Implications of the Regulatory Treatment of Sovereign Exposures for Bank Behavior

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Motivation and Puzzle

Sovereign Bonds

Pivotal role in financial markets:

- Fiscal policy of sovereigns;
- monetary policy of central banks;
- risk-free benchmark.

Purposes for banks:

- investment opportunity;
- liquidity management;
- regulatory compliance.

Banking Regulation

Incentivizes banks to hold exposures to EU sovereigns.

Regardless of actual riskiness:

- No minimum capital requirements for credit risk;
- highest liquidity status for liquidity risk;
- no limit to large exposures for risk concentrations.

Implications for Bank Behavior

How are banks' sovereign exposures composed? Does the regulatory treatment of sovereign exposures affect bank behavior?

Regulatory Treatment of Sovereign Exposures

Table 1. *Regulatory requirements for sovereign exposures. Legal basis are European Parliament and Council (2013, 2019); European Commission (2015a,b).*

	Credit Risk	Market Risk	Liquidity Risk		Risk Concentration
			LCR	NSFR	
ECAI Rating	Risk Weight [%]	Specific Risk Charge [%]	Haircut [%]	RSF Factor [%]	LTLE
AAA–AA	0	0	0	0	No limit
A	20	0.25–1.6	15	15	25% · *Capital*
BBB	50	0.25–1.6	100	50–100	25% · *Capital*
BB-B	100	8	100	50–100	25% · *Capital*
CCC–D	150	12	100	50–100	25% · *Capital*
EU	0	0	0	0	No limit

Fundamental principle
Risk-based requirements.

EU sovereigns
No minimum requirements.

Strands of the Literature and Key Papers

Determinants of banks' sovereign exposures:

1. *Altavilla, Pagano, and Simonelli (2017). Bank Exposures and Sovereign Stress Transmission. Review of Finance 21(6), 2103–2139.*

Impact of monetary policy on sovereign exposures:

2. *Acharya and Steffen (2015). The "greatest" carry trade ever? Understanding eurozone bank risks. Journal of Financial Economics 115(2), 215–236.*
3. *Drechsler, Drechsel, Marques-Ibanez, and Schnabl (2016). Who Borrows from the Lender of Last Resort? The Journal of Finance 71(5), 1933-1974.*

Impact of sovereign exposures on bank lending:

4. *Acharya, Eisert, Eufinger, and Hirsch (2018). Real Effects of the Sovereign Debt Crisis in Europe: Evidence from Syndicated Loans. The Review of Financial Studies 31(8), 2855-2896.*

Acharya and Steffen (2015): "Greatest Carry Trade Ever"

Problem: Bank-level data of sovereign bond positions are unavailable $\rightarrow$ Indirect analysis.

Finding: Bank stock price returns load

- positively on GIIPS sovereign bond price returns and
- negatively on German sovereign bond price returns.

$\rightarrow$ Banks designed *carry trades* as investments in GIIPS sovereign bonds *(high economic risks and returns)* financed with short-term debt *(low economic costs)*.

Carry trade channels:

1. *Regulatory Capital Arbitrage*: Banks hold assets with the highest returns and lowest risk weights.
2. *Moral Suasion*: A stressed sovereign puts pressure on domestic banks to buy its bonds.
3. *Risk Shifting*: Banks from stressed countries substitute safer foreign by riskier domestic sovereign bonds (risk of bank runs).

Altavilla et al. (2017): Sovereign Exposure Determinants

Problem: Indirect evidence of Acharya and Steffen (2015) only holds if factor loadings proxy for sovereign exposures → Direct estimation of impact of sovereign stress on sovereign exposures.

Finding: In times of sovereign stress

- government-owned and bailed out banks as well as
- weakly capitalized banks

buy more domestic sovereign debt than other banks.

- Monetary policy interventions reinforce this behavior.

→ *Moral suasion* and *carry trades*.

Research Gap

Data does not break non-domestic exposures down by sovereign issuer → Expansion from domestic to foreign sovereigns, especially EU and third countries.

Hypotheses

Benchmark—Yield seeking:

BM *Banks react to a rising sovereign bond yield by increasing their sovereign exposure.*

Regulatory arbitrage:

H_{1a} *The reaction of banks to rising sovereign bond yields of member states of the EU is more pronounced compared to third countries.*

H_{1b} *The reaction of banks with low capital ratios to rising sovereign bond yields is more pronounced compared to banks with higher capital ratios.*

H_{1c} *The reaction of banks with low liquidity ratios to rising sovereign bond yields is more pronounced compared to banks with higher liquidity ratios.*

Moral suasion:

H_2 *Banks under high government influence increase their domestic sovereign exposures more compared to banks under low government influence.*

Refinancing—Carry Trades:

H_3 *The reaction of banks to rising sovereign bond yields is more pronounced in times of cheaply available funding.*

Causal Relationship and Variable Definitions

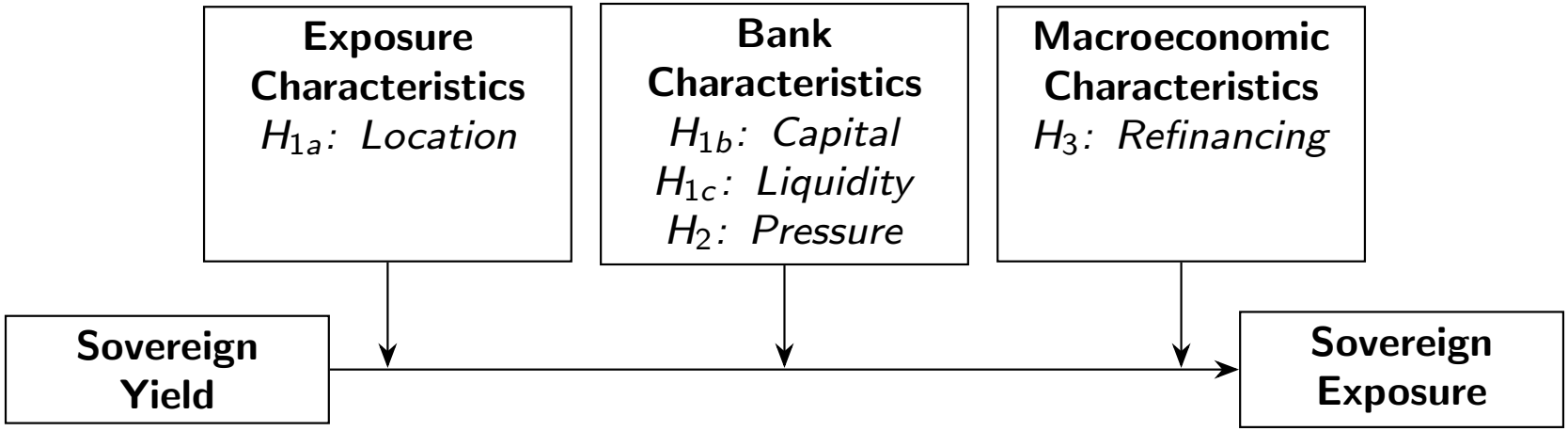


Figure 1. *Interaction approach to estimate banks' reaction to sovereign bond yield changes. Figure adjusted from Jaccard and Turrisi (2003).*

$$\begin{aligned}\Delta Exposure^{Sov}_{i,k,t} = {} & \beta_1^{BM} \cdot \Delta Yield^{Sov}_{k,t} + \beta_1^{C} \cdot \Delta FXRate^{Exposure}_{k\neq j,t} \qquad |BM(+) \qquad (1)\\ & + \beta_2^{C} \cdot ln(TotalAssets^{Bank}_{i,t}) + \beta_3^{C} \cdot LoansAssets^{Bank}_{i,t} \\ & + \beta_4^{C} \cdot DepLiab^{Bank}_{i,t} + \beta_5^{C} \cdot \Delta EqIndex^{Domestic}_{k=j,t} \\ & + \beta_i^{B} \cdot Bank_i + \beta_t^{T} \cdot Date_t + \alpha + \epsilon_{i,k,t}.\end{aligned}$$

$$\Delta Exposure^{Sov}_{i,k,t} = \left(\frac{Exposure^{Sov}_{i,k,t} - Exposure^{Sov}_{i,k,t-1}}{\overline{Exposure^{Sov}_{i,k}}} \right) \cdot 100. \qquad (2)$$

$$\Delta Yield^{Sov}_{k,t} = Yield^{Sov}_{k,t} - Yield^{Sov}_{k,t-1}. \qquad (3)$$

Regression Specification: Full Model

$$
\begin{aligned}
\Delta Exposure^{Sov}_{i,k,t} = {} & \beta^{BM}_1 \cdot \Delta Yield^{Sov}_{k,t} + \beta^{A}_2 \cdot Domestic^{Exposure}_{i,k=j,t} && | BM(+) \\
& + \beta^{A}_3 \cdot \Delta Yield^{Sov}_{k,t} \cdot Domestic^{Exposure}_{i,k=j,t} + \beta^{A}_4 \cdot ThCountry^{Exposure}_{i,k\neq j,t} && \\
& + \beta^{A}_5 \cdot \Delta Yield^{Sov}_{k,t} \cdot ThCountry^{Exposure}_{i,k\neq j,t} + \beta^{A}_6 \cdot CapitalRatio^{Bank}_{i,t} && | H_{1a}(-) \\
& + \beta^{A}_7 \cdot \Delta Yield^{Sov}_{k,t} \cdot CapitalRatio^{Bank}_{i,t} + \beta^{A}_8 \cdot CashRatio^{Bank}_{i,t} && | H_{1b}(-) \\
& + \beta^{A}_9 \cdot \Delta Yield^{Sov}_{k,t} \cdot CashRatio^{Bank}_{i,t} && | H_{1c}(-) \\
& + \beta^{S}_1 \cdot StateAid^{Bank}_{i,j=k,t} \cdot Domestic^{Exposure}_{i,k=j,t} && | \ H_2(+) \\
& + \beta^{S}_2 \cdot \Delta Ownership^{Sov}_{i,j=k,t} \cdot Domestic^{Exposure}_{i,k=j,t} && | \ H_2(+) \\
& + \beta^{R}_1 \cdot \Delta Yield^{Sov}_{k,t} \cdot Price^{Germany}_{t} && | \ H_3(-) \\
& + \beta^{R}_2 \cdot \Delta Yield^{Sov}_{k,t} \cdot LTRO_t && | \ H_3(+) \\
& + \beta^{C}_1 \cdot \Delta FXRate^{Exposure}_{k\neq j,t} + \beta^{C}_2 \cdot ln(TotalAssets^{Bank}_{i,t}) && (4) \\
& + \beta^{C}_3 \cdot LoansAssets^{Bank}_{i,t} + \beta^{C}_4 \cdot DepLiab^{Bank}_{i,t} && \\
& + \beta^{C}_5 \cdot \Delta EqIndex^{Domestic}_{k=j,t} + \beta^{B}_i \cdot Bank_i + \beta^{T}_t \cdot Date_t + \alpha + \epsilon_{i,k,t}. &&
\end{aligned}
$$

Sample Distribution

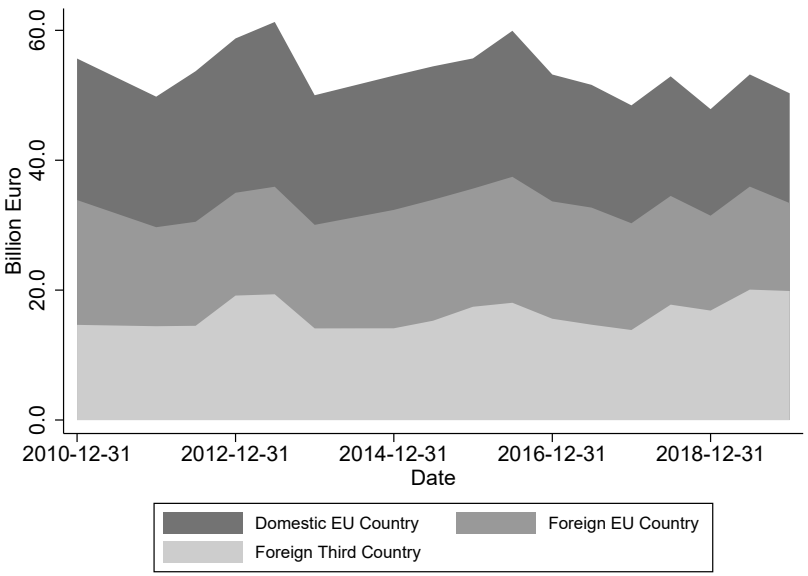
Table 2. *EBA investigations. The data is available at European Banking Authority (2020).*

Data Point	Reporting Date	Publication Date	EBA Investigation
1	2010-12-31	2011-07-15	Stress Test 2011
2 and 3	2011-12-31 and 2012-06-30	2012-10-03	Capital Exercise 2011
4 and 5	2012-12-31 and 2013-06-30	2013-12-16	Transparency Exercise 2013
6	2013-12-31	2014-10-26	Stress Test 2014
7 and 8	2014-12-31 and 2015-06-30	2015-11-24	Transparency Exercise 2015
9 and 10	2015-12-31 and 2016-06-30	2016-12-02	Transparency Exercise 2016
11 and 12	2016-12-31 and 2017-06-30	2017-11-24	Transparency Exercise 2017
13 and 14	2017-12-31 and 2018-06-30	2018-12-14	Transparency Exercise 2018
15 and 16	2018-12-31 and 2019-06-30	2019-11-29	Transparency Exercise 2019
17	2019-12-31	2020-06-08	Transparency Exercise 2020

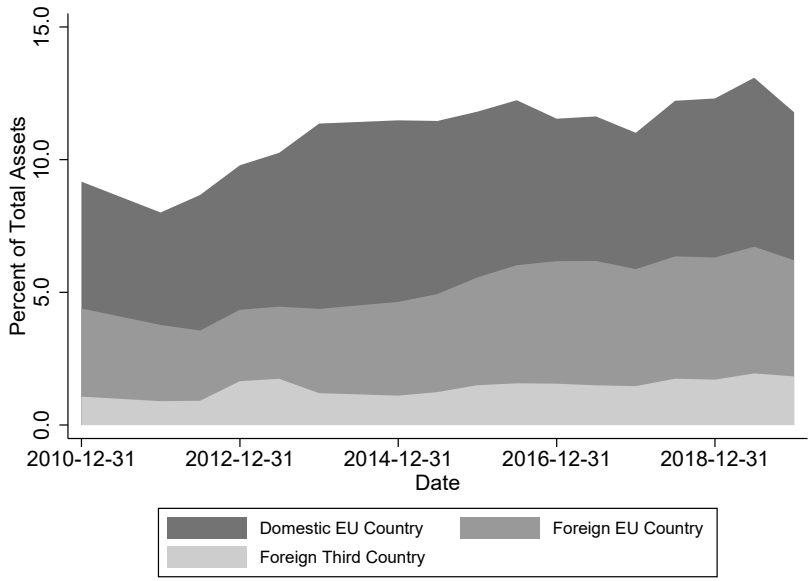
Table 3. *Sample distribution grouped by home countries and sovereign counterparties. Nordea Bank Abp is double counted due to re-location from Sweden to Finland in 2019.*

	Banks			Sovereign Counterparties		
Country	Count	Obs.	(%)	Count	Obs.	(%)
EU Core	40	8,660	(67.29)	12	7,016	(54.52)
EU Periphery	29	4,209	(32.71)	5	3,168	(24.62)
Third Countries	0	0	(0.00)	6	2,685	(20.86)
Full Sample	69	12,869	(100.00)	23	12,869	(100.00)

Evolution of Banks' Sovereign Exposures



(a) *Billion Euro*



(b) *Percent of total assets*

Figure 2. *Evolution of banks' sovereign exposures.*

Excess Exposure to Foreign Sovereigns

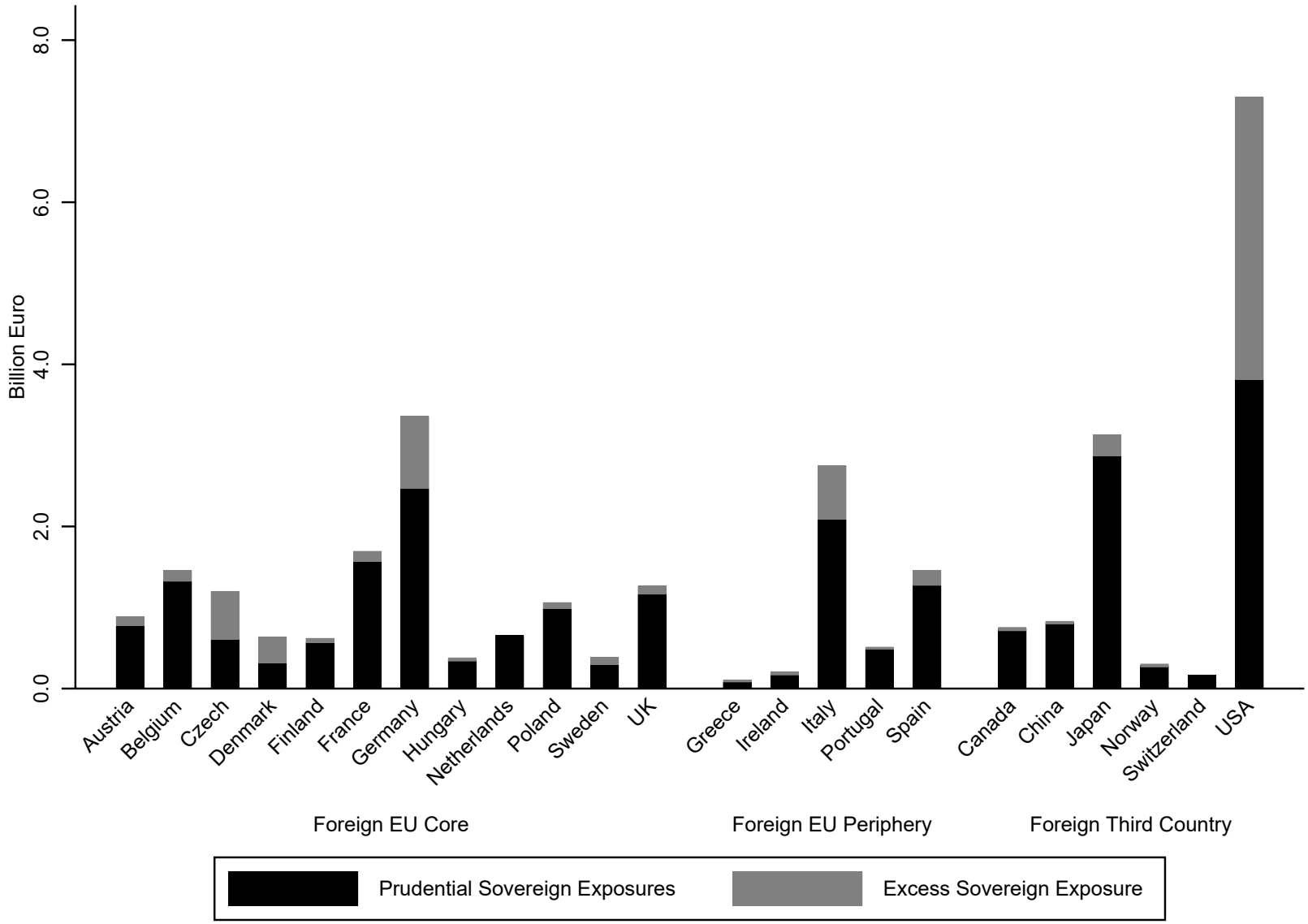


Figure 3. *Excess sovereign exposures by foreign sovereign counterparty.*

Excess Exposure to Domestic Sovereigns

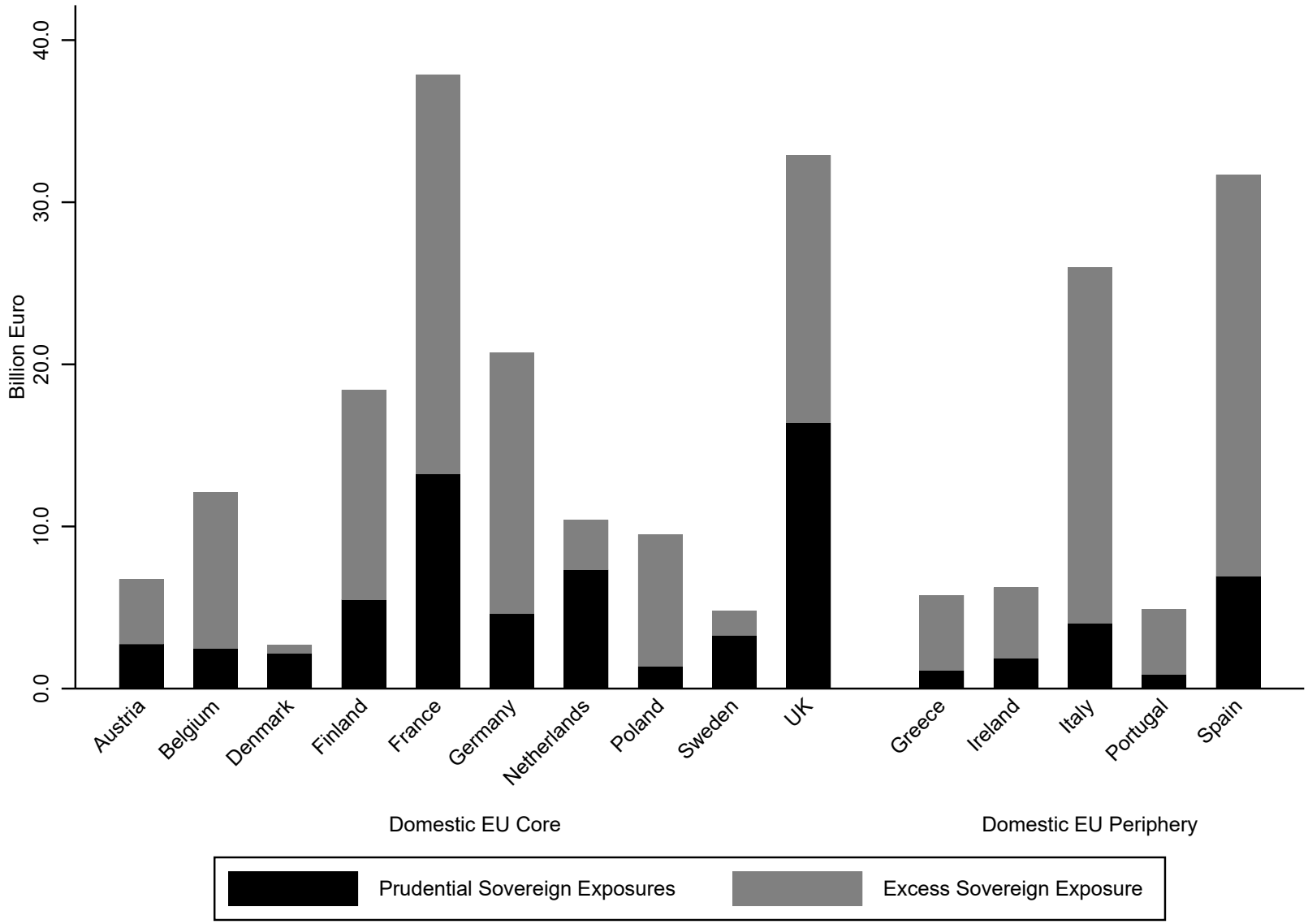


Figure 4. *Excess sovereign exposures by domestic sovereign counterparty.*

Share of Sovereign Debt Held by Sample Banks

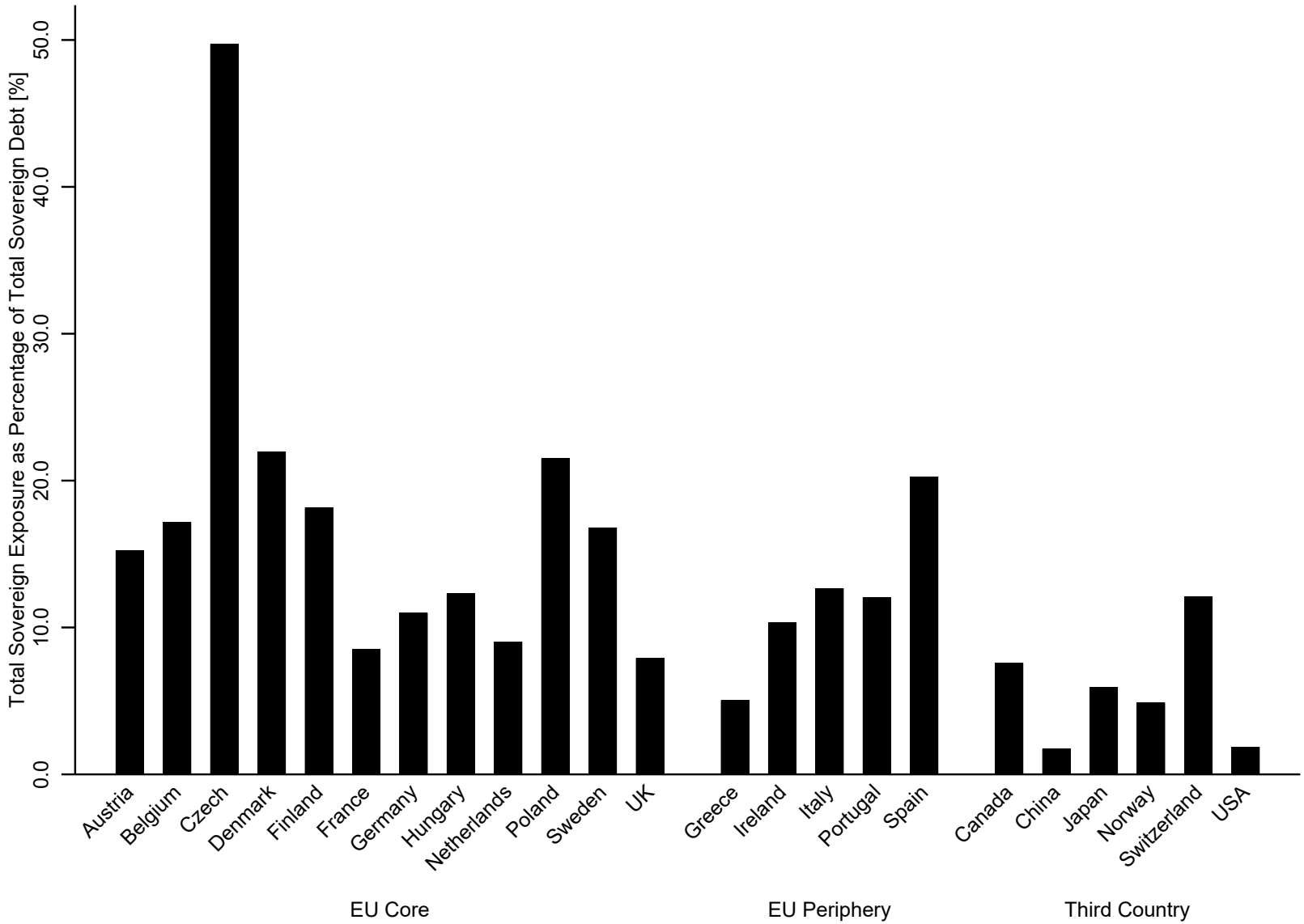


Figure 5. *Share of sovereign debt held by sample banks.*

Sovereign Ratings

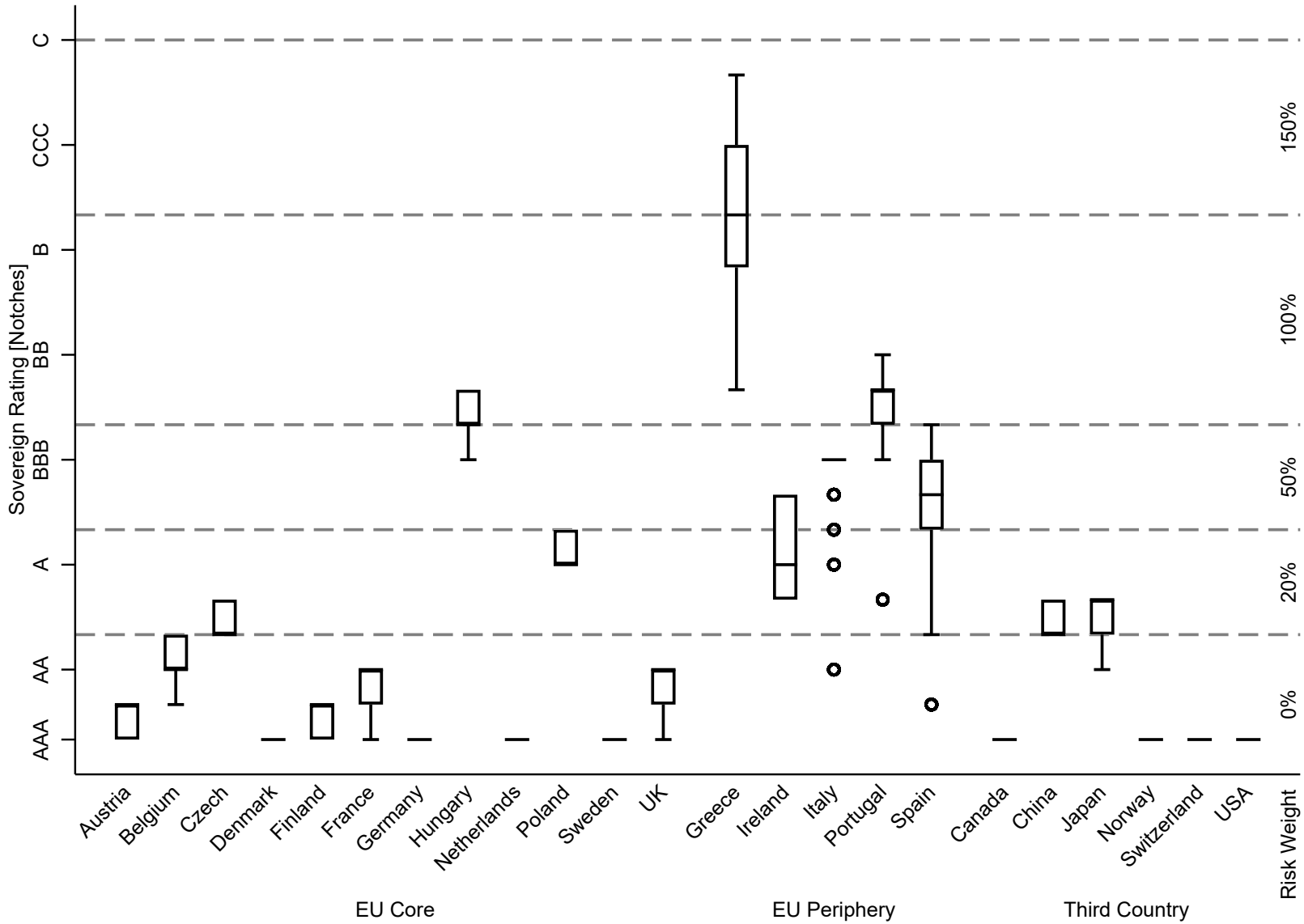


Figure 6. *Sovereign ratings by sovereign counterparty.*

Evolution of Sovereign Bond Yields

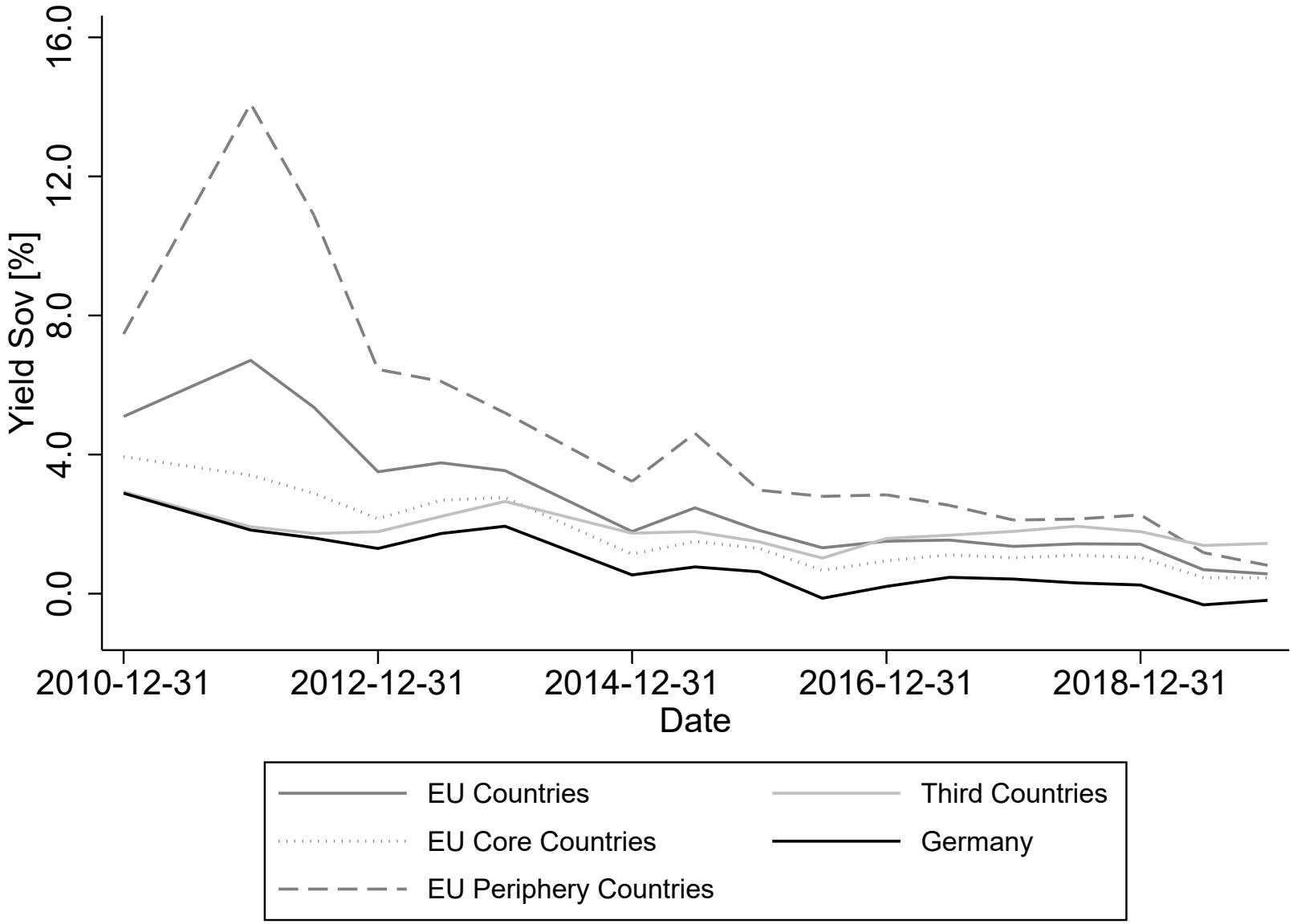


Figure 7. *Evolution of sovereign bond yields.*

Regression Results

Table 4. *Regression results. Standard errors are clustered at the bank level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.*

$\Delta Exposure^{Sov}_{i,k,t}$	(1) Benchmark	(2) Arbitrage	(3) Suasion	(4) Refinancing	(5) Combined
$\Delta Yield^{Sov}_{k,t}$	12.7403***	41.3839***	12.8019***	84.2002***	77.9011***
$Domestic^{Exposure}_{i,k=j,t}$		−0.0360			−0.5184
$\Delta Yield^{Sov}_{k,t} \cdot Domestic^{Exposure}_{i,k=j,t}$		−14.1978***			−13.0688***
$ThCountry^{Exposure}_{i,k\neq j,t}$		3.8568**			3.9509**
$\Delta Yield^{Sov}_{k,t} \cdot ThCountry^{Exposure}_{i,k\neq j,t}$		3.0815			7.2758
$CapitalRatio^{Bank}_{i,t}$		−1.4774**			−1.4565**
$\Delta Yield^{Sov}_{k,t} \cdot CapitalRatio^{Bank}_{i,t}$		−1.3818***			−1.0078**
$CashRatio^{Bank}_{i,t}$		−0.1599			−0.1389
$\Delta Yield^{Sov}_{k,t} \cdot CashRatio^{Bank}_{i,t}$		−1.4115***			−0.8947**
$StateAid^{Bank}_{i,j=k,t} \cdot Domestic^{Exposure}_{i,k=j,t}$			12.2550**		4.5687
$\Delta Ownership^{Sov}_{i,j=k,t} \cdot Domestic^{Exposure}_{i,k=j,t}$			0.3526		0.2895*
$\Delta Yield^{Sov}_{k,t} \cdot Price^{Germany}_{t}$				−0.8571***	−0.5652*
$\Delta Yield^{Sov}_{k,t} \cdot LTRO_t$				29.3511***	28.6052***
Control Variables	Yes	Yes	Yes	Yes	Yes
Entity Fixed Effects	Bank level	Bank level	Bank level	Bank level	Bank level
Time Fixed Effects	Half-yearly	Half-yearly	Half-yearly	Half-yearly	Half-yearly
Constant	Yes	Yes	Yes	Yes	Yes
Observations	10,541	10,541	10,541	10,541	10,541
Banks	68	68	68	68	68
Adjusted R^2 [%]	1.2	1.5	1.2	1.8	1.9

Regulatory Arbitrage: Counterparty Location

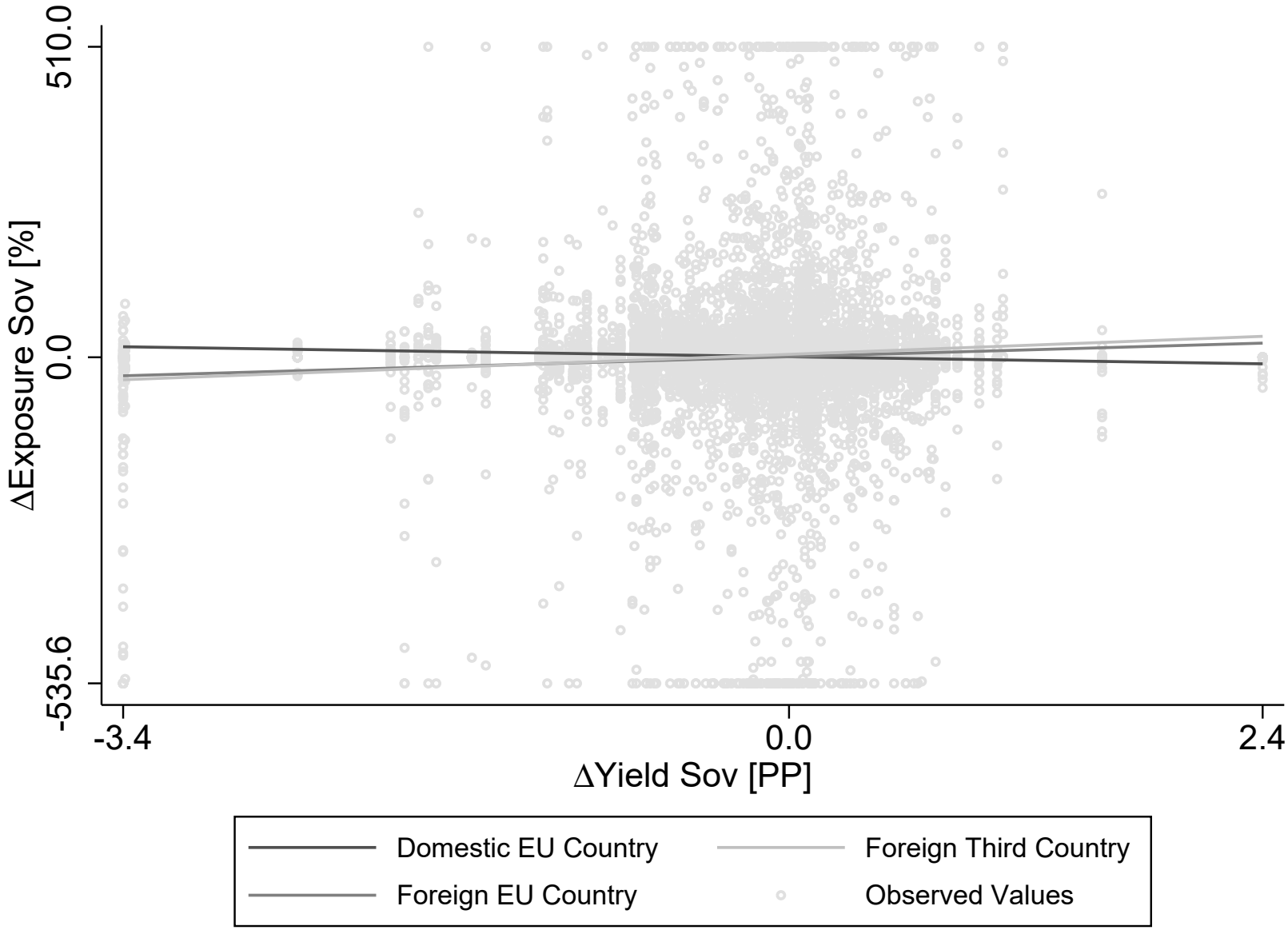
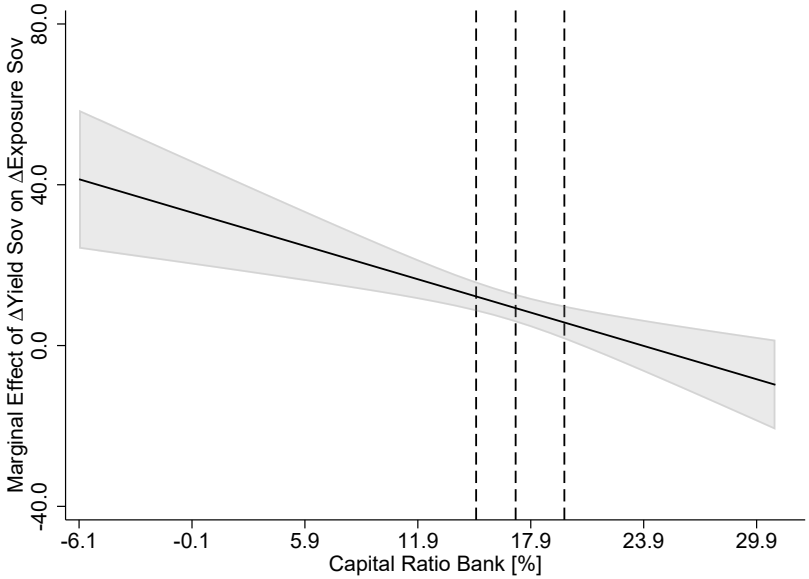
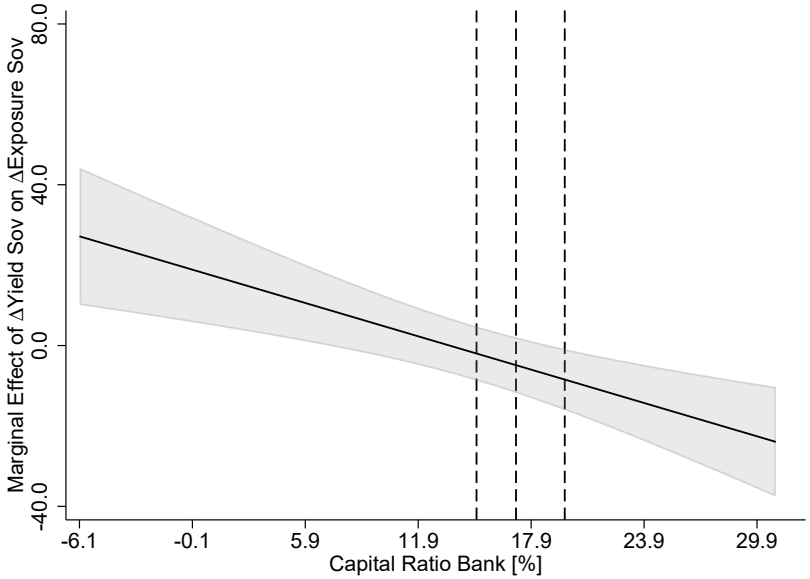


Figure 8. *Slope estimations for exposure characteristics.*

Regulatory Arbitrage: Bank Capitalization



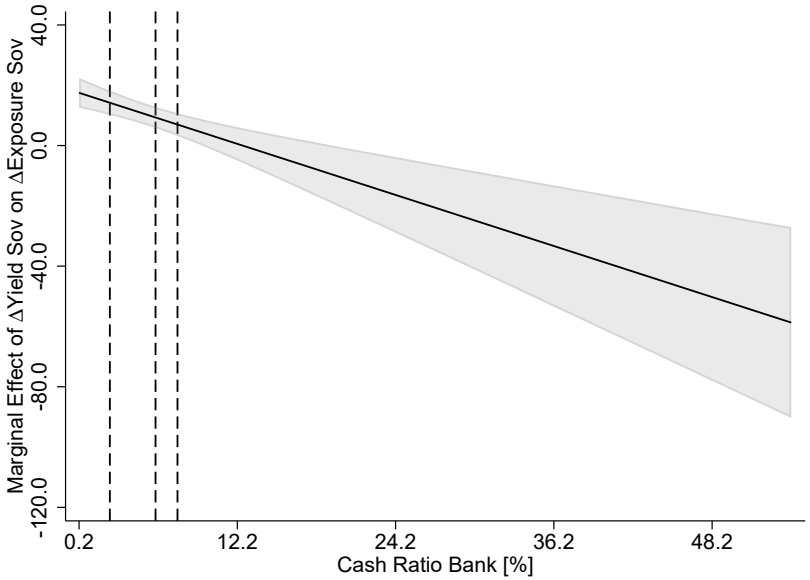
(a) *Foreign sovereign exposure*



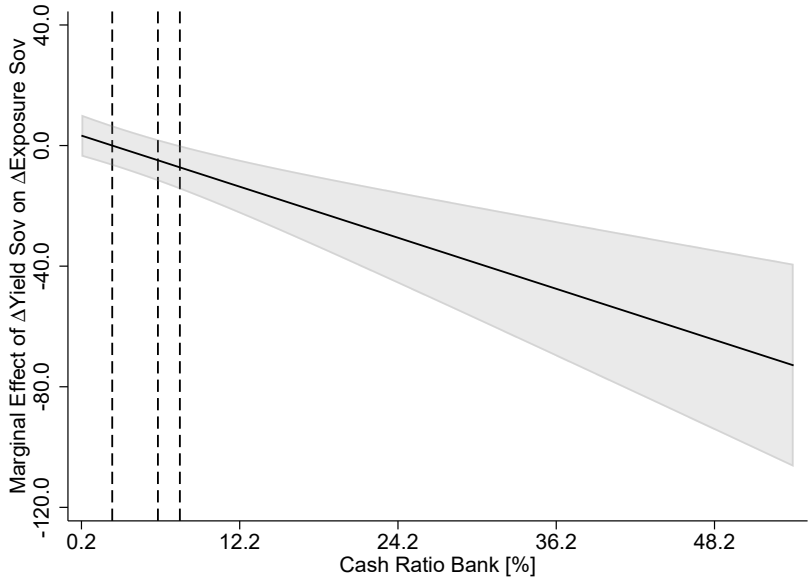
(b) *Domestic sovereign exposure*

Figure 9. *Marginal effect of bank capitalization.*

Regulatory Arbitrage: Bank Liquidity



(a) *Foreign sovereign exposure*



(b) *Domestic sovereign exposure*

Figure 10. *Marginal effect of bank liquidity.*

Moral Suasion: Government Influence

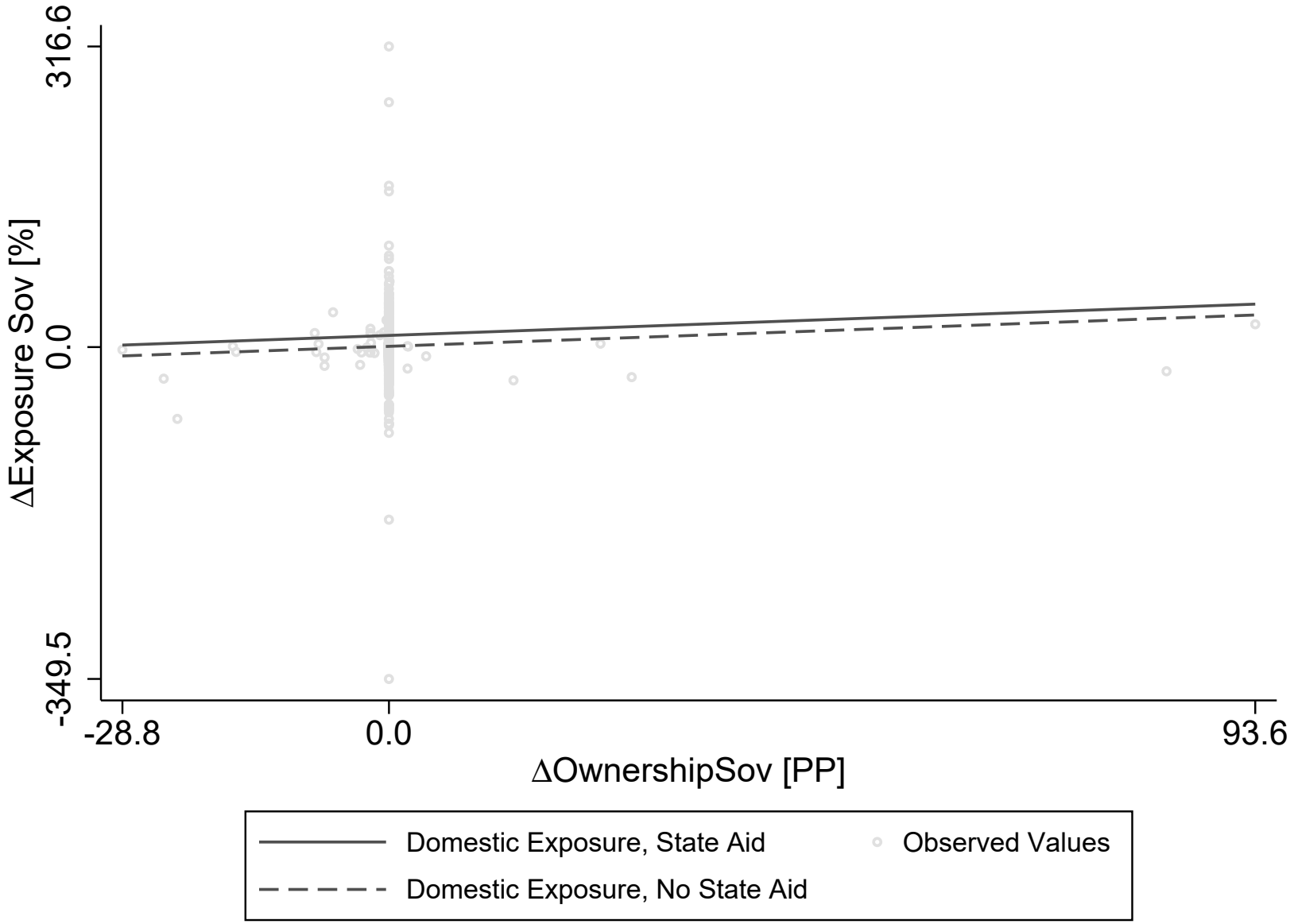
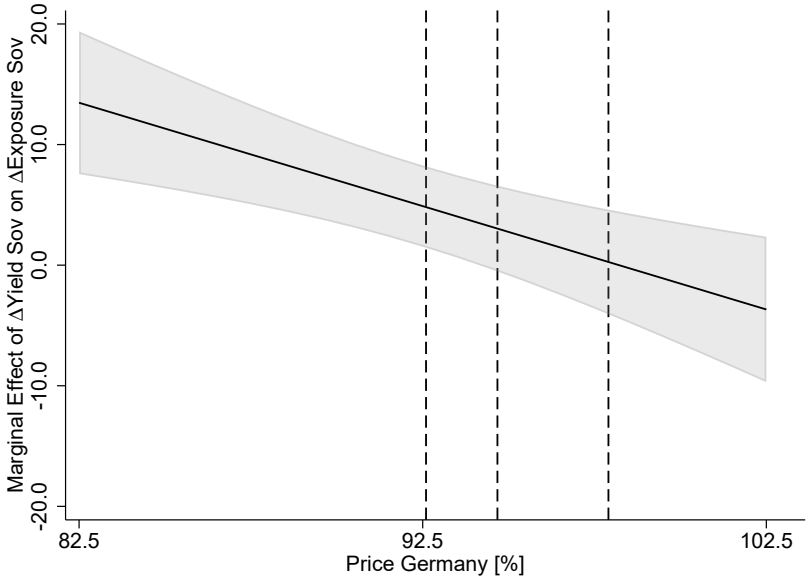
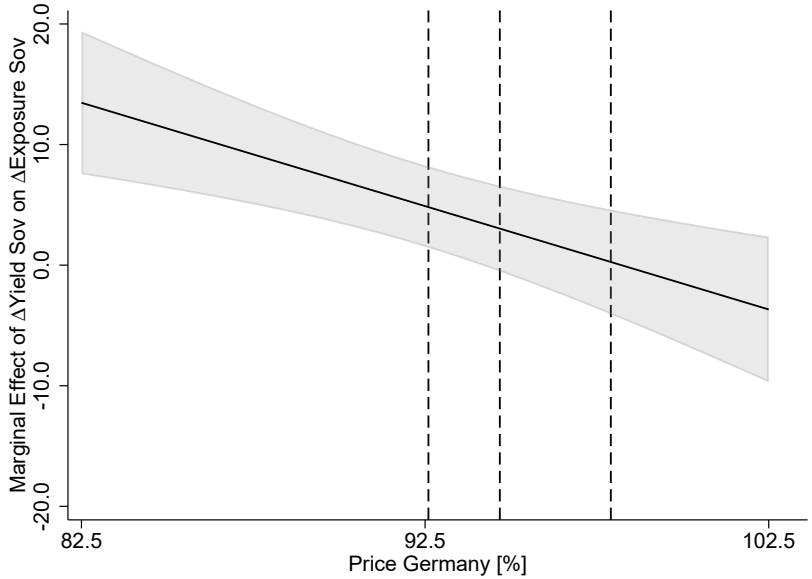


Figure 11. *Slope estimations for government influence.*

Refinancing—Carry Trades: German Bond Price



(a) *Foreign sovereign exposure*



(b) *Domestic sovereign exposure*

Figure 12. *Marginal effect of the German sovereign bond price.*

Robustness

Robustness? The results are (partially) robust to...

- bank entry and exit $\rightarrow$ constant sample;
- outliers $\rightarrow$ no winsorization;
- precision $\rightarrow$ clustering of standard errors at exposure, country and counterparty level;
- definition of dependent variable $\rightarrow$ relative exposure change, scaling by total sovereign exposure and scaling by total assets;
- different methodology $\rightarrow$ sample split.

Research Contribution

What's new? This paper...

- contributes to the literature by taking a holistic view on banks' sovereign exposures with a focus on foreign counterparties;
- expands Altavilla et al. (2017) from domestic to foreign sovereigns with different regulatory requirements.

Benchmark—Yield seeking:

✓ *BM*: Banks buy sovereign bonds in reaction to rising yields.

Regulatory arbitrage:

✗ H_{1a}: Bank behavior is similar towards EU and third countries.
✓ H_{1b}: Less capitalized banks are more yield seeking.
✓ H_{1c}: Less liquid banks are more yield seeking.

Moral suasion:

✓ H_2: Government influence raises banks' domestic exposures.

Refinancing—Carry trades:

✓ H_3: Periods of cheap funding reinforce yield seeking behavior.

Relevance

So what? Implications for banking regulation...

- *Relevance*: Sovereign exposures build a sizable and stable share of 11% of total assets or 53 billion Euro per bank.
- *Home bias*: 17 billion Euro stem from the domestic sovereign.
- *Risk concentrations*: Domestic sovereign exposures exceed large exposure limits by 13 billion Euro.
- *Regulatory arbitrage*:
  - Evidence in terms of bank capitalization.
  - Evidence in terms of bank liquidity.
  - No evidence in terms of favorable treatment of EU sovereigns.

  $\rightarrow$ Regulatory requirements for exposures to highly rated third countries are comparable to EU member states.

Next steps? Do regulatory requirements favor sovereign bonds over other asset classes? Are regulatory requirements for sovereign exposures risk adequate?

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ECB as Lender and Buyer of Last Resort

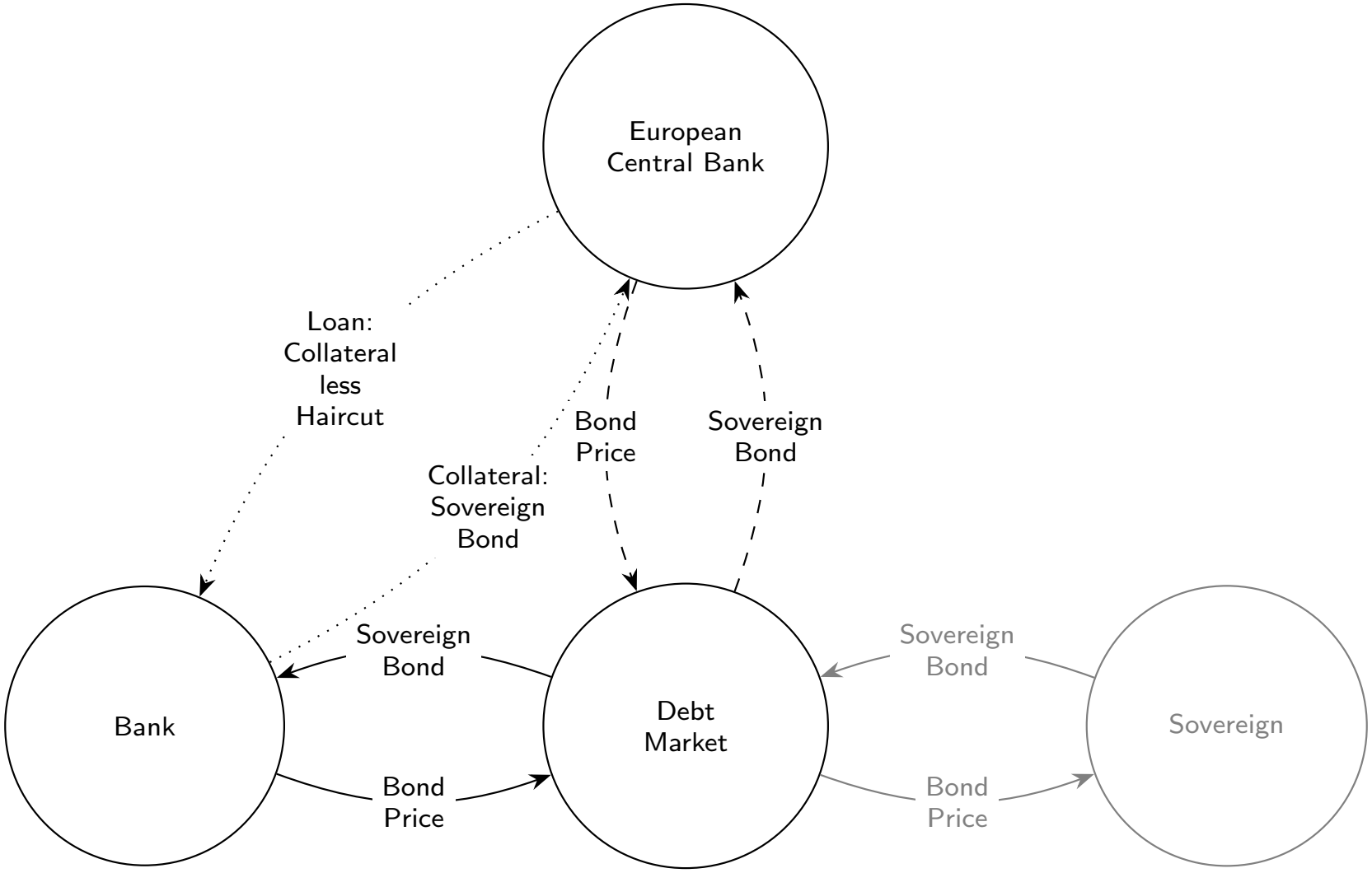

Figure 13. *Open Market Operations of the ECB. Dotted lines depict liquidity provisioning for banks and dashed lines depict liquidity provisioning for sovereigns through the European Central Bank. Figure derived from Governing Council of the European Central Bank (2015).*

Descriptive Statistics

Table 5. *Descriptive statistics of the data sample.*

Variable	Mean	Std. Dev.	Min.	P^{25}	P^{75}	Max.
Bank Characteristics						
$TotalAssets^{Bank}_{i,t}$ [billion Euro]	587,72	624,00	0,94	92,79	846,06	2.411,91
$CapitalRatio^{Bank}_{i,t}$ [%]	17,09	4,82	−6,1	15,00	19,68	31,76
$CashRatio^{Bank}_{i,t}$ [%]	5,98	5,06	0,18	2,52	7,65	54,22
$LoansAssets^{Bank}_{i,t}$ [%]	58,17	14,48	22,63	49,83	68,27	100,00
$DepLiab^{Bank}_{i,t}$ [%]	50,97	20,14	0,85	35,78	63,38	96,60
$StateAid^{Bank}_{i,j=k,t}$ [1 = yes]	0,0010	0,0323	0,0000	0,0000	0,0000	1,0000
$\Delta Ownership^{Sov}_{i,j=k,t}$ [PP]	0,01	1,38	−28,78	0,00	0,00	93,55
Exposure Characteristics						
$Exposure^{Sov}_{i,k,t}$ [billion Euro]	2,47	7,87	0,00	0,00	1,07	110,01
$\Delta Exposure^{Sov}_{i,k,t}$ [% of average]	0,09	106,06	−535,57	−7,58	6,53	510,00
$Exposure^{Domestic}_{i,k=j,t}$ [billion Euro]	19,04	19,46	0,00	4,76	26,73	85,79
$Exposure^{ThCountries}_{i,k\neq j,t}$ [billion Euro]	2,67	9,07	0,00	0,00	0,88	110,01
$Exposure^{EU}_{i,k\neq j,t}$ [billion Euro]	1,17	3,22	0,00	0,00	0,68	51,06
$\Delta Yield^{Sov}_{k,t}$ [PP]	−0,16	0,66	−3,36	−0,45	0,18	2,39
$\Delta FXRate^{Counterparty}_{k\neq j,t}$	0,03	2,43	−29,01	0,00	0,00	18,92
Macroeconomic Characteristics						
$Price^{Germany}_{t}$ [%]	94,69	6,32	82,52	92,62	97,92	103,26
$LTRO_t$ [1 = 2011H2 or 2012H1]	0,06	0,23	0,00	0,00	0,00	1,00
$\Delta EqIndex^{Domestic}_{k=j,t}$ [%]	4,28	10,78	−25,25	−3,84	11,62	27,98

Robustness Tests: Constant Sample and no Winsorization

Table 6. *Robustness tests: Constant sample and winsorization. Standard errors are clustered at the bank level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.*

$\Delta Exposure^{Sov}_{i,k,t}$	(1) Constant Sample	(2) No Winsorization
$\Delta Yield^{Sov}_{k,t}$	97.1421***	43.0171
$Domestic^{Exposure}_{i,k=j,t}$	0.8258	−0.2546
$\Delta Yield^{Sov}_{k,t} \cdot Domestic^{Exposure}_{i,k=j,t}$	−17.7270***	−5.2476
$ThCountry^{Exposure}_{i,k\neq j,t}$	5.8489***	6.1230**
$\Delta Yield^{Sov}_{k,t} \cdot ThCountry^{Exposure}_{i,k\neq j,t}$	4.6097	27.4735
$CapitalRatio^{Bank}_{i,t}$	−1.0734	−1.7655**
$\Delta Yield^{Sov}_{k,t} \cdot CapitalRatio^{Bank}_{i,t}$	−1.6306***	−0.5399*
$CashRatio^{Bank}_{i,t}$	−0.2373	−0.2793
$\Delta Yield^{Sov}_{k,t} \cdot CashRatio^{Bank}_{i,t}$	−0.9092	−0.5488*
$StateAid^{Bank}_{i,j=k,t} \cdot Domestic^{Exposure}_{i,k=j,t}$	−3.1118	3.7265
$\Delta Ownership^{Sov}_{i,j=k,t} \cdot Domestic^{Exposure}_{i,k=j,t}$	0.4191	0.1539
$\Delta Yield^{Sov}_{k,t} \cdot Price^{Germany}_{t}$	−0.6586**	−0.3272
$\Delta Yield^{Sov}_{k,t} \cdot LTRO_t$	31.4561***	28.4381***
Control Variables	Yes	Yes
Entity Fixed Effects	Bank level	Bank level
Time Fixed Effects	Half-yearly	Half-yearly
Constant	Yes	Yes
Observations	7,986	10,541
Banks	30	68
Adjusted R^2 [%]	2.1	1.6

Robustness Test: Clustering of Standard Errors

Table 7. *Robustness test: Clustering of standard errors. Standard errors (in parentheses) are clustered at different levels. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.*

	Cluster			
$\Delta Exposure^{Sov}_{i,k,t}$	(1) Exposure		(2) Country	
$\Delta Yield^{Sov}_{k,t}$	77.9011**	(31.3982)	77.9011**	(34.0536)
$Domestic^{Exposure}_{i,k=j,t}$	−0.5184	(1.7779)	−0.5184	(1.8198)
$\Delta Yield^{Sov}_{k,t} \cdot Domestic^{Exposure}_{i,k=j,t}$	−13.0688***	(4.6610)	−13.0688***	(3.5520)
$ThCountry^{Exposure}_{i,k\neq j,t}$	3.9509**	(1.7421)	3.9509***	(1.2482)
$\Delta Yield^{Sov}_{k,t} \cdot ThCountry^{Exposure}_{i,k\neq j,t}$	7.2758	(8.6484)	7.2758	(11.7085)
$CapitalRatio^{Bank}_{i,t}$	−1.4565***	(0.4700)	−1.4565**	(0.6210)
$\Delta Yield^{Sov}_{k,t} \cdot CapitalRatio^{Bank}_{i,t}$	−1.0078**	(0.3993)	−1.0078**	(0.3853)
$CashRatio^{Bank}_{i,t}$	−0.1389	(0.4491)	−0.1389	(0.6829)
$\Delta Yield^{Sov}_{k,t} \cdot CashRatio^{Bank}_{i,t}$	−0.8947**	(0.4341)	−0.8947**	(0.3291)
$StateAid^{Bank}_{i,j=k,t} \cdot Domestic^{Exposure}_{i,k=j,t}$	4.5687	(5.6819)	4.5687	(5.0707)
$\Delta Ownership^{Sov}_{i,j=k,t} \cdot Domestic^{Exposure}_{i,k=j,t}$	0.2895	(0.1988)	0.2895*	(0.1515)
$\Delta Yield^{Sov}_{k,t} \cdot Price^{Germany}_{t}$	−0.5652*	(0.3414)	−0.5652	(0.3505)
$\Delta Yield^{Sov}_{k,t} \cdot LTRO_t$	28.6052***	(8.3235)	28.6052***	(7.4856)
Control Variables	Yes		Yes	
Entity Fixed Effects	Bank level		Bank level	
Time Fixed Effects	Half-yearly		Half-yearly	
Constant	Yes		Yes	
Observations	10,541		10,541	
Number of Clusters	943		21	
Adjusted R^2 [%]	1.9		1.9	

Robustness Test: Scaling of Exposure Change

Table 8. *Robustness test: Scaling of exposure change. Standard errors (in parentheses) are clustered at the bank level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.*

$\Delta Exposure^{Sov}_{i,k,t}$	Scaling of Exposure Change		
	(1) Relative	(2) Total Exposure	(3) Total Assets
$\Delta Yield^{Sov}_{k,t}$	45.0326	1.5511**	0.1260**
$Domestic^{Exposure}_{i,k=j,t}$	−13.2094***	−0.3592	−0.0672**
$\Delta Yield^{Sov}_{k,t} \cdot Domestic^{Exposure}_{i,k=j,t}$	−2.2202	−1.8819***	−0.1764***
$ThCountry^{Exposure}_{i,k\neq j,t}$	5.3091	0.0659	0.0059
$\Delta Yield^{Sov}_{k,t} \cdot ThCountry^{Exposure}_{i,k\neq j,t}$	16.5310	0.0381	0.0115
$CapitalRatio^{Bank}_{i,t}$	−2.2766**	−0.0102	−0.0011
$\Delta Yield^{Sov}_{k,t} \cdot CapitalRatio^{Bank}_{i,t}$	−1.8575**	−0.0353***	−0.0030***
$CashRatio^{Bank}_{i,t}$	0.3270	0.0114	0.0004
$\Delta Yield^{Sov}_{k,t} \cdot CashRatio^{Bank}_{i,t}$	−1.2939	−0.0080	−0.0013***
$StateAid^{Bank}_{i,j=k,t} \cdot Domestic^{Exposure}_{i,k=j,t}$	10.4393	1.4625	0.2466
$\Delta Ownership^{Sov}_{i,j=k,t} \cdot Domestic^{Exposure}_{i,k=j,t}$	0.3992	0.0051	−0.0002
$\Delta Yield^{Sov}_{k,t} \cdot Price^{Germany}_{t}$	−0.1940	−0.0094	−0.0007
$\Delta Yield^{Sov}_{k,t} \cdot LTRO_t$	18.5534**	0.0272	0.0039
Entity Fixed Effects	Bank level	Bank level	Bank level
Time Fixed Effects	Half-yearly	Half-yearly	Half-yearly
Constant	Yes	Yes	Yes
Observations	7,438	10,477	10,504
Banks	67	67	68
Adjusted R^2 [%]	2.1	3.3	3.5

Robustness Test: Sample Split Foreign Sovereigns

Table 9. *Robustness test: Sample split foreign sovereign exposures. Standard errors (in parentheses) are clustered at the bank level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.*

	Sample Split Foreign Sovereign Counterparties		
$\Delta Exposure^{Sov}_{i,k,t}$	(1) Full Sample	(2) EU Countries	(3) Third Countries
$\Delta Yield^{Sov}_{k,t}$	82.6908***	41.4036	399.8310**
$CapitalRatio^{Bank}_{i,t}$	−1.5361**	−1.4844**	−1.8640
$\Delta Yield^{Sov}_{k,t} \cdot CapitalRatio^{Bank}_{i,t}$	−0.9985*	−1.1850**	1.2082
$CashRatio^{Bank}_{i,t}$	−0.1430	−0.3457	0.7321
$\Delta Yield^{Sov}_{k,t} \cdot CashRatio^{Bank}_{i,t}$	−0.8442**	−0.8174**	−1.7807
$\Delta Yield^{Sov}_{k,t} \cdot Yield^{Germany}_{t}$	−0.6146**	−0.1798	−4.1230**
$\Delta Yield^{Sov}_{k,t} \cdot LTRO_t$	30.0969***	37.6942***	−204.1837**
$\Delta FXRate^{Sov}_{k \neq j,t}$	−1.3632***	−1.7793**	0.2121
$ln(TotalAssets^{Bank}_{i,t})$	−9.7631	−12.1245	−0.6287
$LoansAssets^{Bank}_{i,t}$	0.0248	0.0313	0.0328
$DepLiab^{Bank}_{i,t}$	0.0689	−0.0412	0.7094*
$\Delta EqIndex^{Domestic}_{k=j,t}$	−0.0397	−0.0500	−0.0150
Entity Fixed Effects	Bank level	Bank level	Bank level
Time Fixed Effects	Half-yearly	Half-yearly	Half-yearly
Constant	Yes	Yes	Yes
Observations	9,964	7,746	2,218
Banks	66	66	57
Adjusted R^2 [%]	2.1	2.7	0.6