

Covered bonds and bank portfolio rebalancing

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Institutional background

- Covered bond is a debt instrument issued by banks to refinance mortgage loans.
- Mortgage loans are encumbered to back covered bonds.
- Q42019 **more than 35% of all bonds issued by European banks were covered bonds.**

There was a wave of introducing covered bond markets across Europe: Sweden 2004, Italy and Greece 2006, UK and Netherlands 2008.

- Norway introduced covered bonds in June 2007.
- Covered bonds become a popular tool in Norway, in some years **more than 50% of mortgages were refinanced with covered bonds**, see Figure 1.

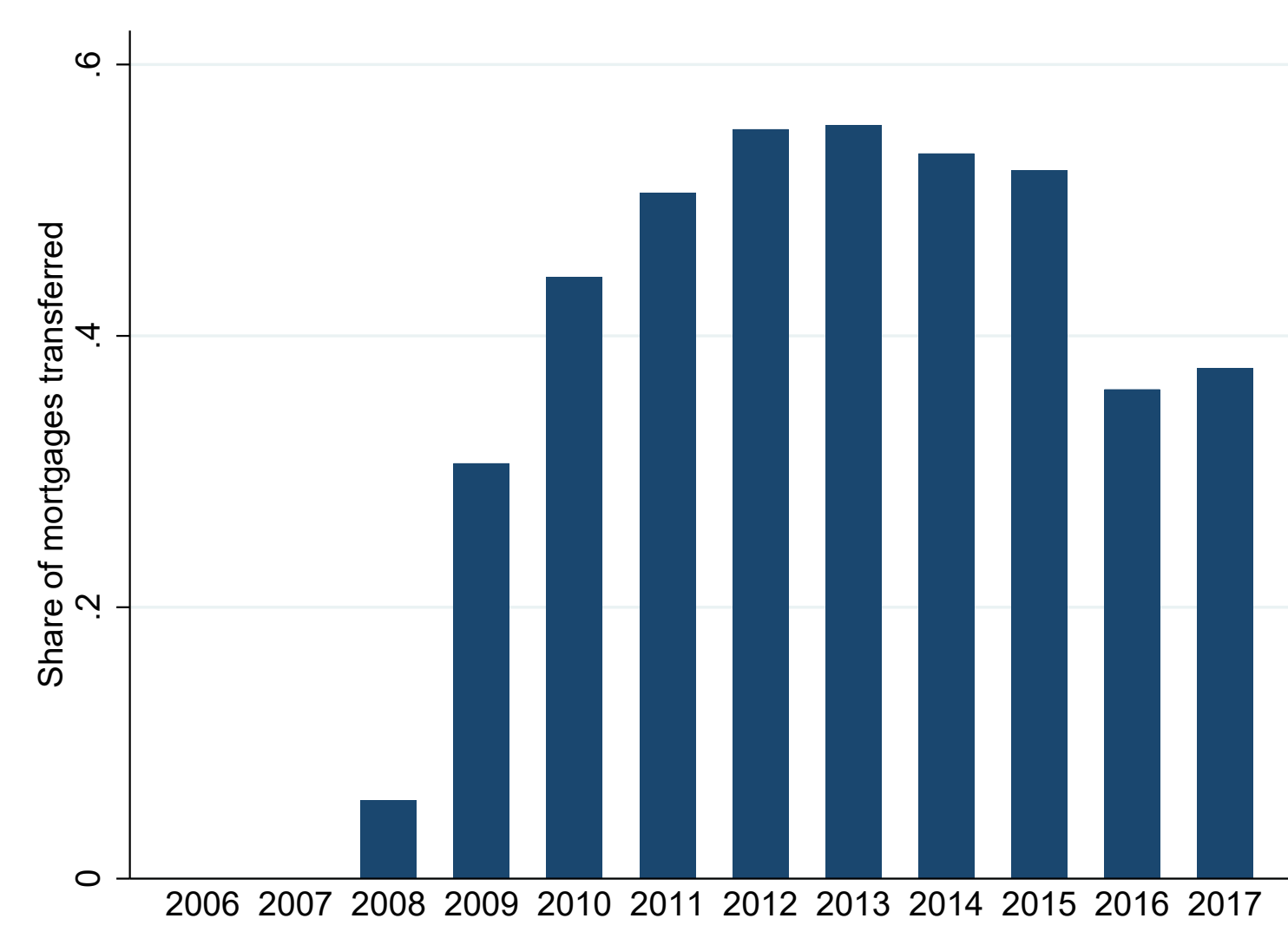


Figure 1: Share of mortgages used to issue covered bonds

This figure shows the share of mortgages used in cover pools over total mortgage lending from 2008q4 until 2017. Source: ORBOF, with authors' own calculations.

Hypotheses

- Similar to mortgage backed securities (MBS), covered bonds make mortgage lending more attractive because they reduce refinancing costs
- Further, they can provide more leeway for risk-taking.

H_1 : Banks increase mortgage lending.

H_2 : Banks increase risk taking.

Alternatively, banks might not change their behavior and simply reap the profits from lower costs.

H_0 : Banks do not change behavior.

Data

- Quarterly balance sheets and income statements of all 133 Norwegian banks 2003q1- 2012q4 from ORBOF.
- Volume of mortgage loans used to issue covered bonds.
- Firm loan level data with > 3.8 million loan observations from 220,059 firms from Norwegian tax administration.
- Firm ratings from credit rating agency Bisnode.

Summary

Research question: Do banks change lending and risk-taking behavior when using covered bonds to refinance mortgage loans?

Setting: We exploit the introduction of covered bond markets in Norway in June 2007.

Results: Banks do not increase mortgage lending, instead they expand firm lending.

Channel: Covered bonds allow banks to increase balance sheet liquidity. This enables banks to increase less liquid and more risky firm lending: The "liquidity channel" of covered bonds.

Identification

Event: Introduction of covered bond markets in Norway in June 2007.

Heterogeneity: Share of eligible mortgages in 2006.

- Mortgages must have LTVs < 75% to be eligible.
- Banks above the median share of eligible mortgages are "high exposure" banks. They could more readily enter covered bond markets.
- High exposure banks issued more covered bonds after the introduction of covered bond markets, see Figure 2.

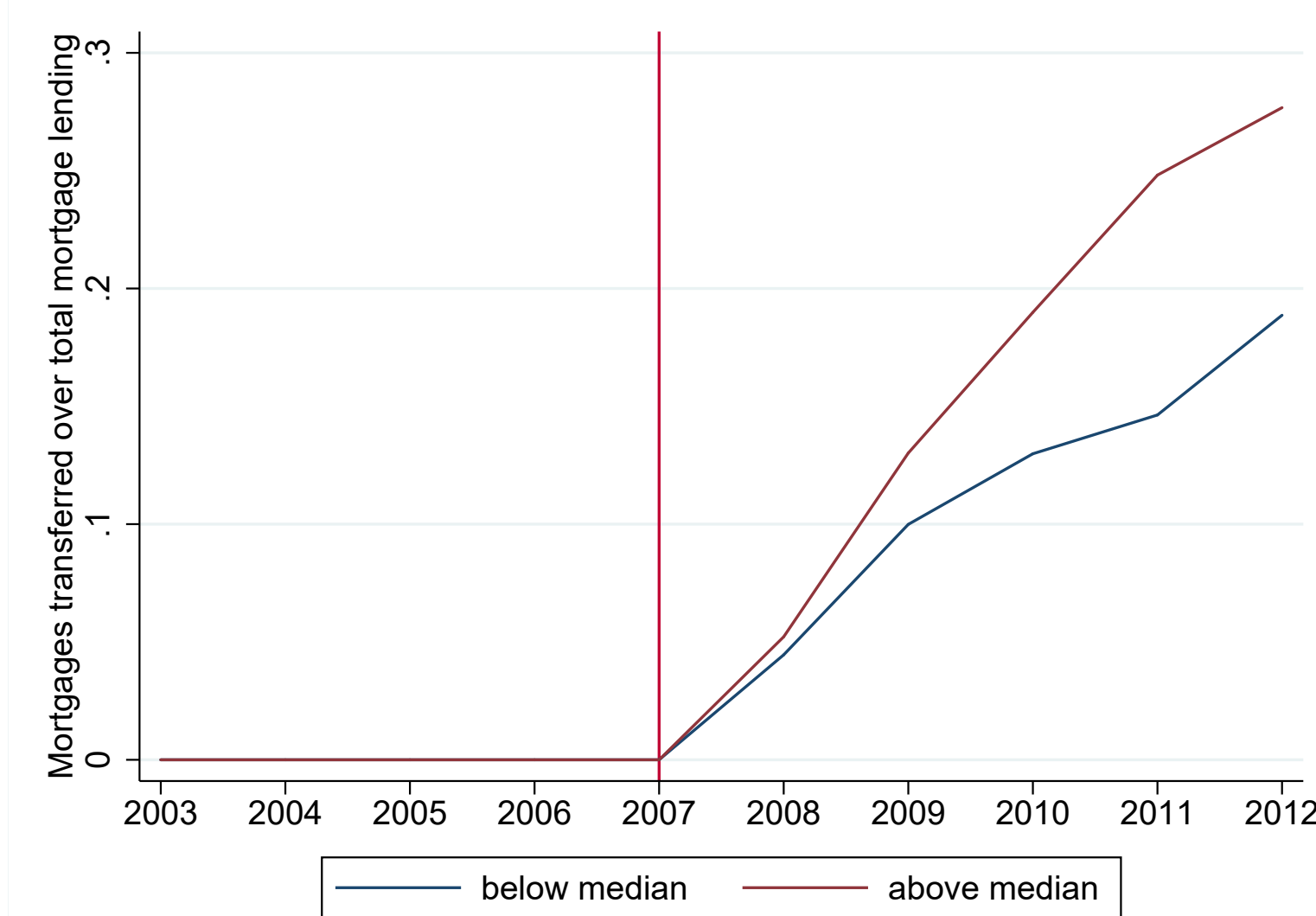


Figure 2: Share of mortgages refinanced with covered bonds

In this figure we show the share of mortgages used to issue covered bonds for high exposure banks in red and low exposure banks in blue.

- We estimate the following dynamic difference-in-differences regression at the bank level:

$$Y_{b,t} = \alpha_b + \sum_{\tau} \delta_{\tau} \mathbf{1}_{t=\tau} + \sum_{\tau=2003q1, \tau \neq 2006q4}^{2012q4} \gamma_{\tau} (\mathbf{1}_{t=\tau} \times T_b) + \epsilon_{b,t} \quad (1)$$

- Dependent variables $Y_{b,t}$ are balance sheet items of bank i in quarter-year t .
- T_b is an indicator which equals 1 for high exposure banks and 0 for low exposure banks.
- $\mathbf{1}_{t=\tau}$ are indicators for every quarter-year using 2006q4 as the base.
- We show results for our coefficient of interest γ_{τ} in Figure 3 and Figure 4.

Results

- High exposure banks (red) **decrease the share of mortgage lending** over total lending compared to low exposure banks (blue), see left panel in Figure 3.
- The difference is statistically significant in the post period, see right panel.
- **Economic magnitude:** High exposure banks decrease the share of mortgage lending by around 9% of average mortgage lending shares in the pre period.

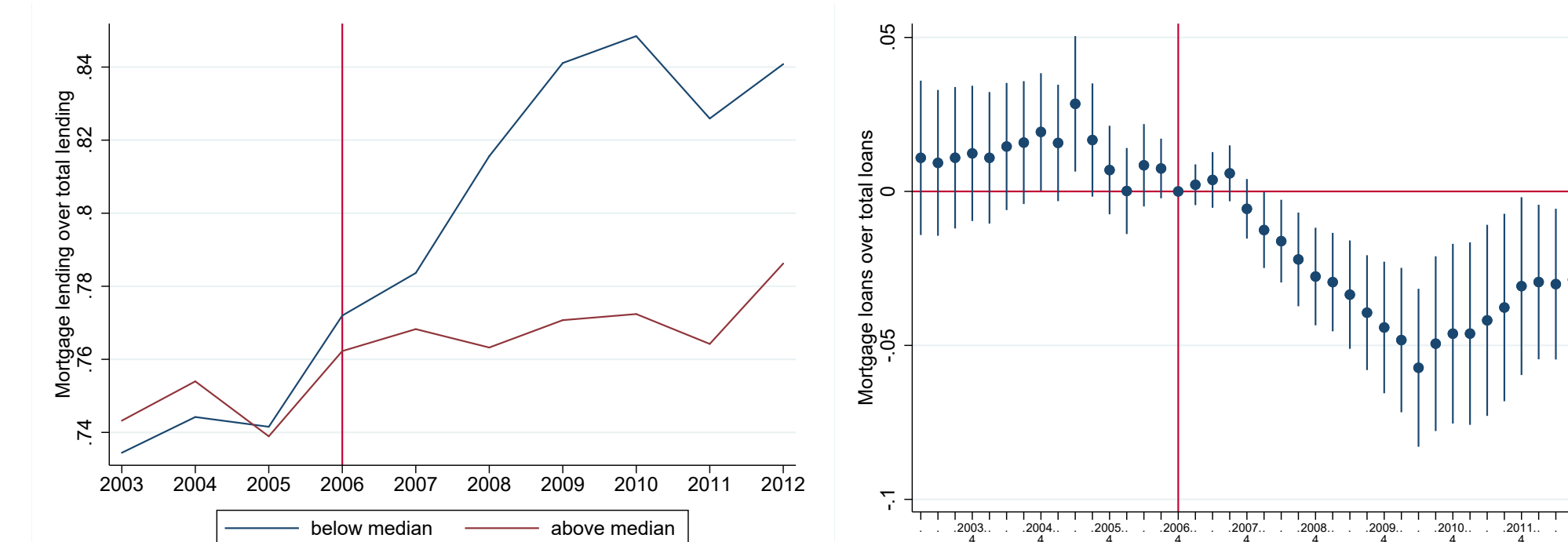


Figure 3: Mortgage lending over total lending

In the left panel we show the development of the share of mortgage lending over total lending over time for high exposure banks (red) and low exposure bank (blue). In the right panel we show the coefficient plot for γ_{τ} with confidence intervals at 90% from estimating equation (1).

- High exposure banks (red) **increase the share of firm lending** over total lending compared to low exposure banks (blue), see left panel in Figure 4.
- The difference is statistically significant for most quarter-years in the post period, see right panel.
- **Economic magnitude:** High exposure banks increase the share of mortgage lending by around 7.5% of average firm lending shares in the pre period.

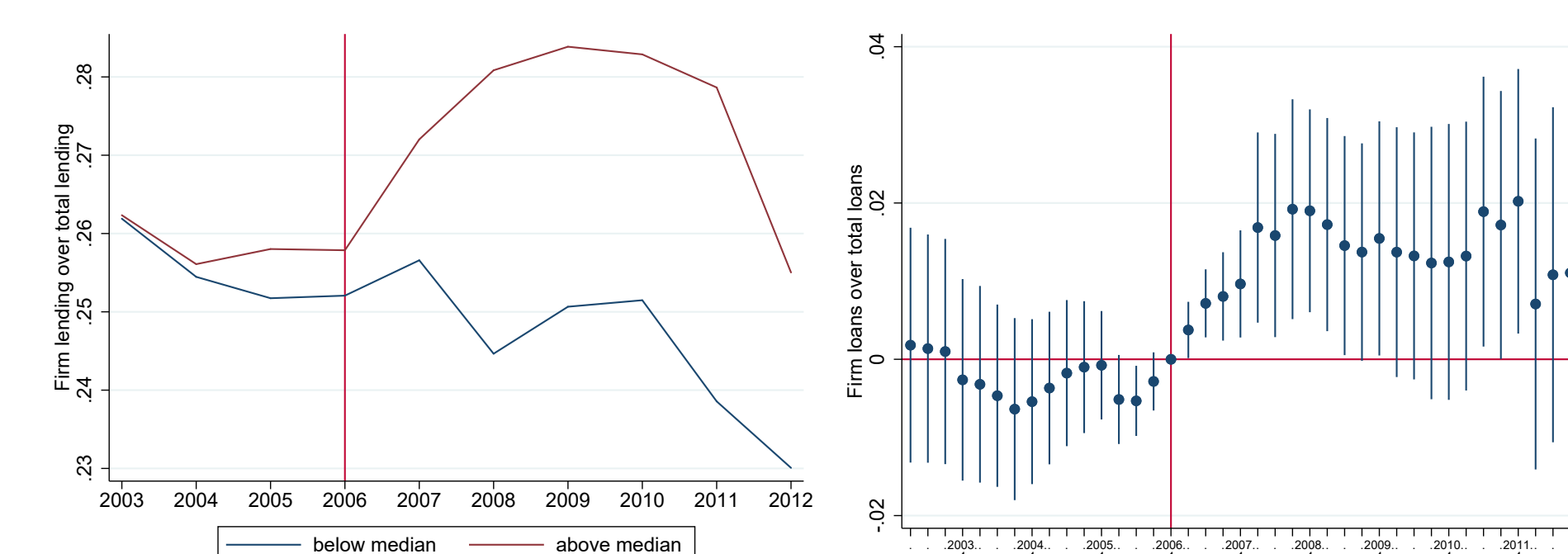


Figure 4: Firm lending over total lending

In the left panel we show the development of the share of firm lending over total lending over time for high exposure banks (red) and low exposure bank (blue). In the right panel we show the coefficient plot for γ_{τ} with confidence intervals at 90% from estimating equation (1).

Liquidity channel

- We show results for estimating equation (1) for the sample of low (blue) and high liquid banks (red) separately in Figure 5.
- **Previously liquidity constraint banks drive increases in firm lending.**

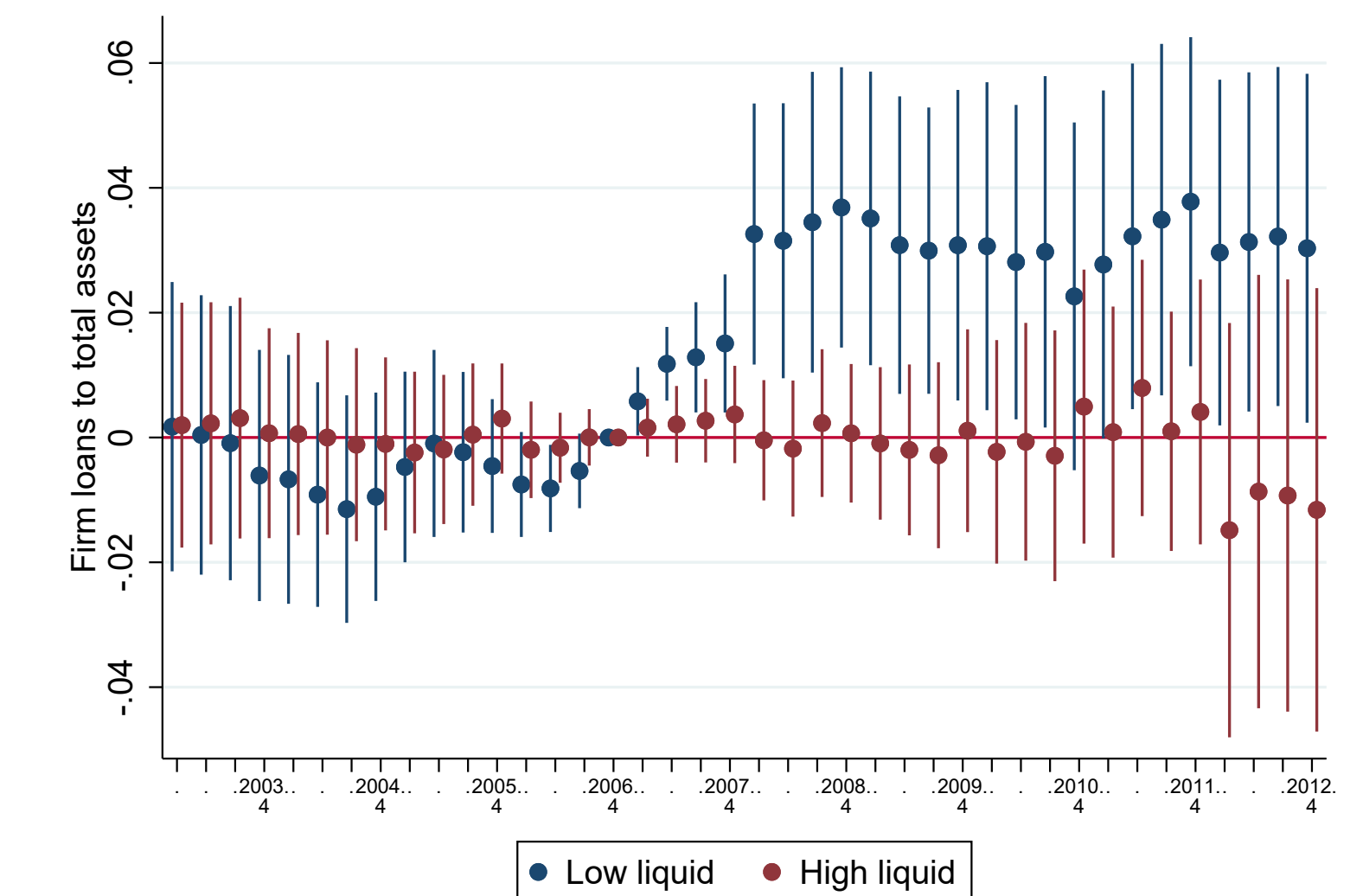


Figure 5: Firm lending over total lending for low and high liquid banks
In this figure we show coefficient plots from re-estimating equation (1) for the sample of low- (blue) and high-liquidity banks (red) respectively with confidence intervals at 90%.

Results on bank risk

- Banks' balance sheets become much more liquid, liquidity risk decreases.
- Firm lending is directed to younger and lower rated firms, credit risk increases.
- Total bank risk decreases: Unsecured creditors ask for lower risk premia.

Robustness

We provide robustness checks to proof identifying assumptions:

- 1 **Confounding supply shocks:** We rule out that the GFC as well as the transition to Basel II confound our results.
- 2 **Confounding demand shock:** We move to the loan level and employ granular industry-location-size-time fixed effects (ILST) and firm-time fixed effects for a sub-sample of firms.
- 3 **Systematic differences:** We test for systematic differences across high and low exposure banks.

Contact Information

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