# The Anatomy of the Transmission of Macroprudential Policies

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# Paper

- Stricter LTV and LTI limits force banks to reallocate mortgage lending away from low-income borrowers/hot housing markets (low distance) towards high-income borrowers/cool housing markets (high distance).
- The reallocation is mainly driven by the institutions with high exposure to low-distance borrowers.
- A part of lending is reallocated to risky corporate loans and risky securities.
- Estimated effects are statistically and economically significant.

| | | Volume | Size | LTV | LTI | Rate |
|---|---|---|---|---|---|---|
| Distance × Exposure × Post | ($\beta_1$) | 1.638** | 4.633*** | 108.309*** | 0.931 | -1.203*** |
| | | (0.729) | (0.667) | (18.522) | (0.946) | (0.402) |
| Distance × Exposure | ($\beta_2$) | -3.877*** | -5.375*** | -126.769*** | -0.971 | 1.284*** |
| | | (0.912) | (0.509) | (14.369) | (0.845) | (0.305) |
| Distance × Post | ($\beta_3$) | -0.558* | -1.719*** | -36.681*** | -0.206 | 0.544*** |
| | | (0.304) | (0.271) | (7.818) | (0.386) | (0.174) |
| County-Time FE | | ✓ | ✓ | ✓ | ✓ | ✓ |
| County-Bucket FE | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bank-Time | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Observations | | 12,960 | 12,960 | 12,757 | 12,708 | 12,577 |
| R-squared | | 0.605 | 0.482 | 0.226 | 0.451 | 0.543 |

**Table 5: Bank Mortgage Credit Reallocation.** This table presents the results from specification (5). The sample period runs monthly from February 2014 to January 2016. The unit of observation is county-month-bank-income bucket. The dependent variables are the logarithm of mortgage volume, the logarithm of the median loan size, the value-weighted LTV, the value-weighted LTI, and the mortgage rate. *Exposure* is defined in (4), and *Post* is a dummy equal to 1 from February 2015 to January 2016. Standard errors double clustered at the bank-county level in parentheses. Source: Central Bank of Ireland.

exposure defined in (4) to specification (1):

$$\begin{aligned} Y_{bcht} = \alpha + \gamma_{ct} + \eta_{ch} + \mu_{bt} + \beta_1 Post_t \times Distance_{ch} \times Exposure_b \\ + \beta_2 Distance_{ch} \times Exposure_b \\ + \beta_3 Post_t \times Distance_{ch} + \epsilon_{bcht} \end{aligned} \tag{5}$$

# Exposure and lending: interpretation of coefficients

- High exposure = preference for high risk borrowers
- Table 5 on p. 24
- The marginal effect of distance

$$\frac{\Delta Y}{\Delta D} = \beta_2 E + (\beta_3 + \beta_1 E) Post$$

- Two polar cases: $E = 0$ and $E = 1$

$$\left.\frac{\Delta Y}{\Delta D}\right|_{E=0} = \beta_3 Post, \qquad \left.\frac{\Delta Y}{\Delta D}\right|_{E=1} = \beta_2 + (\beta_3 + \beta_1) Post$$

# Distance

- $\beta_3 + \beta_1$ positive for Volume, Size, LTV, LTV, negative for Rate – fine
- $\beta_3$ negative for Volume, Size, LTV, LTV, negative for Rate – counterintuitive
- Banks with zero exposure offer worse loan terms to more distant, i.e. safer borrowers after the policy intervention?
- A regression with 3-way fixed effects as a more flexible specification?

(1) to (5), respectively. The positive coefficient $\beta_1$ shows the credit reallocation documented in Section 3 is primarily driven by banks more exposed to the limits. The sum of the first two coefficients $(\beta_1 + \beta_2)$ being very close to zero in columns (2)-(4) shows that banks maintained a similar loan size, LTV, and LTI after the policy compared with the pre-policy period, suggesting banks, while conforming with the new limits, issued mortgages with similar characteristics to the mortgages they issued before the policy.However, the negative sum of the first two coefficients in column (1) suggests banks were forced to partially reduce their mortgage issuance and were, therefore, unable to completely "undo" the new limits.

# Exposure

- The marginal effect of exposure

$$\frac{\Delta Y}{\Delta E} = (\beta_3 + \beta_1 Post)D$$

- Before vs. after:

$$\left.\frac{\Delta Y}{\Delta E}\right|_{Post=1} = (\beta_2 + \beta_1)D$$

approximately zero for Size, LTV, LTI, Rate, negative for Volume

$$\left.\frac{\Delta Y}{\Delta E}\right|_{Post=0} = \beta_2 D$$

negative

| | Income Quintiles | | | | |
|---|---|---|---|---|---|
| | **Bottom Q1** | **Q2** | **Q3** | **Q4** | **Top Q5** |
| **Panel A: Loan Volume** | | | | | |
| Post×Exposure | -1.311** | -0.570 | -0.307 | -0.773 | 2.085** |
| | (0.553) | (0.552) | (0.642) | (0.615) | (0.928) |
| Observations | 2,404 | 2,786 | 2,947 | 2,512 | 1,929 |
| R-squared | 0.496 | 0. 505 | 0.582 | 0.590 | 0.655 |
| **Panel B: Loan Size** | | | | | |
| Post×Exposure | -0.546 | -0.773*** | -1.050** | -1.856*** | 4.591*** |
| | (0.386) | (0.273) | (0.469) | (0.476) | (1.250) |
| Observations | 2,404 | 2,786 | 2,947 | 2,512 | 1,929 |
| R-squared | 0.446 | 0.359 | 0.360 | 0.369 | 0.476 |
| **Panel C: LTV** | | | | | |
| Post×Exposure | -91.148*** | -30.657** | -0.421 | -6.747 | 67.309** |
| | (14.915) | (14.100) | (16.285) | (12.749) | (26.549) |
| Observations | 2,363 | 2,755 | 2,896 | 2,466 | 1,866 |
| R-squared | 0.389 | 0.264 | 0.242 | 0.265 | 0.372 |
| **Panel D: LTI** | | | | | |
| Post×Exposure | -4.855 | 3.548 | 5.461 | 2.357 | 4.453*** |
| | (6.830) | (4.521) | (4.001) | (4.193) | (1.579) |
| Observations | 1,396 | 1,775 | 1,929 | 1,743 | 1,267 |
| R-squared | 0.426 | 0.419 | 0.484 | 0.492 | 0.538 |
| Bank Controls | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bucket-Time FE | ✓ | ✓ | ✓ | ✓ | ✓ |

# Income quintiles

- Add Q1-Q5 regressions for Rate?
- Positive coefficients for Volume, Size, LTV, LTI partially reflect stimulating effect of lower rates offered to high-income borrowers in the post period.
- Geographic reallocation of lending: away from urban areas with hot housing markets towards rural areas with cool housing markets? Equivalent of Q1-Q5 regressions in Table 6?

# Other comments

- The aggregate volume of loanable funds that was crowded out from mortgage lending to corporate lending and securities?
- Aggregate effect of the implemented policy given evidence at the micro level? E.g., the probability of default on a typical loan in the portfolio? The probability of a systemic crisis?
- The paper provides evidence that the policy works in the right direction. But how can one judge if the implemented changes in LTI and LTV are sufficient for financial stability?
- The policy forces banks to take less risk in one sector (residential mortgages) but more risk in other sectors (securities and corporate loans). Net effect for financial stability?