{b,2020-21} × MPRate _{t-1}	-0.01** (0.01)	-0.01** (0.01)	-0.01** (0.01)	-0.01** (0.01)
NBExposure _{b,2020-21}	0.44*** (0.02)			0.50*** (0.02)
Constant	0.37*** (0.02)	0.48*** (0.04)	0.47*** (0.04)	0.33*** (0.01)
Observations	233,795	233,795	233,795	152,791
R ²	0.60	0.84	0.89	0.60
Quarter FE	Y	Y	Y	
Borrower FE		Y		
Borrower-Year FE			Y	
Industry-Location-Size-Quarter FE				Y
Loan controls	Y	Y	Y	Y

Note: *** $p < 0.01$, ** $p < 0.05$.

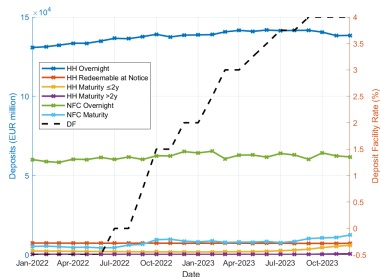
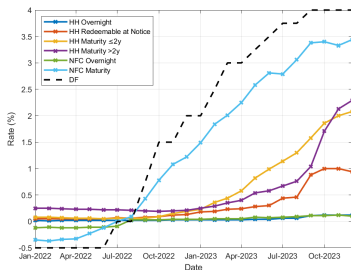
- Tighter monetary conditions induce firms to shift borrowing from NBLs to Banks (credit supply reallocation).

Economic Mechanism – Lenders' Liability Structure

- ▶ We interpret the stronger pass-through of NBLs as arising from **differences in funding structures** between Banks and NBLs.
- ▶ **Banks:** finance mainly with **insured retail deposits** — cheap, stable, and weakly sensitive to monetary policy.
- ▶ **NBLs:** lack access to deposits and rely on **wholesale and market-based funding**, whose costs **reprice quickly with policy rates**.

→ *NBLs' funding costs move more with monetary policy, so their lending rates do too.*

Banks are funded with Deposits of Households & Non-Financial Companies



- ▶ Retail Deposits are stable over time both by volume and price.

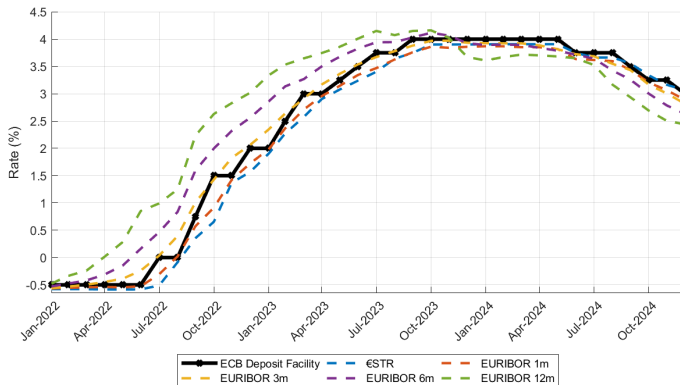
NBLs Are Funded with Wholesale Short-Term Debt

- ▶ We hand-collect Equity/Assets and Short-term/Total Liabilities for the top 30 NBLs using Orbis data.

	2020	2021	2022	2023
A: Equity / Assets				
Mean	0.49	0.54	0.70	0.73
Median	0.14	0.16	0.17	0.16
Weighted average	0.01	0.03	0.03	0.03
B: Short-term / Total Liabilities				
Mean	0.62	0.68	0.68	0.68
Median	0.52	0.76	0.66	0.62
Weighted average	0.71	0.81	0.81	0.74

- ▶ NBLs are highly leveraged.
- ▶ NBLs rely predominantly on short-term wholesale liabilities.

Non-Banks are funded with Wholesale Deposits



- Price on Wholesale Deposits is sensitive to changes in the policy rate.

Testing Economic Mechanism

- ▶ **Split NBLs by liability maturity:**

- ▶ *Short-term funded (STF)*: short-term debt / total debt above sample mean (99.5% of NBLs by count, 85% by volume)
- ▶ *Long-term funded (LTF)*: remaining NBLs

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- ▶ *Long-term funded (LTF)*: remaining NBLs

- ▶ **1. NBLs vs Banks**: do *STFs* or *LTFs* have stronger pass-through than Banks?

$$y_{b,i,l,t} = \beta_1 D_{i,y-1}(\text{STF}) \times \text{MPRate}_{t-1} + \beta_2 D_{i,y-1}(\text{LTF}) \times \text{MPRate}_{t-1} + \alpha_{b,t} + \alpha_i + \gamma' Z_l + \epsilon_{b,i,l,t}$$

Testing Economic Mechanism

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$$y_{b,i,l,t} = \beta_1 D_{i,y-1}(\text{STF}) \times \text{MPRate}_{t-1} + \beta_2 D_{i,y-1}(\text{LTF}) \times \text{MPRate}_{t-1} + \alpha_{b,t} + \alpha_i + \gamma' Z_l + \epsilon_{b,i,l,t}$$

- ▶ **2. Within NBLs:** do *STFs* have stronger pass-through than *LTFs*?

$$y_{b,n,l,t} = \alpha_{b,t} + \alpha_n + \beta D_{n-1}(\text{STF}) \times \text{MPRate}_{t-1} + \gamma' Z_l + \epsilon_{b,n,l,t},$$

Testing Economic Mechanism – NBLs vs Banks

Variable	(1)	(2)	(3)	(4)	(5)
A: Outcome variable: Interest rate					
$D_{i,y-1}(\text{STF}) \times \text{MPRate}_{t-1}$	0.28*** (0.01)	0.25*** (0.01)	0.23*** (0.01)	0.21*** (0.03)	0.24*** (0.01)
$D_{i,y-1}(\text{LTF}) \times \text{MPRate}_{t-1}$	0.11*** (0.02)	0.13*** (0.02)	0.03 (0.02)	0.01 (0.05)	-0.05*** (0.01)
Observations	3,181,359	3,181,359	3,181,359	3,181,359	3,181,359
R^2	0.56	0.92	0.91	0.97	0.57
B: Outcome variable: Log loan size					
$D_{i,y-1}(\text{STF}) \times \text{MPRate}_{t-1}$	-0.02*** (0.00)	-0.04*** (0.02)	-0.02*** (0.01)	-0.02*** (0.01)	-0.03*** (0.00)
$D_{i,y-1}(\text{LTF}) \times \text{MPRate}_{t-1}$	0.01** (0.00)	-0.02 (0.01)	-0.00 (0.01)	0.00 (0.02)	-0.01*** (0.00)
Observations	3,181,359	3,181,359	3,181,359	3,181,359	3,181,359
R^2	0.72	0.95	0.95	0.98	0.72
Quarter FE	Y	Y	Y		
Lender FE	Y		Y	Y	Y
Lender-Borr. FE		Y			
Borrower-Year FE			Y		
Borrower-Quarter FE				Y	
Segment-Quarter-Borrower-Type-County FE					Y
Loan controls	Y	Y	Y	Y	Y

Note: *** $p < 0.01$, ** $p < 0.05$.

Economic mechanism – Within NBLs regressions

Variable	(1)	(2)	(3)	(4)	(5)
A: Outcome variable: Interest rate					
$D_{i,y-1}(\text{STF}) \times \text{MPRate}_{t-1}$	0.10*** (0.02)	0.12*** (0.04)	0.17*** (0.03)	0.15*** (0.05)	0.19*** (0.01)
Observations	643,178	643,178	643,178	643,178	643,178
R^2	0.60	0.94	0.94	0.98	0.61
B: Outcome variable: Log loan size					
$D_{i,y-1}(\text{STF}) \times \text{MPRate}_{t-1}$	-0.02*** (0.01)	-0.03** (0.01)	-0.02** (0.01)	-0.02** (0.01)	-0.02*** (0.01)
Observations	643,178	643,178	643,178	643,178	643,178
R^2	0.85	0.97	0.97	0.98	0.85
Quarter FE	Y	Y	Y		
Lender FE	Y		Y	Y	Y
Lender-Borr. FE		Y			
Borrower-Year FE			Y		
Borrower-Quarter FE				Y	
Segment-Quarter-Borrower_Type-County FE					Y
Loan controls	Y	Y	Y	Y	Y

Note: *** $p < 0.01$, ** $p < 0.05$.

ROBUSTNESS – Within Banks

- ▶ **Bank category:** licensed banks + credit unions.
 - ▶ Credit unions are funded **exclusively by retail deposits**.
 - ▶ Licensed banks use a **broader mix of funding sources**.
 - ▶ **Robustness test:** Re-estimate the baseline regression using **licensed banks as the reference group** and compare their MP sensitivity to:
 - ▶ credit unions, and
 - ▶ NBLs
- *Confirms the funding-structure channel within the banking sector itself.*

ROBUSTNESS – Within Banks

Variable	(1)	(2)	(3)	(4)	(5)
Outcome variable: Interest rate					
$D_i(\text{NBL}) \times \text{MPRate}_{t-1}$	0.11*** (0.01)	0.18*** (0.03)	0.15*** (0.01)	0.14** (0.05)	0.15*** (0.00)
$D_i(\text{CU}) \times \text{MPRate}_{t-1}$	-0.16*** (0.00)	-0.13*** (0.00)	-0.15*** (0.01)	-0.19*** (0.02)	-0.13*** (0.00)
Observations	3,153,773	3,153,773	3,153,773	3,153,773	3,153,773
R^2	0.57	0.92	0.91	0.97	0.58
Quarter FE	Y	Y	Y		
Lender FE	Y		Y	Y	Y
Lender-Borr. FE		Y			
Borrower-Year FE			Y		
Borrower-Quarter FE				Y	
Segment-Quarter-Borrower_Type-County FE					Y
Loan controls	Y	Y	Y	Y	Y

Note: *** $p < 0.01$, ** $p < 0.05$.

- Credit unions have the weakest pass-through

ROBUSTNESS – Within Non-Banks

- ▶ The Non-Bank category consists of:
 - ▶ **Retail Credit Firms (RCFs)** — operate similarly to banks, hold diversified asset portfolios, but are funded through **short-term wholesale debt**.
 - ▶ **Specialised Finance Providers (SFPs)** — focus on business lending with **large, lumpy loans**; portfolios vary substantially year-to-year (e.g., CLO-type vehicles), making their lending more **demand-driven**.
- ▶ We re-estimate the baseline regression separately for RCFs and SFPs *to verify that the stronger pass-through among NBLs is not driven by institutional heterogeneity within the NBL sector.*

ROBUSTNESS – Within Non Banks

Variable	(1)	(2)	(3)	(4)	(5)
Outcome variable: Interest rate					
$D_i(\text{RCF}) \times \text{MPRate}_{t-1}$	0.21*** (0.01)	0.28*** (0.03)	0.16*** (0.01)	0.15*** (0.03)	0.17*** (0.00)
$D_i(\text{SFP}) \times \text{MPRate}_{t-1}$	0.15*** (0.04)	0.22** (0.11)	0.19*** (0.05)	0.17** (0.07)	0.12*** (0.03)
Observations	3,189,778	3,189,778	3,189,778	3,189,778	3,189,778
R^2	0.57	0.92	0.91	0.97	0.57
Quarter FE	Y	Y	Y		
Lender FE	Y		Y	Y	Y
Lender-Borr. FE		Y			
Borrower-Year FE			Y		
Borrower-Quarter FE				Y	
Segment-Quarter-Borrower-Type-County FE					Y
Loan controls	Y	Y	Y	Y	Y

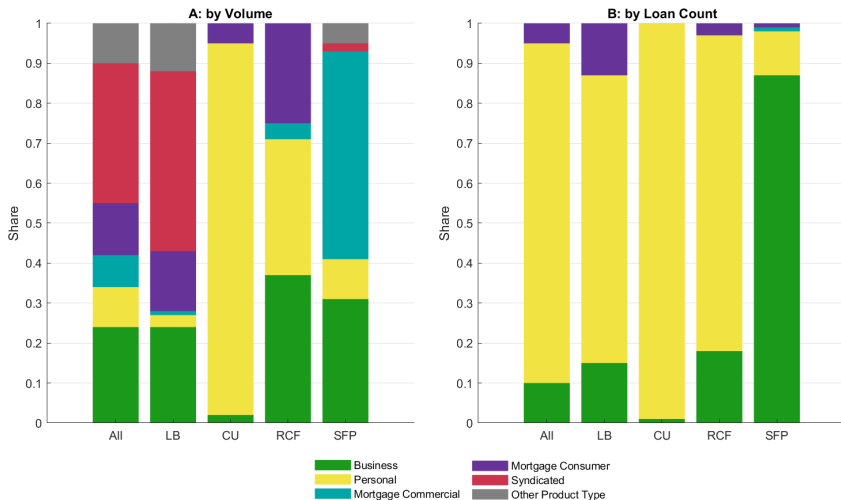
Note: *** $p < 0.01$, ** $p < 0.05$.

Conclusions

- ▶ We provide new empirical evidence on monetary policy pass-through for **Banks vs. Non-Banks** using universe loan-level data.
- ▶ **NBLs are significantly more sensitive to monetary policy than Banks.**
 - ▶ A 1pp policy-rate increase raises NBL loan rates by **0.17pp more** than bank loan rates.
 - ▶ NBLs also **reduce lending on the extensive margin**: fewer loans (−9%) and lower volumes (−6%), losing market share to banks.
- ▶ **Mechanism: Funding structure heterogeneity.**
 - ▶ Banks benefit from **stable retail deposits**.
 - ▶ NBLs rely on **short-term wholesale funding** that reprices nearly one-to-one with monetary policy.
 - ▶ Within NBLs, those more reliant on short-term funding exhibit an **even stronger** pass-through relative to Banks.

APPENDIX

Lender Types by Loan Market Segment.

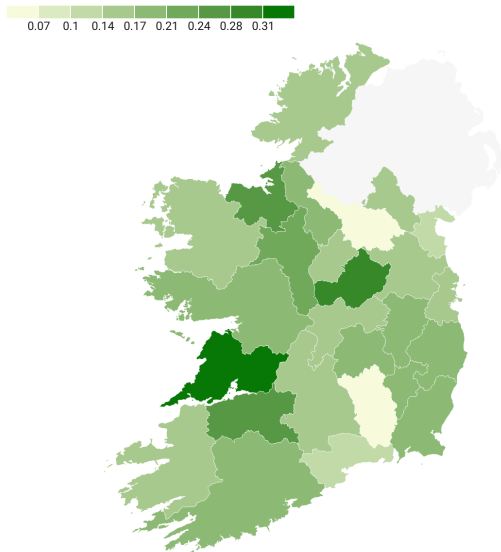


Extensive margin - Lender Level

	(1)	(2)
Lender Level		
Dependent variable, $\ln(.)$	New Loans Volume $_{i,t}$	New Loans Number $_{i,t}$
$D_i(\text{NBL}) \times \text{MPRate}_{t-1}$	-0.04** (0.02)	-0.07** (0.04)
Observations	3,171	3,171
R ²	0.94	0.98
Quarter FE	Y	Y
Lender-Year FE	Y	Y

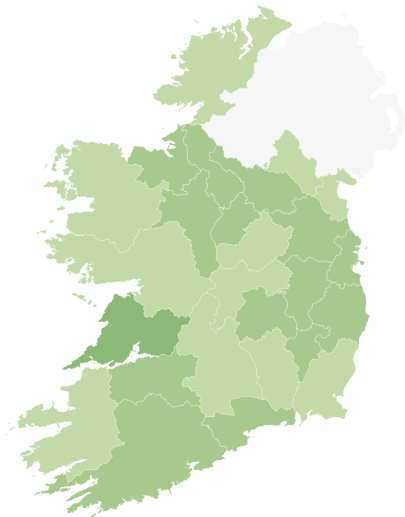
Note: *** $p < 0.01$, ** $p < 0.05$.

Non-bank lending share by County: Non-consumer loans



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Non-bank lending share by County: Consumer loans



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