

Real Effects of Financial Market Integration: Evidence from an ECB Collateral Framework Change

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The views expressed here are our own and do not necessarily reflect those of the Deutsche Bundesbank or the Eurosystem.

- Financial market union necessary in monetary union *absent fiscal union*.
 - Financial market segmentation at the heart of the Eurozone crisis.
 - Financial market union requires that private sector funding conditions are independent of local banking system.
- Little knowledge about the microeconomics of financial market integration.
- We zoom in on one aspect:
 - Monetary policy implementation through *harmonized collateral policy*.
 - Use an ECB collateral framework change as quasi-natural experiment.

Financial Market Integration & Collateral Policy

- ECB implements monetary policy through national central banks:
- Before 2007, **two-tier system**.
 - Tier-one assets (gvt bonds) always eligible.
 - Tier-two assets under full discretion of national central banks.
 - Accounts for peculiarities of local banking system (Germany best example).
- Problematic treatment of **bank loans** to non-financial firms:
 - Only domestic bank loans were accepted by *some* NCBs.
 - Additional source of home bias.
 - Violates no sudden-stop condition of financial market union.

Financial Market Integration & Collateral Policy

- ECB implements monetary policy through national central banks.
- After 2007, ECB determines eligibility status/conditions in **single list**.
 - Consequence: German bank can pledge loan granted to Spanish firm.
 - Relaxes funding constraints for banks.
 - Increases funding pool for firms.
- **This paper**: how did the single list affect
 - banks' credit supply?
 - cross-border lending?
 - the non-financial sector?

Preview of Results

- How does collateral policy affect banks' credit supply to firms?
Banks holding eligible assets increase their lending by 10.6% compared to banks without newly eligible assets.

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- Which firms experience the largest funding inflows?
Mostly eligible borrowers previously in the collateral pool.

Preview of Results

- How does collateral policy affect banks' credit supply to firms?
Banks holding eligible assets increase their lending by 10.6% compared to banks without newly eligible assets.
- Which firms experience the largest funding inflows?
Mostly eligible borrowers previously in the collateral pool.
- What are the real effects at the firm level?
Affected firms increase employment and investment.

Related Literature

- Bank funding conditions and cross-border credit flows:
 - European bank loans: Spiegel (2009), Kalemli-Ozcan, Papaioannou, and Peydró (2010), Unger (2017) Hoffmann, Maslov, and Sørensen (2022).
 - US bank loans: Becker (2007).
 - Euro interbank market: Bruche and Suarez (2010).
 - Multinational banks: Giannetti and Laeven (2012).→ Small effect of harmonized collateral policy on cross-border lending.
- Bank lending channel and collateral policy: Van Bakkum, Gabarro, and Irani (2018), Koulischer and Struyven (2014), Corradin, Heider, and Hoerova (2017).
→ Collateral policy affects bank lending behaviour to firms in *normal times*.
- Real effects: Pelizzon et al. (2019) Grosse-Rueschkamp, Steffen, and Streitz (2019)
→ Collateral policy affects firm level employment and investment.

Institutional Framework & Data

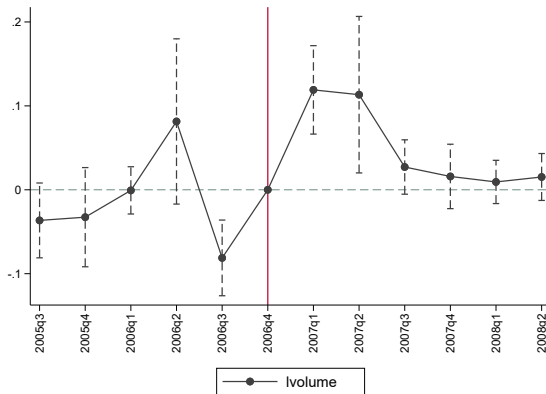
- Focus: **syndicated loans market** (multiple banks lend to one borrower).
 - Inclusion of syndicated loans in single list announced in July 2005.
 - Single list came into affect in January 2007 (crisis-unrelated).
- Borrowers are non-financial firms (54% headquartered in euro area).
- Merged dataset from Dealscan, CapitalIQ, and Compustat
 - Sample period 2003q1-2008q2.
 - 1700 firms, average loan issuance 470 million. [▶▶ Sum Stats Firms](#)
 - Average spread and maturity 204bp and 7 years. [▶▶ Sum Stats Loans](#)
 - Banks lend $\approx 62\%$ domestically and $\approx 38\%$ to other euro area firms.

[▶▶ Sum Stats Banks](#)

Empirical Strategy

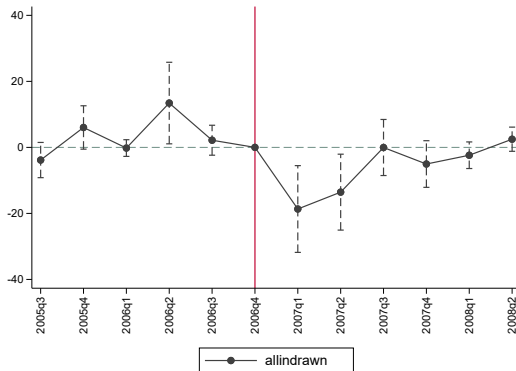
- $Affected_i = \frac{\text{Other-EA (not domestic) Loan Issues}}{\text{All Loan Issues}}$ from 2003q1-2005q2.
- Banks with **above-median issuance history** to other-EA (not domestic) borrowers are classified as affected.
- **Identifying assumption**: unaffected banks do not change business model in response to collateral framework change.
- We estimate loan issuance/interest rate spread from bank i to firm j in quarter t
$$\log(y_{ijt}) = \beta_1 \text{Affected}_i(0/1) \times \text{Post07}_t + \gamma X_{i,t-4} + \mu_{ij} + \nu_{jt} + \epsilon_{ijt}$$
- Concerns:
 - No random treatment assignment: add bank controls $X_{i,t-4}$ size, liquidity ...
 - Bank-firm FE μ_{ij} to account for different borrower characteristics between affected and unaffected banks.
 - Firm-quarter FE ν_{jt} to control for loan demand (Khwaja and Mian, 2008).

Credit Supply: Parallel Trends



Parallel trends assumption: $L_{ijt} = \sum_{k \neq 2006q4} \beta_k \text{Affected}_i(0/1) \times \mathbf{1}[k = t] + \varepsilon_{ijt}$

Interest Rate Spread: Parallel Trends



Parallel trends assumption: $S_{ijt} = \sum_{k \neq 2006q4} \beta_k \text{Affected}_i(0/1) \times \mathbf{1}[k = t] + \varepsilon_{ijt}$

Credit Supply: Results

| | L_{ijt} | L_{ijt} | L_{ijt} |
|--|---------------------|---------------------|---------------------|
| $Affected_i \times Post07_t$ | 0.101*** (0.031) | 0.110*** (0.037) | 0.109*** (0.036) |
| N | 3,209 | 3,209 | 3,183 |
| R^2 | 0.866 | 0.867 | 0.867 |
| Bank Controls | No | Yes | Yes |
| Loan Controls | No | Yes | Yes |
| Bank \times Firm FE | Yes | Yes | Yes |
| Country \times Time FE | Yes | Yes | No |
| Firm \times Time FE | Yes | Yes | No |
| Country \times Industry \times Time FE | No | No | Yes |

- Standard errors clustered at bank level.
- Estimation window 2006q1-2007q4.
- Bank-level controls: ln(total assets), equity ratio, ROE, cash ratio, liquidity ratio, deposit ratio
- Loan-level controls: secured, refinancing, purpose

Interest Rate Spreads: Results

| | S_{ijt} | S_{ijt} | S_{ijt} |
|--|----------------------|-----------------------|-----------------------|
| $Affected_i \times Post07_t$ | -12.733** (5.251) | -12.438*** (4.157) | -12.652*** (4.450) |
| N | 3,209 | 3,209 | 3,183 |
| R^2 | 0.783 | 0.783 | 0.782 |
| Bank Controls | No | Yes | Yes |
| Loan Controls | No | Yes | Yes |
| Bank \times Firm FE | Yes | Yes | Yes |
| Country \times Time FE | Yes | Yes | No |
| Firm \times Time FE | Yes | Yes | No |
| Country \times Industry \times Time FE | No | No | Yes |

- Standard errors clustered at bank level.
- Estimation window 2006q1-2007q4.
- Bank-level controls: ln(total assets), equity ratio, ROE, cash ratio, liquidity ratio, deposit ratio
- Loan-level controls: secured, refinancing, purpose

Credit Supply: Borrower Location

| | (1) Previously eligible | (2) Newly eligible | (3) Foreign |
|------------------------------|----------------------------|-----------------------|------------------|
| $Affected_i \times Post07_t$ | 0.359*** (0.026) | 0.023*** (0.007) | 0.017 (0.018) |
| Observations | 941 | 800 | 1,462 |
| R-squared | 0.892 | 0.867 | 0.839 |
| Bank \times Firm FE | Yes | Yes | Yes |
| Country \times Time FE | Yes | Yes | Yes |
| Firm \times Time FE | Yes | Yes | Yes |
| Cluster | Bank | Bank | Bank |

- Most of the additional credit goes to previously eligible (=domestic) firms.
- No supply at all to foreign borrowers.

- $Exposed_j = \frac{\text{Loans from affected banks}}{\text{All Loans}}$ from 2003q1-2005q2.
- Firms with **above-median share** of loans from affected banks are classified as exposed.

$$y_{jt} = \delta_1 Exposed_j(0/1) \times Post07_t + \gamma X_{j,t-4} + \mu_{dj} + \nu_{ct} + \chi_j + \epsilon_{jt}$$

- Firm controls $X_{j,t-1}$: log assets, leverage, liquidity.
- μ_{dj} industry-time FE, ν_{ct} country-time FE, χ_j firm FE.
- Outcome variables:
 - **Credit supply**: in terms of $pr(Loan)_{jt} = 1$ and L_{jt}
 - **Real effects**: log employment.

Firm Level: Probability of obtaining loan

| | (1) | (2) | (3) | (4) |
|-----------------------------|------------------|--------------------|--------------------|-------------------|
| | $pr(Loan)$ | $pr(Loan)$ | $pr(Loan)$ | $pr(Loan)$ |
| $Exposed_j \times Post07_t$ | 0.087 (0.071) | 0.156** (0.076) | 0.194** (0.085) | 0.140* (0.083) |
| N | 1,103 | 1,103 | 1,103 | 1,061 |
| R^2 | 0.050 | 0.443 | 0.584 | 0.505 |
| Firm Controls | Yes | Yes | Yes | Yes |
| Firm FE | No | Yes | Yes | Yes |
| Year FE | No | Yes | No | No |
| Industry-Year FE | No | No | Yes | No |
| Country-Year FE | No | No | No | Yes |

- Standard errors clustered at firm level.
- Estimation window 2005-2008.
- Firm-level controls: assets, leverage, liquidity
- Firms exposed to affected banks experience increase in probability of obtaining a loan.

Firm Level: Credit Supply

| | (1) | (2) | (3) | (4) |
|---|-------------------|--------------------|--------------------|-------------------|
| | $\ln(1 + L_{jt})$ | $\ln(1 + L_{jt})$ | $\ln(1 + L_{jt})$ | $\ln(1 + L_{jt})$ |
| <i>Exposed_j × Post07_t</i> | 0.769 (0.591) | 1.282** (0.622) | 1.470** (0.688) | 1.308* (0.687) |
| N | 1,103 | 1,103 | 1,103 | 1,061 |
| R ² | 0.050 | 0.451 | 0.583 | 0.521 |
| Firm Controls | Yes | Yes | Yes | Yes |
| Firm FE | No | Yes | Yes | Yes |
| Year FE | No | Yes | No | No |
| Industry-Year FE | No | No | Yes | No |
| Country-Year FE | No | No | No | Yes |

- Standard errors clustered at firm level.
- Estimation window 2005-2008.
- Firm-level controls: assets, leverage, liquidity
- Firms exposed to affected banks experience increase in loan supply.

Firm Level: Real Effects

| Outcome Firm-Type | Employment | | | Tangible Assets | | |
|--|------------------|--------------------|--------------------|-------------------|------------------|--------------------|
| | All | NoTrade | Trade | All | NoTrade | Trade |
| <i>Affected_j</i> $\times Post07_t$ | 0.030 (0.023) | 0.156** (0.074) | 0.066** (0.026) | 0.063* (0.058) | 0.010 (0.128) | 0.152** (0.064) |
| N | 1,249 | 161 | 518 | 1447 | 186 | 646 |
| R^2 | 0.990 | 0.984 | 0.991 | 0.995 | 0.992 | 0.981 |

- Standard errors clustered at firm level.
- Estimation window 2005-2008.
- Investment/employment effects only for non-tradable good firms.

Robustness

- Country-Specific Eligible Assets. [▶▶ Rob1](#)
- Domestic Affected (0/1). [▶▶ Rob2](#)
- Event Window [2005q3 - 2008q2]. [▶▶ Rob3](#)
- Lead Arranger and Participating Sample. [▶▶ Rob4](#)
- Announcement Date vs. Implementation Date. [▶▶ Rob5](#)
- Placebo Test. [▶▶ Rob6](#)
- "Affected" Defined Over Total Assets. [▶▶ Rob7](#)
- "Affected" Defined as Share (%). [▶▶ Rob8](#)
- No Term Loans Sample. [▶▶ Rob9](#)

[▶▶ Conclusion](#)

Robustness Checks: Country-Specific Eligible Assets.

Table: Country-Specific Eligible Assets.

| VARIABLES | (1) lvolume | (2) lvolume | (3) lvolume | (4) lvolume | (5) lvolume | (6) lvolume |
|---|-------------------|------------------|-------------------|---------------------|---------------------|---------------------|
| AffectedCS _i (0/1) × Post07 _t | -0.146 (0.284) | 0.134 (0.152) | -0.037 (0.104) | 0.101*** (0.031) | 0.110*** (0.037) | 0.109*** (0.036) |
| Assets | | | | | -0.010 (0.037) | 0.005 (0.056) |
| Equity Ratio | | | | | 0.007 (0.009) | 0.011 (0.015) |
| ROE | | | | | 0.000 (0.001) | 0.001 (0.001) |
| Cash ratio | | | | | -0.005 (0.003) | -0.004 (0.005) |
| Liquid ratio | | | | | -0.002 (0.001) | -0.002 (0.001) |
| Deposits ratio | | | | | -0.001 (0.000) | -0.001 (0.001) |
| Loan refinancing | | | | | 0.660* (0.372) | 0.668* (0.368) |
| Loan secured | | | | | 0.479*** (0.122) | 0.511*** (0.128) |
| Loan dealpurpose | | | | | 0.103 (0.115) | 0.101 (0.106) |
| AffectedCS _i (0/1) | 0.021 (0.240) | | | | | |
| post 2007 | 0.108 (0.147) | 0.172 (0.108) | | | | |
| Observations | 3,209 | 3,209 | 3,209 | 3,209 | 3,209 | 3,183 |
| R-squared | 0.001 | 0.848 | 0.861 | 0.866 | 0.867 | 0.867 |
| Bank-level Controls | No | No | No | No | Yes | Yes |
| Bank × Firm FE | No | Yes | Yes | Yes | Yes | Yes |
| Country × Time FE | No | No | Yes | Yes | Yes | No |
| Firm × Time FE | No | No | No | Yes | Yes | No |
| Country × Industry × Time FE | No | No | No | No | No | Yes |
| Cluster | Bank | Bank | Bank | Bank | Bank | Bank |

Robustness Checks: Domestic Affected (0/1).

Table: **Domestic Affected (0/1).**

| VARIABLES | (1) lvolume | (2) lvolume | (3) lvolume | (4) lvolume | (5) lvolume |
|---------------------------------------|---------------------|---------------------|---------------------|-------------------|---------------------|
| Domestic Affected × Affected × Post07 | -0.446** (0.194) | 0.715*** (0.186) | 0.172*** (0.060) | -0.049 (0.090) | -0.084 (0.070) |
| Assets | | | | | 0.020 (0.030) |
| Equity ratio | | | | | 0.011 (0.009) |
| ROE | | | | | 0.000 (0.001) |
| Cash ratio | | | | | -0.003 (0.005) |
| Liquid ratio | | | | | -0.002 (0.002) |
| Deposits ratio | | | | | -0.001* (0.000) |
| Loan refinancing | | | | | 0.660* (0.372) |
| Loan secured | | | | | 0.479*** (0.122) |
| Loan dealpurpose | | | | | 0.103 (0.115) |
| Observations | 3,209 | 3,209 | 3,209 | 3,209 | 3,209 |
| R-squared | 0.004 | 0.848 | 0.861 | 0.866 | 0.867 |
| Bank-level Controls | No | No | No | Yes | Yes |
| Bank × Firm FE | Yes | Yes | Yes | Yes | Yes |
| Country × Time FE | No | Yes | Yes | Yes | Yes |
| Firm × Time FE | No | No | Yes | Yes | Yes |
| Cluster | Bank | Bank | Bank | Bank | Bank |

Robustness: Event Window [2005q3 - 2008q2]

Table: **Event Window [2005q3 - 2008q2].**

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) |
|------------------------------|------------------|---------------------|------------------|--------------------|---------------------|---------------------|
| | lvolume | lvolume | lvolume | lvolume | lvolume | lvolume |
| Affected05 (0/1) × post07 | 0.083 (0.174) | 0.061 (0.085) | 0.055 (0.059) | 0.077** (0.033) | 0.079* (0.039) | 0.073** (0.035) |
| ln(assets) | | | | | 0.019 (0.037) | 0.044 (0.046) |
| Equity ratio | | | | | -0.005 (0.009) | -0.000 (0.010) |
| ROE | | | | | 0.000 (0.000) | 0.000 (0.000) |
| Cash ratio | | | | | -0.001 (0.004) | 0.000 (0.005) |
| Liquidity Ratio | | | | | -0.001 (0.001) | -0.001 (0.001) |
| Deposits ratio | | | | | 0.001 (0.001) | 0.001 (0.001) |
| Loan refinancing | | | | | 0.479* (0.282) | 0.479* (0.278) |
| Loan secured | | | | | 0.621*** (0.108) | 0.650*** (0.107) |
| Loan deal purpose | | | | | 0.220** (0.090) | 0.214** (0.085) |
| Affected05 (0/1) | 0.061 (0.218) | | | | | |
| post 2007 | 0.063 (0.095) | 0.256*** (0.067) | | | | |
| Observations | 4,782 | 4,782 | 4,782 | 4,782 | 4,782 | 4,744 |
| R-squared | 0.002 | 0.841 | 0.855 | 0.863 | 0.865 | 0.866 |
| Bank-level Controls | No | No | No | No | Yes | Yes |
| Bank × Firm FE | No | Yes | Yes | Yes | Yes | Yes |
| Country × Time FE | No | No | Yes | Yes | Yes | No |
| Firm × Time FE | No | No | No | Yes | Yes | No |
| Country × Industry × Time FE | No | No | No | No | No | Yes |
| Cluster | Bank | Bank | Bank | Bank | Bank | Bank |

Robustness: Lead and Participating Banks

Table: **Lead and Participating Banks.**

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) |
|------------------------------|---------------------|---------------------|------------------|--------------------|---------------------|---------------------|
| | lvolume | lvolume | lvolume | lvolume | lvolume | lvolume |
| affected05 (0/1) × post07 | 0.009 (0.082) | 0.074 (0.076) | 0.015 (0.043) | 0.036** (0.017) | 0.036** (0.016) | 0.012 (0.015) |
| Assets | | | | | -0.058 (0.035) | -0.046 (0.034) |
| Equity ratio | | | | | -0.013 (0.009) | -0.013* (0.008) |
| ROE | | | | | -0.000 (0.001) | -0.000 (0.001) |
| Cash ratio | | | | | 0.008** (0.004) | 0.008* (0.005) |
| Liquidity ratio | | | | | 0.002** (0.001) | 0.002** (0.001) |
| Deposits ratio | | | | | -0.000 (0.001) | -0.000 (0.001) |
| Loan refinancing | | | | | 0.448 (0.293) | 0.403 (0.277) |
| Loan secured | | | | | 0.426*** (0.089) | 0.436*** (0.091) |
| Loan deal purpose | | | | | 0.145 (0.093) | 0.116 (0.076) |
| Affected05 (0/1) | 0.130 (0.129) | | | | | |
| post 2007 | 0.226*** (0.064) | 0.189*** (0.051) | | | | |
| Observations | 10,158 | 10,158 | 10,158 | 10,158 | 10,158 | 10,038 |
| R-squared | 0.008 | 0.851 | 0.857 | 0.861 | 0.862 | 0.863 |
| Bank-level Controls | No | No | No | No | Yes | Yes |
| Bank × Firm FE | No | Yes | Yes | Yes | Yes | Yes |
| Country × Time FE | No | No | Yes | Yes | Yes | No |
| Firm × Time FE | No | No | No | Yes | Yes | No |
| Country × Industry × Time FE | No | No | No | No | No | Yes |
| Cluster | Bank | Bank | Bank | Bank | Bank | Bank |

Robustness: Announcement Date (2005q2) vs Implementation Date (2007q1)

Table: **Announcement vs Implementation [2004q2-2006q4].**

| VARIABLES | (1) lvolume | (2) lvolume | (3) lvolume | (4) lvolume | (5) lvolume | (6) lvolume |
|------------------------------|--------------------|-------------------|---------------------|-------------------|---------------------|---------------------|
| Affected05 × Post05 | -0.054 (0.132) | 0.059 (0.172) | -0.250** (0.101) | -0.059 (0.039) | -0.049 (0.039) | -0.041 (0.045) |
| Assets | | | | | -0.096 (0.080) | -0.107 (0.077) |
| Equity ratio | | | | | -0.020* (0.011) | -0.021* (0.011) |
| ROE | | | | | 0.000 (0.000) | 0.000 (0.000) |
| Cash ratio | | | | | 0.008 (0.010) | 0.008 (0.010) |
| Liquidity ratio | | | | | -0.002** (0.001) | -0.003** (0.001) |
| Deposits ratio | | | | | 0.001 (0.001) | 0.001 (0.001) |
| Loan refinancing | | | | | 0.739*** (0.194) | 0.777*** (0.171) |
| Loan secured | | | | | 0.345* (0.174) | 0.337* (0.174) |
| Loan deal purpose | | | | | 0.117** (0.048) | 0.135*** (0.043) |
| Affected05 (0/1) | 0.109 (0.226) | | | | | |
| post 2005 | 0.165** (0.073) | 0.241* (0.142) | | | | |
| Observations | 3,233 | 3,233 | 3,233 | 3,233 | 3,233 | 3,212 |
| R-squared | 0.003 | 0.848 | 0.868 | 0.878 | 0.879 | 0.879 |
| Bank-level Controls | No | No | No | No | Yes | Yes |
| Bank × Firm FE | No | Yes | Yes | Yes | Yes | Yes |
| Country × Time FE | No | No | Yes | Yes | Yes | No |
| Firm × Time FE | No | No | No | Yes | Yes | No |
| Country × Industry × Time FE | No | No | No | No | No | Yes |
| Cluster | Bank | Bank | Bank | Bank | Bank | Bank |

Robustness: Placebo Test

Table: Placebo Test: Lender outside the EA.

| VARIABLES | (1) Ivolume | (2) Ivolume | (3) Ivolume | (4) Ivolume | (5) Ivolume | (6) Ivolume |
|------------------------------|--------------------|---------------------|--------------------|------------------|----------------------|----------------------|
| Placebo05 × Post07 | 0.328** (0.127) | 0.666*** (0.000) | 0.867** (0.363) | 0.137 (0.143) | 0.018 (0.103) | 0.094 (0.141) |
| Assets | | | | | 2.119 (1.228) | 1.272 (1.472) |
| Equity ratio | | | | | -0.268*** (0.063) | -0.262*** (0.048) |
| ROE | | | | | 0.003 (0.014) | 0.028 (0.019) |
| Cash ratio | | | | | 0.010*** (0.003) | 0.010*** (0.003) |
| Liquidity ratio | | | | | -0.009*** (0.001) | -0.008*** (0.001) |
| Deposits_ratio | | | | | -0.025*** (0.004) | -0.025*** (0.003) |
| Loan refinancing | | | | | -0.844** (0.339) | -0.830** (0.325) |
| Loan secured | | | | | 0.265 (0.150) | 0.260 (0.150) |
| Loan deal purpose | | | | | -0.014 (0.096) | -0.004 (0.090) |
| Observations | 1,859 | 1,859 | 1,859 | 1,859 | 1,859 | 1,829 |
| R-squared | 0.003 | 0.844 | 0.855 | 0.859 | 0.860 | 0.861 |
| Bank-level Controls | No | No | No | No | Yes | Yes |
| Bank × Firm FE | No | Yes | Yes | Yes | Yes | Yes |
| Country × Time FE | No | No | Yes | Yes | Yes | No |
| Firm × Time FE | No | No | No | Yes | Yes | No |
| Country × Industry × Time FE | No | No | No | No | No | Yes |
| Cluster | Bank | Bank | Bank | Bank | Bank | Bank |

Robustness: Affected Defined Over Total Assets (%).

Table: Affected Defined Over Total Assets (%).

| VARIABLES | (1) lvolume | (2) lvolume | (3) lvolume | (4) lvolume | (5) lvolume | (6) lvolume |
|---|-------------------|-------------------|------------------|------------------|---------------------|---------------------|
| Affected over $TA_{05}(0/1) \times \text{post}$ | 0.219 (0.220) | 0.254* (0.128) | 0.159 (0.096) | 0.058 (0.057) | 0.083* (0.049) | 0.084* (0.049) |
| Assets | | | | | -0.091** (0.035) | -0.083* (0.046) |
| Equity ratio | | | | | -0.014 (0.011) | -0.011 (0.018) |
| ROE | | | | | -0.000 (0.001) | -0.000 (0.001) |
| Cash ratio | | | | | -0.001 (0.004) | -0.001 (0.005) |
| Liquidity ratio | | | | | -0.001 (0.001) | -0.001 (0.001) |
| Deposits ratio | | | | | -0.000 (0.001) | -0.000 (0.001) |
| Loan refinancing | | | | | 0.662* (0.374) | 0.670* (0.370) |
| Loan secured | | | | | 0.479*** (0.122) | 0.511*** (0.129) |
| Loan deal purpose | | | | | 0.102 (0.115) | 0.102 (0.107) |
| affected05ta | -0.171 (0.230) | | | | | |
| post 2007 | -0.063 (0.108) | 0.121 (0.092) | | | | |
| Observations | 3,179 | 3,179 | 3,179 | 3,179 | 3,179 | 3,153 |
| R-squared | 0.002 | 0.849 | 0.861 | 0.866 | 0.867 | 0.867 |
| Bank-level Controls | No | No | No | No | Yes | Yes |
| Bank \times Firm FE | No | Yes | Yes | Yes | Yes | Yes |
| Country \times Time FE | No | No | Yes | Yes | Yes | No |
| Firm \times Time FE | No | No | No | Yes | Yes | No |
| Country \times Industry \times Time FE | No | No | No | No | No | Yes |
| Cluster | Bank | Bank | Bank | Bank | Bank | Bank |

Robustness: Affected (%).

Table: Affected (%).

| VARIABLES | (1) Ivolume | (2) Ivolume | (3) Ivolume | (4) Ivolume | (5) Ivolume | (6) Ivolume |
|------------------------------|-------------------|-------------------|-------------------|-------------------|----------------------|---------------------|
| Affected05 (%) × post07 | -0.015 (0.010) | 0.011 (0.012) | -0.001 (0.006) | 0.004* (0.002) | 0.005** (0.002) | 0.005** (0.002) |
| Assets | | | | | -0.061** (0.025) | -0.048 (0.050) |
| Equity ratio | | | | | -0.014 (0.020) | -0.011 (0.024) |
| ROE | | | | | 0.000 (0.000) | 0.000 (0.001) |
| Cash ratio | | | | | -0.006*** (0.002) | -0.005 (0.004) |
| Liquid ratio | | | | | -0.002 (0.002) | -0.002 (0.002) |
| Deposits ratio | | | | | -0.000 (0.001) | -0.000 (0.001) |
| Loan refinancing | | | | | 0.659* (0.372) | 0.667* (0.369) |
| Loan secured | | | | | 0.479*** (0.122) | 0.511*** (0.128) |
| Loan deal purpose | | | | | 0.101 (0.114) | 0.100 (0.106) |
| Affected05 (%) | 0.005 (0.013) | | | | | |
| post 2007 | 0.457 (0.367) | -0.062 (0.318) | | | | |
| Observations | 3,209 | 3,209 | 3,209 | 3,209 | 3,209 | 3,183 |
| R-squared | 0.002 | 0.848 | 0.861 | 0.866 | 0.867 | 0.867 |
| Bank-level Controls | No | No | No | No | Yes | Yes |
| Bank × Firm FE | No | Yes | Yes | Yes | Yes | Yes |
| Country × Time FE | No | No | Yes | Yes | Yes | No |
| Firm × Time FE | No | No | No | Yes | Yes | No |
| Country × Industry × Time FE | No | No | No | No | No | Yes |
| Cluster | Bank | Bank | Bank | Bank | Bank | Bank |

Robustness: No Term Loans.

Table: No Term Loans Sample.

| VARIABLES | (1) lvolume | (2) lvolume | (3) lvolume | (4) lvolume | (5) lvolume | (6) lvolume |
|------------------------------|-------------------|--------------------|-------------------|-------------------|---------------------|---------------------|
| affected05 (0/1) × post07 | 0.274 (0.170) | -0.074 (0.106) | -0.012 (0.095) | -0.012 (0.018) | -0.029 (0.018) | -0.032 (0.020) |
| Assets | | | | | -0.042 (0.035) | 0.059 (0.070) |
| Equity ratio | | | | | -0.010 (0.015) | 0.003 (0.019) |
| ROE | | | | | -0.003** (0.001) | -0.002 (0.002) |
| Cash ratio | | | | | -0.011** (0.005) | -0.008 (0.005) |
| Liquidity ratio | | | | | -0.003 (0.002) | -0.003** (0.002) |
| Deposits ratio | | | | | 0.001* (0.001) | 0.001 (0.001) |
| Loan refinancing | | | | | 0.536 (0.356) | 0.557 (0.351) |
| Loan secured | | | | | -0.404** (0.160) | -0.402** (0.158) |
| Loan deal purpose | | | | | -0.115 (0.173) | -0.140 (0.172) |
| Affected05 (0/1) | -0.126 (0.204) | | | | | |
| post 2007 | -0.020 (0.122) | 0.149** (0.064) | | | | |
| Observations | 1,826 | 1,826 | 1,826 | 1,826 | 1,826 | 1,818 |
| R-squared | 0.002 | 0.890 | 0.898 | 0.906 | 0.908 | 0.909 |
| Bank-level Controls | No | No | No | No | Yes | Yes |
| Bank × Firm FE | No | Yes | Yes | Yes | Yes | Yes |
| Country × Time FE | No | No | Yes | Yes | Yes | No |
| Firm × Time FE | No | No | No | Yes | Yes | No |
| Country × Industry × Time FE | No | No | No | No | No | Yes |
| Cluster | Bank | Bank | Bank | Bank | Bank | Bank |

Conclusion

- Harmonized collateral policy as one aspect of banking union.
 - Collateral eligibility increases bank lending, especially cross-border.
 - Our results suggest positive real effects.
- Are there **downsides** of having a single-list?
 - Cross-border capital flows could fuel unsustainable credit boom.
 - But: no counterfactual with single list introduced in crisis.
- **Limitations** of our analysis
 - Local funding conditions still diverged after 2008.
 - Collateral eligibility obviously not the only source of home bias.

Summary Statistics: Loans

Table: **Summary Statistics: Bank-Loan-Quarter Level.**

| | mean | sd | min | max | count |
|---------------------------|--------|--------|-------|----------|-------|
| Loan amount (mn) | 470.66 | 792.20 | 6.38 | 4,000.00 | 3,209 |
| All-in-drawn spread (bps) | 203.55 | 129.93 | 17.50 | 550.00 | 3,209 |
| Maturity (months) | 85.11 | 41.66 | 5.00 | 515.00 | 3,167 |
| Loan Deal Purpose | 3.33 | 1.64 | 1.00 | 5.00 | 3,209 |
| Loan Refinancing | 0.30 | 0.46 | 0.00 | 1.00 | 3,209 |
| Loan Secured | 0.97 | 0.17 | 0.00 | 1.00 | 2,301 |
| EA firm | 0.54 | 0.50 | 0.00 | 1.00 | 3,209 |
| EA not domestic firm | 0.38 | 0.49 | 0.00 | 1.00 | 1,747 |
| GIIPS firm | 0.20 | 0.40 | 0.00 | 1.00 | 1,747 |
| Domestic firm | 0.62 | 0.49 | 0.00 | 1.00 | 1,747 |

Table: **Summary Statistics: Bank Level.**

| | mean | min | max | count |
|------------------|------|-----|------|-------|
| ln(total assets) | 12.1 | 8.8 | 14.2 | 35 |
| Equity ratio | 5.0 | 2.2 | 15.2 | 35 |
| ROE, in (%) | 15.3 | 4.6 | 29.2 | 35 |
| Cash ratio | 1.5 | 0.0 | 11.1 | 35 |
| Liquidity ratio | 25.7 | 6.4 | 94.1 | 35 |
| Deposit ratio | 40.5 | 5.2 | 72.9 | 35 |
| Affected (%) | 25.4 | 0.0 | 69.0 | 35 |
| Affected (0/1) | 0.4 | 0.0 | 1.0 | 35 |

Table: **Summary Statistics: Firm Level.**

| | Not Exposed mean | sd | Exposed mean | sd |
|---------------------------------|---------------------|-------|-----------------|-------|
| Exposed _{0405,j} (0/1) | 0.00 | 0.00 | 1.00 | 0.00 |
| ln(1+loan volume) _{ft} | 1.31 | 2.76 | 1.70 | 3.58 |
| ln(Total Assets) | 7.72 | 1.72 | 8.38 | 1.95 |
| Leverage | 0.41 | 0.21 | 0.38 | 0.18 |
| Liquidity (internal finance) | 0.01 | 0.11 | 0.03 | 0.08 |
| Market to book ratio | 1.51 | 0.68 | 1.48 | 0.62 |
| Return on assets | 0.08 | 0.06 | 0.08 | 0.06 |
| Dividend payout ratio | 0.26 | 0.45 | 0.21 | 0.38 |
| Employment (th) | 16.00 | 28.93 | 16.33 | 28.22 |
| ln(Investment) | 4.32 | 2.22 | 5.13 | 2.43 |