

Negative Interest Rate Policy and Corporate Financing Decisions

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Motivation: Monetary Policy at the Effective Lower Bound

- What should central banks do when there is prolonged low economic activity? (e.g. after GFC and ESDC)
- What if the official policy rate hits the zero-lower bound ?
- What if unconventional policies like Quantitative Easing (QE) and Forward Guidance (FG) are not enough?

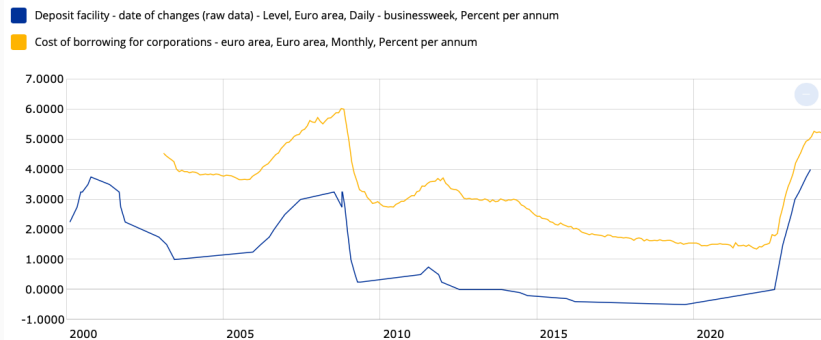
Negative Interest Rate Policy: Motivation

- A few Central banks like the European Central Bank (ECB) begun to charge interest on the excess reserves of commercial banks instead of paying interest on the reserves.
- This is negative interest rate policy (Very unconventional)
- The motive? To encourage commercial banks to lend more (Supply-side Channel)

Negative Interest Rate Policy: Motivation Cont'd

- What of the demand side ?
- How do non-financial firms react to this policy?

The ECB's Negative Interest Rate Policy (2014–2022)



Source: FINANCIAL PROVIDERS, ESCB

- June 2014: Deposit facility rate falls below zero (first time in history)
- Corporate borrowing rates follow closely
- Creates unprecedented incentives for non-financial firms to restructure debt

1. Does negative interest rate policy induce firms to increase their debt?
2. Does the policy have any effect on how firms structure their debt maturity?

Central Hypothesis

Firms respond to NIRP with a precautionary maturity extension — reducing rollover risk — rather than immediately changing their capital structure.

Key Takeaways

1. Firms in NIRP jurisdictions significantly **reduce short-term debt** and **increase long-term debt**
2. Total leverage remains largely unchanged in the short run — pure maturity rebalancing
3. The effect is demand-driven: strongest when credit supply is tight
4. A stylised and DSGE models rationalise the mechanism

NIRP - Mainly Bank Lending Channel

- NIRP: Eggertsson et al. (2024) and Heider et al. (2016) – Weak
- Bottero et al. (2022), Demiralp et al. (2021) — Strong
- Altavilla et al. (2022) – Strong channel through deposit pass-through affecting firm investment.

This paper bridges the literature.

Corporate Capital Structure

- *Debt Market timing theory* – (Graham & Harvey, 2001; Korajczyk & Levy, 2003)
- Pro-cyclical (Jermann & Quadrini, 2006); Counter cyclical (Halling et al., 2016)
- But no evidence on leverage and maturity choices under negative rates

1. First large-scale causal evidence on corporate debt maturity under NIRP (over 58,000 firms, 127 countries)
2. Document "borrow long, dump short" as a new transmission channel
3. Shows it is demand-driven evidence (robust to QE, FG, credit supply)
4. Calibrated DSGE
5. Policy relevance: maturity restructuring enhances firm resilience but may weaken future tightening

Empirical Strategy: Difference-in-Differences

Identification:

- Treatment: Euro-area
- Control: Firms in non-euro countries
- Outcomes: Short-term (SDR), long-term (LDR), and total debt (TDR) ratios

Spec:

$$Y_{it} = \alpha_i + \gamma_t + \delta \cdot (Treated_i \times Post_t) + \mathbf{X}'_{it}\beta + \epsilon_{it}$$

- Firm & year fixed effects. Overall 58,418 firms from 2001 to 2021. 472,778 Obs.
- Industry $\times$ year fixed effects
- Controls: QE, FG, firm-specific controls (Age, Size, Asset structure, Liquidity, and Profitability), macro controls (Inflation and GDP growth)

Table 1: Summary Statistics of Debt Ratios by Treatment Group

Variable	Treatment	Q1	Median	Mean	Q3	Max
TDR	Control	0.30	0.48	0.48	0.65	0.96
TDR	Treated	0.45	0.59	0.58	0.72	0.96
SDR	Control	0.14	0.26	0.30	0.42	0.84
SDR	Treated	0.21	0.31	0.33	0.45	0.84
LDR	Control	0.00	0.06	0.12	0.19	0.65
LDR	Treated	0.05	0.14	0.16	0.24	0.65

Table 2: NIRP and Corporate Debt Maturity — Baseline

	(1)	(2)	(3)	(4)
Short-term debt ratio	-0.018*** (0.003)	-0.017*** (0.003)	-0.011*** (0.002)	-0.011*** (0.002)
Long-term debt ratio	0.015*** (0.003)	0.015*** (0.003)	0.017*** (0.002)	0.016*** (0.002)
Total debt ratio	-0.004 (0.003)	-0.003 (0.003)	0.004 (0.003)	0.004 (0.003)
Firm	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Industry $\times$ Year		Yes		Yes
Controls			Yes	Yes
Observations	472,778	472,778	472,778	472,778

Robustness: Controlling for Credit Supply

Table 3: NIRP and Corporate Debt Maturity — Controlling for Credit Supply

	(1)	(2)	(3)	(4)
Short-term debt ratio	-0.016*** (0.003)	-0.016*** (0.003)	-0.011*** (0.002)	-0.010*** (0.002)
Long-term debt ratio	0.022*** (0.003)	0.021*** (0.003)	0.025*** (0.002)	0.024*** (0.002)
Total debt ratio	0.005 (0.003)	0.004 (0.003)	0.013*** (0.003)	0.012*** (0.003)
Firm	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Industry $\times$ Year		Yes		Yes
Bank Credit Growth(t-1)	Yes	Yes	Yes	Yes
Other Controls			Yes	Yes
Observations	300,349	300,3498	300,349	300,349

Robustness: Interaction with Credit Supply

Table 4: NIRP and Corporate Debt Maturity — Interaction with Credit Supply

	Short-term debt	Long-term debt	Total debt
DiD	-0.011*** (0.002)	0.024*** (0.003)	0.013*** (0.003)
Bank Credit Growth(t-1)	-0.063*** (0.003)	0.049*** (0.004)	-0.034*** (0.005)
DiD × Bank Credit Growth(t-1)	0.058*** (0.003)	-0.065** (0.026)	-0.022 (0.031)
Firm, Year, & Industry × Year	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes
Observations	300,349	300,349	300,349
Net Effect @ 1% Credit Growth	-1%	2%	—

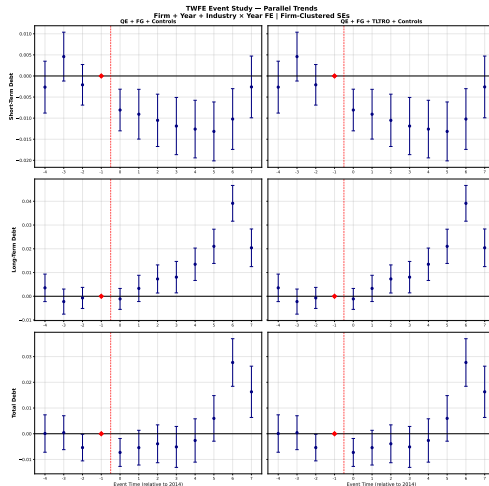
Robustness: Summary of Credit Supply Effect

- Include lagged bank credit growth $\rightarrow$ NIRP effect stronger when supply is tight
- Interaction: DiD $\times$ Credit Growth $\rightarrow$ maturity shift is **weaker** when supply is abundant

Conclusion: Maturity rebalancing is primarily demand-driven.

Event Study Evidence: Parallel Trends and Treatment Effects

- Decrease in short-term debt
- Increase in long-term debt
- Total debt increases after 5 years



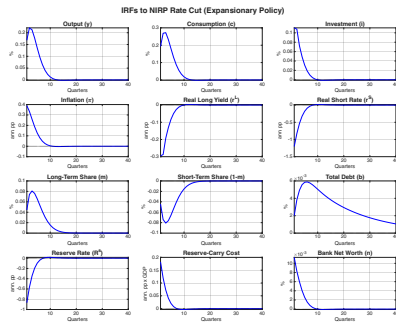
Robustness: Sub-Sample Heterogeneity

Effect is stronger for financially constrained firms

- Small, High-leveraged and Low-liquid firms and Older Firms

Interpretation

Firms most exposed to higher rollover risk are precisely those that “borrow long and dump short” under negative rates.



- New Keynesian (NK) model with banking sector and occasionally binding ZLB
- Calibrated to euro area
- NIRP $\rightarrow$ sharp compression of long-term yields $\rightarrow$ firms borrow long
- Total debt increases only if NIRP is persistent

Key Results

Negative interest rates cause firms to **borrow long and dump short** — a new, demand-driven transmission channel.

- No increase in total leverage in the short run.
- Total leverage increase when the policy is persistent
- Effect is strongest when credit supply is tight

Policy Implication

By inducing firms to lock in long-term debt at ultra-low rates, NIRP enhances corporate resilience to future tightening but may simultaneously reduce the potency of subsequent rate hikes — creating a classic policy trade-off between near-term stimulus and future monetary control

Broader Lesson

While maturity restructuring may occur immediately due to relative pricing effects, a sustained policy environment is needed to stimulate aggregate corporate borrowing.

Thank you! 