

The Effects of Negative Household Deposit Rates

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Introduction/Research Question

Negative Interest Rate Policy

- Introduction of negative interest rate policy (NIRP) in various countries/financial systems
- Established findings on pass-through of policy rates to loan rates and other market rates

Negative Household Deposit Rates

- New evidence challenging the zero-lower bound (ZLB) on household deposit rates
- 483 German banks introduced the so-called "Verwahrentgelt" (henceforth **NIR-banks**)
- Negative remuneration of deposit account with complementary exemption limits

Research Questions

- Are household deposits affected by the introduction of negative household deposit rates? If yes, how?
- What are the implications for the transmission of monetary policy under negative interest rate policy?

Literature

Borusyak, K., Jaravel, X., & Spiess, J. (2021). Revisiting event study designs: Robust and efficient estimation.

Brandao-Marques, L., Casiraghi, M., Gelos, G., Kamber, G., Meeks, R., et al. (2021). Negative interest rates: Taking stock of the experience so far.

Callaway, B., & Sant'Anna, P. H. (2021). Difference-in-differences with multiple time periods.

Heider, F., Saidi, F., & Schepens, G. (2021). Banks and negative interest rates.

Kashyap, A. K., & Stein, J. C. (2000). What do a million observations on banks say about the transmission of monetary policy?

Data and Descriptive Statistics on NIR-Banks

Self-collected Data Set

- Introduction of negative household deposit rates between May 2019 and April 2022
- Exemption limits range from 0€ to more than 500.000€
- Most NIR-banks are either cooperative or public banks
- In relative terms, more NIR-banks are located in states belonging to former East Germany

Data sets provided by Research Data and Service Centre of Deutsche Bundesbank

- Monthly Balance Sheet Statistics (BISTA): Stahl, H., & Schäfer, M. (2023). Monthly balance sheet statistics (BISTA).
- Selected Master Data for MFIs (MaMFI): Stahl, H. (2023). Selected master data for MFIs (MaMFI).
- Banks' Profit and Loss Accounts (GuV): Stahl, H., & Scheller, N. (2023). Statistics of the banks' profit and loss accounts (GuV).

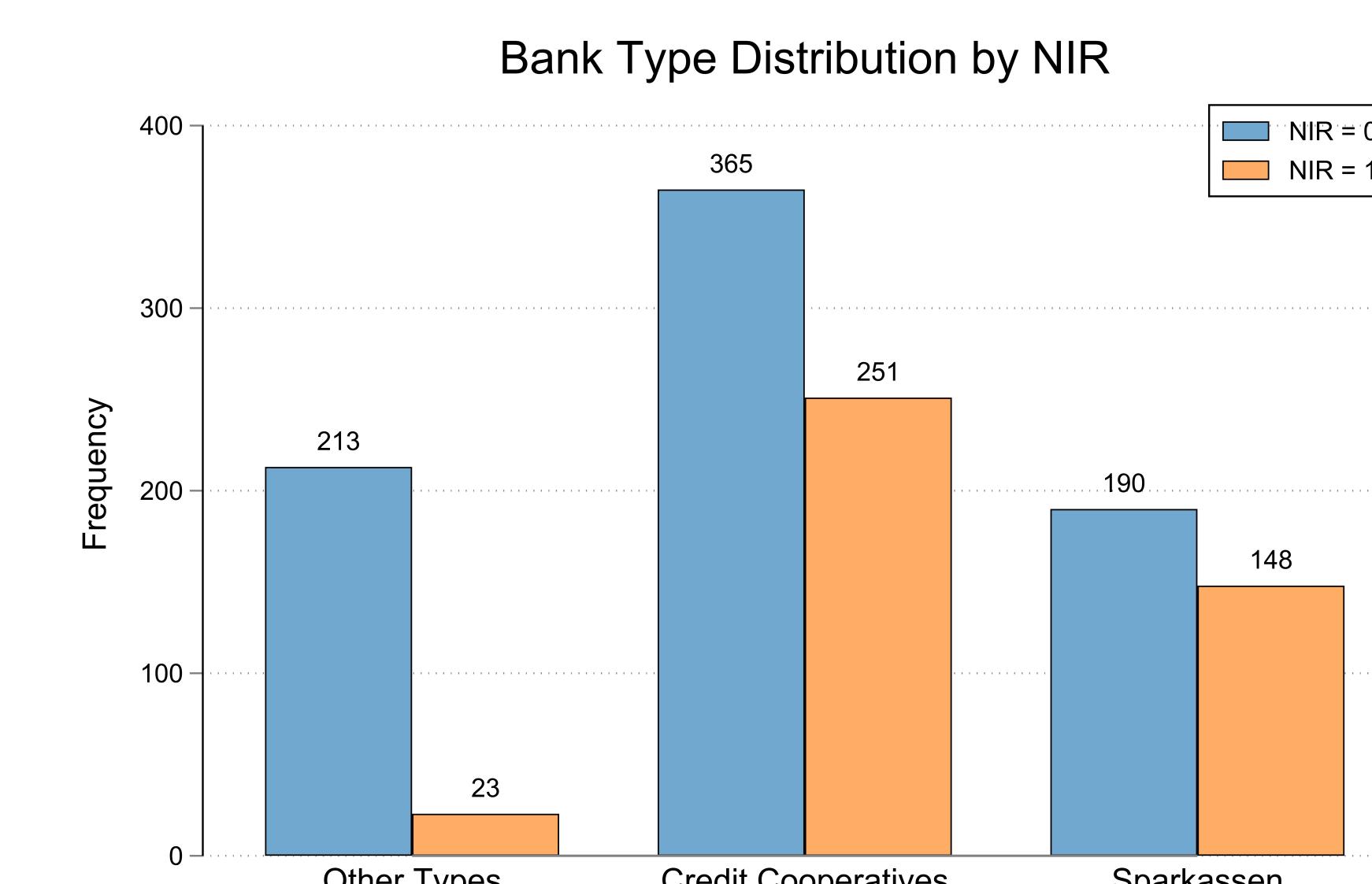


Figure 2: Distribution of NIR-Banks by Type

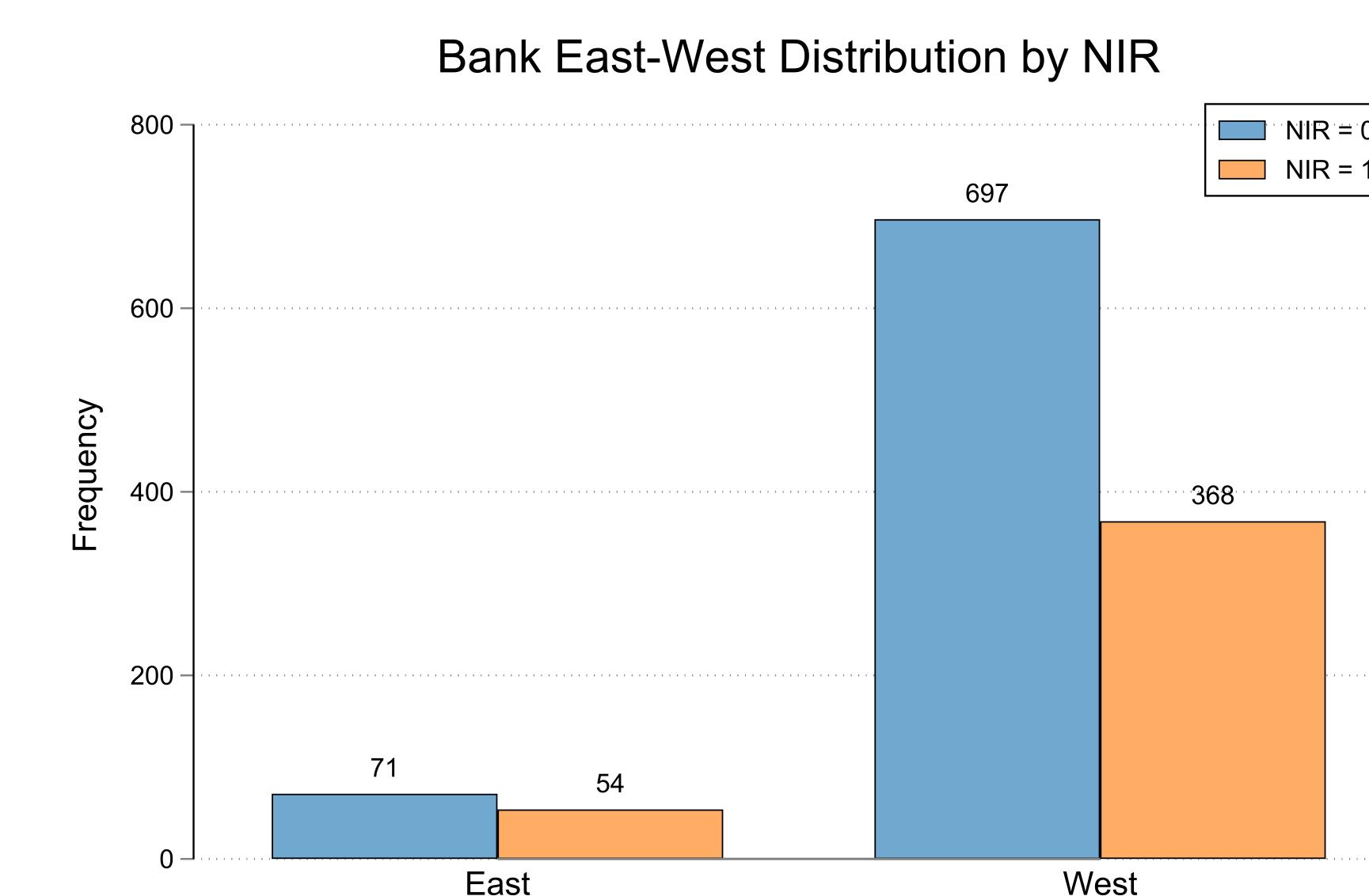


Figure 3: East-West Distribution of NIR-Banks

Methodology

- Most commonly used method for design characteristics of this study is difference-in-differences (DiD)
 - Binary, irreversible and staggered treatment
 - Banks select themselves into treatment
 - Recent advancements in the literature recommend employing various methods for treatment effect estimation

Estimators

- Callaway & Sant'Anna (2021): $ATT(g, t) = \mathbb{E}[Y_t(g) - Y_t(0)|G_g = 1]$
 - Estimate group-time average treatment effect and aggregate them to the desired level, e.g. event study estimates
- Borusyak et al. (2021): Imputation estimator
 - Use the imputed potential non-treated outcome for treated units to compute individual treatment effects $Y_{i,t}(1) - \hat{Y}_{i,t}(0)$
- TWFE regression approach: $y_{i,t} = \alpha_i + \lambda_t + \sum_{k=-K}^{-2} \delta_k^{\text{lead}} D_{i,t}^k + \sum_{k=0}^L \delta_k^{\text{lag}} D_{i,t}^k + \theta X_{i,t} + \epsilon_{i,t}$
 - Included since diagnostics do not show negative weights or weighting issues with bad comparisons

Results

- Reduction in household deposits** after introduction of negative household deposit rates up to 3%
 - High substitutability of deposits for cash or other alternatives for households (Brandao-Marques et al., 2021)
 - Greater salience of rate cuts in negative territory
 - Exemption limits often higher than average fund held in these accounts
- Increase in household loans** by about 2% after adoption of negative deposit rates (not depicted)
 - NIR-banks become financially less constrained, increasing credit supply (Kashyap & Stein, 2000)
 - Cannot exclude concurrent changes on the supply side (e.g. more favorable loan conditions)
 - Indicates that the transmission of monetary policy under negative household deposit rates is operational

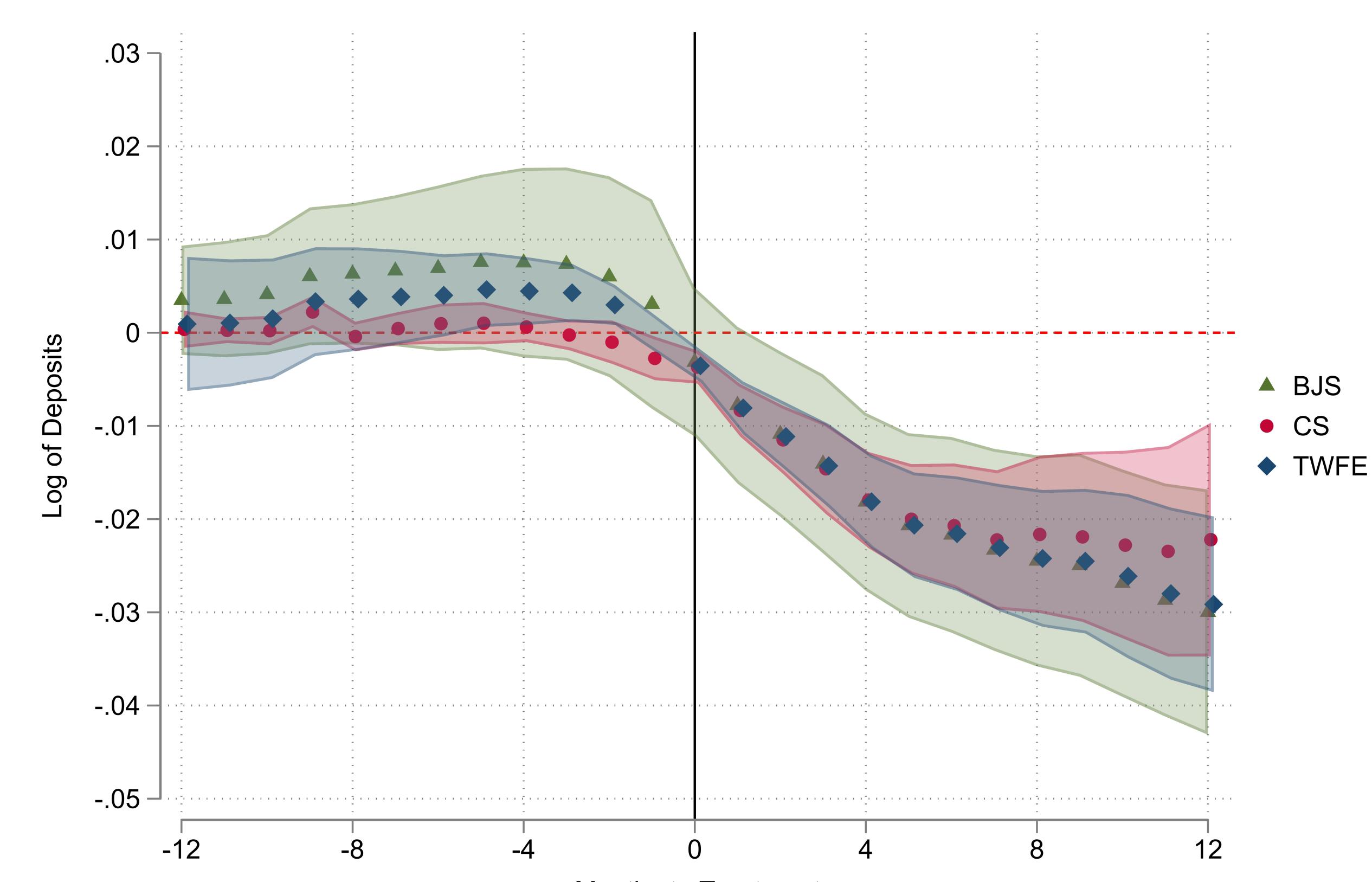


Figure 4: Treatment Effect on Household Deposits