Euro area cross-border banking: before and after the global financial crisis

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Why is it important?

- The global financial crisis first and the sovereign debt crisis afterward, together with some of the related domestic policy responses, have halted the trend towards financial integration and a single EA financial market

⇩

Fragmentation of the EA banking and financial system has wide-ranging negative consequences:
constrains lending, threatens financial stability,
hampers monetary policy,
jeopardizes level playing field and market efficiency

- This paper
  1. presents stylized facts of the segmentation of the EA banking system
  2. investigates the dynamics and the main drivers of bank retrenchment within the domestic borders
  3. provides policy recommendations

Literature

- *Financial integration in the EA*
  - Laeven and Tressel (2013)
  - Allen et al. (2011)

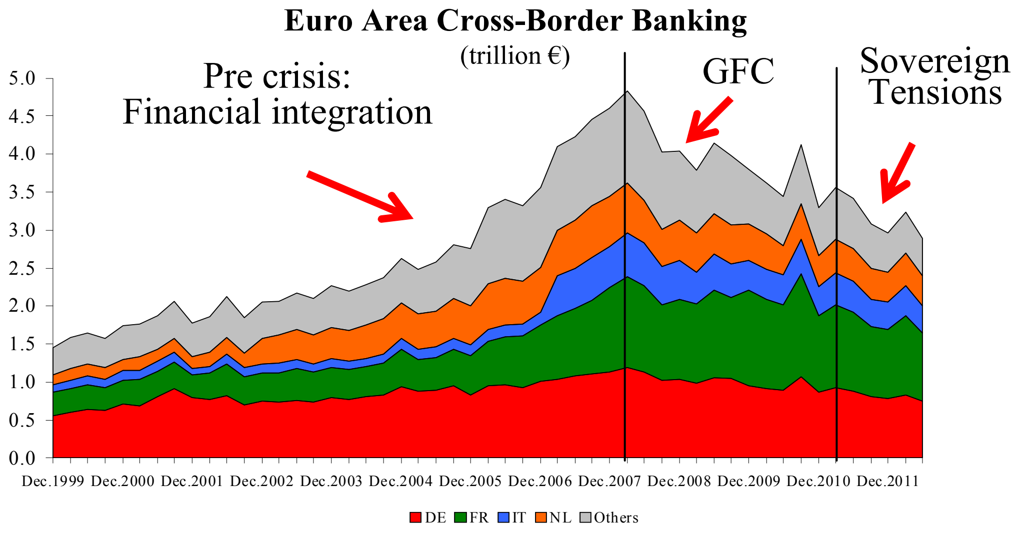
- *Determinants of cross-border banking*
  - Herrmann and Mihaljek (2013)
  - Bruno and Shin (2012)
  - Cetorelli and Goldberg (2011)
  - Herreo and Martínez Pería (2007)
  - Cerutti, Dell'Ariccia, and Martínez Pería (2007)

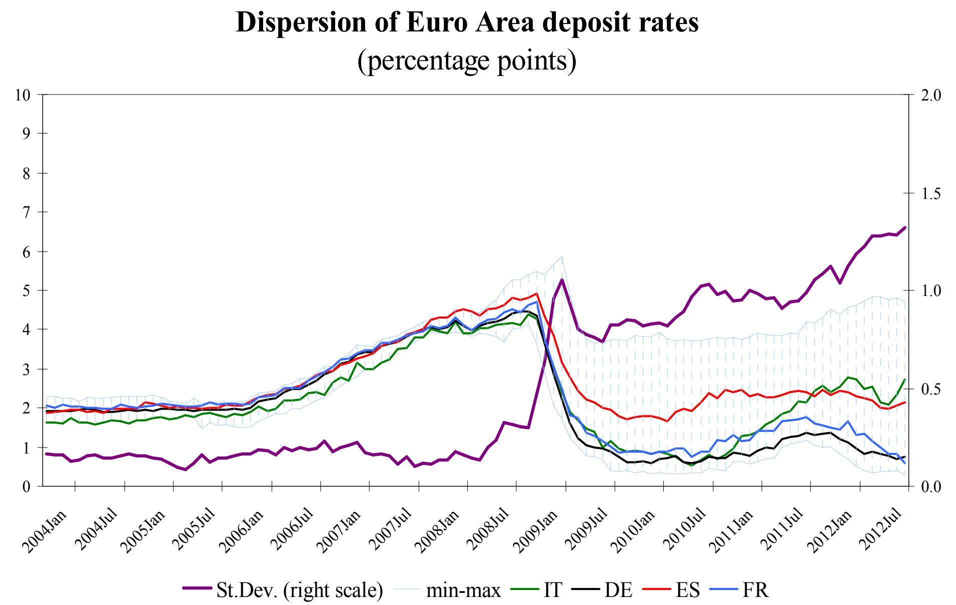
- *Global factors and commonalities in the EA*
  - Sgherri (2012)
  - Bruno and Shin (2012)

Fragmentation of EA banking and financial system

Stylized facts

The dimensions and phases of segmentation 1/2





⇨ ***EA banks sharply contracted their cross-border exposures***

- **Decline of cross-border activity begins with the GFC, including by the banks headquartered in countries with sounder public finances**
- **For non-EA banks business as usual**

⇨ ***Segmentation evident also in prices***

- **Cross-country dispersion on both loan and deposit rates widened significantly**

The dimensions and phases of segmentation 2/2

Claims from banks resident in	On foreign PUBLIC SECTOR of DE	IT	ES	FR	Programme	Others €	Total
DE		-4.6 *-14%*	-2.7 *-13%*	-3.6 *-16%*	-11.0 *-63%*	1.4 *4%*	-30.5 *-12%*
IT	10.7 *29%*		-0.6 *-12%*	0.4 *25%*	-1.4 *-66%*	0.3 *3%*	4.9 *4%*
ES	-1.2 *-30%*	-1.3 *-16%*		1.1 *23%*	0.7 *13%*	0.7 *30%*	-33.0 *-14%*
FR	-10.6 *-24%*	-31.3 *-42%*	-9.5 *-44%*		-9.3 *-67%*	16.3 *23%*	-2.4 *-1%*
Non Euro	122.6 *72%*	-9.4 *-20%*	-4.6 *-23%*	15.7 *15%*	-6.4 *-51%*	95.3 *123%*	402.2 *20%*

Claims from banks resident in	On BANKS resident in DE	IT	ES	FR	Programme	Others €	Total
DE		-13.0 *-38%*	-20.0 *-41%*	-5.8 *-7%*	-9.6 *-38%*	-7.6 *-6%*	-62.5 *-9%*
IT	-5.6 *-14%*		-1.2 *-25%*	-4.2 *-20%*	-2.7 *-59%*	-3.7 *-18%*	-19.2 *-14%*
ES	0.3 *9%*	-0.6 *-21%*		2.1 *27%*	-1.4 *-33%*	-1.7 *-29%*	-18.9 *-19%*
FR	-34.4 *-47%*	-7.1 *-22%*	-10.2 *-37%*		-5.0 *-40%*	5.1 *7%*	-150.9 *-28%*
Non Euro	-11.1 *-8%*	-15.6 *-57%*	-12.5 *-30%*	-52.0 *-23%*	-6.5 *-20%*	-25.8 *-21%*	-95.6 *-5%*

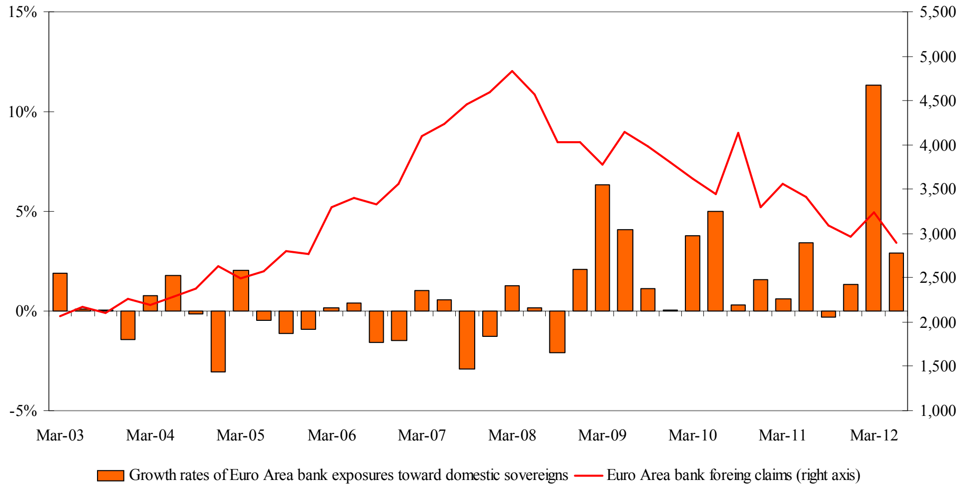
Claims from banks resident in	On foreign PRIVATE SECTOR of DE	IT	ES	FR	Programme	Others €	Total
DE		-2.7 *-6%*	-10.8 *-19%*	-6.1 *-11%*	-11.2 *-15%*	-22.6 *-12%*	-137.8 *-11%*
IT	-12.1 *-11%*		-2.7 *-23%*	-2.8 *-22%*	-1.6 *-17%*	-9.3 *-11%*	-43.47 *-10.1%*
ES	1.8 *5%*	-2.8 *-16%*		2.1 *20%*	-8.9 *-15%*	-0.5 *-2%*	37.2 *5%*
FR	4.3 *5%*	-3.4 *-2%*	-1.9 *-3%*		-1.3 *-2%*	10.6 *5%*	-152.7 *-11%*
Non Euro	7.3 *6%*	-2.9 *-5%*	-16.1 *-17%*	27.1 *17%*	-11.7 *-7%*	-20.3 *-8%*	162.4 *4%*

⇨ ***Some notable differences exist across countries and sectors (June 2011 – June 2012)***

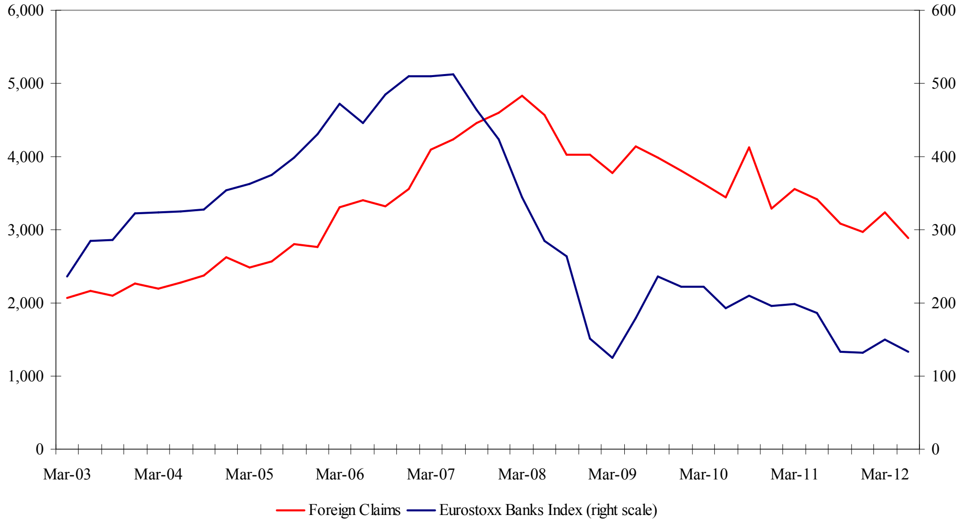
- **Banks have rebalanced their exposures in favor of the EA sovereigns with the sounder public finances**
- **Retrenchment particularly severe in the interbank market**
- **Re-nationalization visible as well in the non-bank private sector**

Bank-sovereign link and common factors

Euro Area bank exposures toward domestic sovereigns and Euro Area bank foreign claims
(quarterly data, percentage changes and billion of euros)



Euro Area bank foreign claims and Eurostoxx bank index
(euro millions and index points)



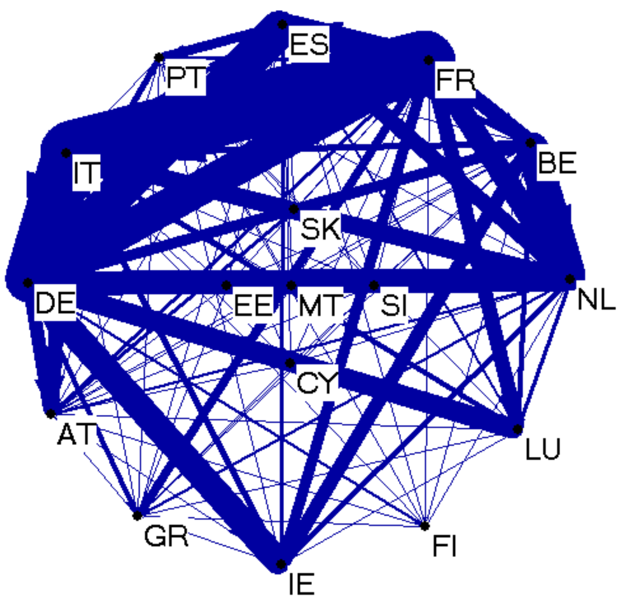
- **Tighter bank-sovereign link associated with the decline in banks' business abroad**
- **Very close co-movement between EA bank foreign claims and Eurostoxx Banking Index, for the entire period**

The dynamics of cross-border banking: modeling framework

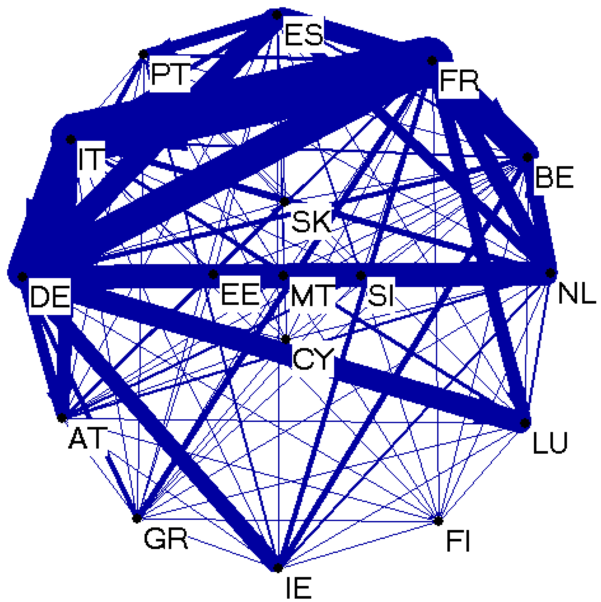
Data

- Consolidated foreign claims of BIS reporting countries
- 11 Euro Area reporting countries (home)
- 17 Euro Area target countries (host)
- Quarterly data from 2003Q1 to 2012Q2

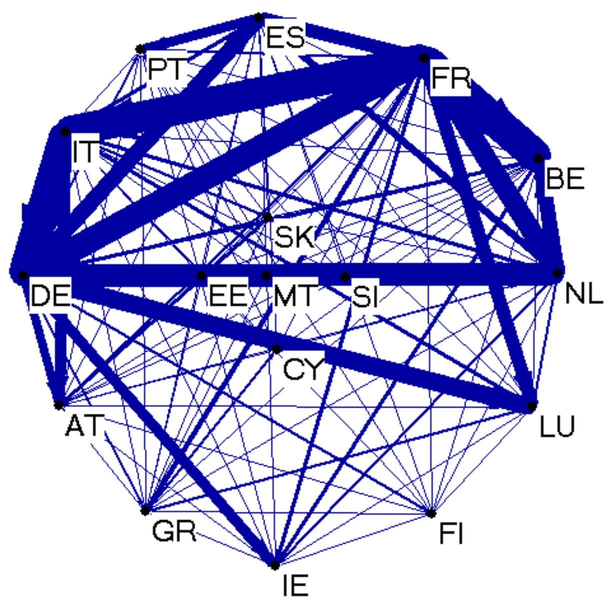
Pre-crisis: financial integration



Global financial crisis



Sovereign debt crisis



Gravity model of foreign claims dynamics

$\Delta FC_{i,j,t} =$	⇨ **Quarterly change of foreign claims from reporting country *i* to target country *j* (over total banking system assets of country *i*)**
$Const$	
$+Macro_{i,t-1}$	⇨ **Change of IP and Debt/GDP of *i* and *j***
$+Macro_{j,t-1}$	
$+Distance_{i,j}$	⇨ **Distances between *i* and *j* (km and rates)**
$+Ext\_vul_{i,j,t-1}$	⇨ $\frac{FC_{j,t-1}}{Asset_{j,t-1}}$ **and** $\frac{FC_{ij,t-1}}{Asset_{j,t-1}}$
$+Ptf_{i,j,t-1}$	⇨ **BETS, concentration, investment, FTQ**
$+Global_{EA,t-1}$	⇨ **Stoxx Europe 600 Banking index returns**
$+\gamma_c$	⇨ **Home and host country FE, Dexia**

The dynamics of cross-border banking: empirical assessment

EA Cross-border banking: pre-crisis period

	$\Delta FC_{ij,t}$	Pre-crisis: (i)	Global (ii)	Sovereign (iii)	Pre-crisis: (iv)	Global (v)	Sovereign (vi)
Macro	$\Delta IP_{i,t-1}$	0.101	-0.156	-0.601	0.097	-0.161	-0.598
	$\Delta IP_{j,t-1}$	-0.057	0.170	0.018	-0.061	0.172	0.018
	$\Delta Debt_{i,t-1}$	0.147	0.253	-0.300 **	0.148	0.257	-0.298 **
	$\Delta Debt_{j,t-1}$	0.064	0.005	0.099	0.064	0.004	0.100
Distance	Distance_KM	-0.065 **	-0.003	-0.017	-0.064 **	-0.002	-0.019
	Distance_deposit_rates	-0.096 **	-0.008	-0.001	-0.093 **	-0.008	0.000
Portfolio allocation	$\Delta BETS_{i,t-1}$	0.112	-0.096	-0.279 ***	0.112	-0.097	-0.280 ***
	$FC_{ij,t-1}/FC_{i,t-1}$	0.397	-0.819 **	-0.911 **	0.352	-0.833 **	-0.908 **
	$Funding\_diff_{j,i,t-1}$	0.574	0.192 *	-0.181	0.542	0.202 *	-0.111
	$FTQ_{j,i,t-1}$	0.132	-0.038	0.142 *			
External vulnerability	$FC_{j,t-1}/ASSET_{j,t-1}$	-0.206	-0.098 ***	-1.319 ***			
	$FC_{ij,t-1}/ASSET_{j,t-1}$	-0.108	-0.042	-0.113			
	- Branches						
	- Subsidiaries						
	- HQ						
Common	$\Delta Equity_{EA,t}$	0.247	0.14 **	0.117 *			
	Constant	0.487 **	0.003	0.204 *			
Fixed Effect	Home country	82%	82%	64%			
	Host country	14%	6%	65%			
	Dexia	NOT SIGNIFICANT	SIGNIFICANT				
	Observations	2027	1660	759			
	R-squared	0.08	0.08	0.20	0.08	0.08	0.20

- **FC driven by physical and financial distance**
- **Home country banking systems structures and supervisory policies also matter**

Clustered standard errors at the country level not reported; * significant at 10%; ** significant at 5%; *** significant at 1%; dependent variable winsorized at the 1% and 99% levels and divided by 100; country dummies included but not reported.

EA Cross-border banking: GFC period

	$\Delta FC_{ij,t}$	Pre-crisis: (i)	Global (ii)	Sovereign (iii)	Pre-crisis: (iv)	Global (v)	Sovereign (vi)
Macro	$\Delta IP_{i,t-1}$	0.101	-0.156	-0.601	0.097	-0.161	-0.598
	$\Delta IP_{j,t-1}$	-0.057	0.170	0.018	-0.061	0.172	0.018
	$\Delta Debt_{i,t-1}$	0.147	0.253	-0.300 **	0.148	0.257	-0.298 **
	$\Delta Debt_{j,t-1}$	0.064	0.005	0.099	0.064	0.004	0.100
Distance	Distance_KM	-0.065 **	-0.003	-0.01			
	Distance_deposit_rates	-0.096 **	-0.008	-0.0			
Portfolio allocation	$\Delta BETS_{i,t-1}$	0.112	-0.096	-0.2			
	$FC_{ij,t-1}/FC_{i,t-1}$	0.397	-0.819 **	-0.9			
	$Funding\_diff_{j,i,t-1}$	0.574	0.192 *	-0.1			
	$FTQ_{j,i,t-1}$	0.132	-0.038	0.1			
External vulnerability	$FC_{j,t-1}/ASSET_{j,t-1}$	-0.206	-0.098 ***	-1.3			
	$FC_{ij,t-1}/ASSET_{j,t-1}$	-0.108	-0.042	-0.1			
	- Branches						
	- Subsidiaries						
	- HQ						
Common	$\Delta Equity_{EA,t}$	0.247	0.14 **	0.1			
	Constant	0.487 **	0.003	0.2			
Fixed Effect	Home country	82%	82%	64			
	Host country	14%	6%	65			
	Dexia	NOT SIGNIFICANT	SIGNIFICANT				
	Observations	2027	1660	759	2027	1660	759
	R-squared	0.08	0.08	0.20	0.08	0.08	0.20

- **FC decline driven by portfolio concentration and host country external vulnerabilities ...**
- **… but banks exploit investments opportunities in fiscally sound countries**
- **FC driven by common EA banking conditions**

Clustered standard errors at the country level not reported; * significant at 10%; ** significant at 5%; *** significant at 1%; dependent variable winsorized at the 1% and 99% levels and divided by 100; country dummies included but not reported.

EA Cross-border banking: sovereign crisis period

	$\Delta FC_{ij,t}$	Pre-crisis: (i)	Global (ii)	Sovereign (iii)
Macro	$\Delta IP_{i,t-1}$	0.101	-0.156	-0.601
	$\Delta IP_{j,t-1}$	-0.057	0.170	0.018
	$\Delta Debt_{i,t-1}$	0.147	0.253	-0.300 **
	$\Delta Debt_{j,t-1}$	0.064	0.005	0.099
Distance	Distance_KM	-0.065 **	-0.003	-0.017
	Distance_deposit_rates	-0.096 **	-0.008	-0.001
Portfolio allocation	$\Delta BETS_{i,t-1}$	0.112	-0.096	-0.279 ***
	$FC_{ij,t-1}/FC_{i,t-1}$	0.397	-0.819 **	-0.911 **
	$Funding\_diff_{j,i,t-1}$	0.574	0.192 *	-0.181
	$FTQ_{j,i,t-1}$	0.132	-0.038	0.142 *
External vulnerability	$FC_{j,t-1}/ASSET_{j,t-1}$	-0.206	-0.098 ***	-1.319 ***
	$FC_{ij,t-1}/ASSET_{j,t-1}$	-0.108	-0.042	-0.113
	- Branches			
	- Subsidiaries			
	- HQ			
Common	$\Delta Equity_{EA,t}$	0.247	0.14 **	0.117 *
	Constant	0.487 **	0.003	0.204 *
Fixed Effect	Home country	82%	82%	64%
	Host country	14%	6%	65%
	Dexia	NOT SIGNIFICANT	SIGNIFICANT	
	Observations	2027	1660	759
	R-squared	0.08	0.08	0.20

Clustered standard errors at the country level not reported; * significant at 10%; ** dependent variable winsorized at the 1% and 99% levels and divided by 100; country du

- **Banks' FC affected by weak domestic public finances**
- **Banks retrench more with tighter bank-sovereign links but…**
- **… invest abroad to FTQ**
- **External vulnerabilities, FC ptf concentration, and common factor still matter**
- **Significant host country FE signal a role for ring-fencing policies**

EA Cross-border banking and banks' foreign presence

	$\Delta FC_{ij,t}$	Pre-crisis: (i)	Global (ii)	Sovereign (iii)	Pre-crisis: (iv)	Global (v)	Sovereign (vi)
Macro	$\Delta IP_{i,t-1}$	0.101	-0.156	-0.601	0.097	-0.161	-0.598
	$\Delta IP_{j,t-1}$	-0.057	0.170	0.018	-0.061	0.172	0.018
	$\Delta Debt_{i,t-1}$	0.147	0.253	-0.300 **	0.148	0.257	-0.298 **
	$\Delta Debt_{j,t-1}$	0.064	0.005	0.099	0.064	0.004	0.100
Distance	Distance_KM	-0.065 **	-0.003	-0.017	-0.064 **	-0.002	-0.019
	Distance_deposit_rates	-0.096 **	-0.008	-0.001	-0.093 **	-0.008	0.000
Portfolio allocation	$\Delta BETS_{i,t-1}$	0.112	-0.096	-0.279 ***	0.112	-0.097	-0.280 ***
	$FC_{ij,t-1}/FC_{i,t-1}$	0.397	-0.819 **	-0.911 **	0.352	-0.833 **	-0.908 **
	$Funding\_diff_{j,i,t-1}$	0.574	0.192 *	-0.181	0.542	0.202 *	-0.111
	$FTQ_{j,i,t-1}$	0.132	-0.038	0.142 *	0.131	-0.02	0.146 *
External vulnerability	$FC_{j,t-1}/ASSET_{j,t-1}$	-0.206	-0.098 ***	-1.319 ***	-0.203	-0.092 ***	-1.298 ***
	$FC_{ij,t-1}/ASSET_{j,t-1}$	-0.108	-0.042	-0.113			
	- Branches				-0.375	-0.165	-0.132
	- Subsidiaries				0.118	0.011	-0.160
	- HQ				-0.137	-0.440 *	-0.754 **
Common	$\Delta Equity_{EA,t}$	0.247	0.14 **	0.117 *	0.247	0.139 **	0.117 *
	Constant	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Fixed Effect	Home country						
	Host country						
	Dexia						
	Observations						
	R-squared						

- It is easier to reduce cross-border exposures when banks don't operate through foreign branches and subsidiaries

Clustered standard errors at the country level not reported; * significant at 10%; ** significant at 5%; *** significant at 1%; dependent variable winsorized at the 1% and 99% levels and divided by 100; country dummies included but not reported.

EA Cross-border banking: does redenomination risk matter?

	$\Delta FC_{ij,t}$	Sovereign debt crisis: $\Delta Spread_{EA,t-1}$ (i)	$Google_{EA,t-1}$ (ii)	$\Delta Equity_{EA,t-1}$ (iii)	$\Delta VDax_{EA,t-1}$ (iv)
Macro	$\Delta IP_{i,t-1}$	-0.662	-0.625	-0.598	-0.971
	$\Delta IP_{j,t-1}$	-0.072	-0.052	0.018	-0.186
	$\Delta Debt_{i,t-1}$	-0.261 **	-0.434 ***	-0.298 **	-0.312 **
	$\Delta Debt_{j,t-1}$	0.054	0.133	0.100	0.079
Distance	Distance_KM	-0.016	-0.021	-0.019	-0.017
	Distance_deposit_rates	-0.003	0.003	0.000	-0.002
Portfolio allocation	$\Delta BETS_{i,t-1}$	-0.305 ***	-0.123 *	-0.28 ***	-0.263 ***
	$FC_{ij,t-1}/FC_{i,t-1}$	-0.904 **	-0.903 **	-0.908 **	-0.904 **
	$Funding\_diff_{j,i,t-1}$	-0.185	-0.122	-0.111	-0.098
	$FTQ_{j,i,t-1}$	0.154 **	0.132 *	0.146 *	0.152 **
External vulnerability	$FC_{j,t-1}/ASSET_{j,t-1}$	-1.099 **	-1.568 ***	-1.298 ***	-1.029 **
	Branches	-0.129	-0.136	-0.132	-0.130
	Subsidiaries	-0.146	-0.174 *	-0.160	-0.150
	HQ	-0.721 **	-0.793 **	-0.754 **	-0.734 **
Common		-0.367 **	-0.001 ***	0.117 *	-0.067 *
	Constant	0.185 *	0.271 **	0.222 *	0.184 *
Fixed Effect	Home country	0.364	0.455	0.455	0.455
	Host country	0.647	0.647	0.647	0.588
	Observations	759	759	759	759
	R-squared	0.20	0.21	0.20	0.20

Clustered standard errors at the country level not reported; * significant at 10%; ** significant at 5%; *** significant at 1%; dependent variable winsorized at the 1% and 99% levels and divided by 100; country dummies included but not reported for brevity.

- **Redenomination risk is a significant driver of banks' FC:**

  factors capturing the commonality in sovereign tensions and the fear of currency break-up are more significant than banking variables

Conclusions and policy implications

Summing up

- Determinants of EA cross-border banking change over-time
  - Pre-crisis: domestic banking system structures and supervisory policies together with country distances are the main drivers
  - Global Financial Crisis: banks retrench from countries with higher external vulnerabilities and higher weight in banks' FC portfolios, but keep on investing abroad in profitable and fiscally sound countries
  - Sovereign tensions: FC decline also driven by deteriorating sovereign conditions, tighter bank-sovereign links, and host countries ring-fencing policies. Banks invest abroad to fly-to-quality. Segmentation increasingly driven by redenomination risk
  - Banks' international organizational form matters. It is easier to reduce cross-border exposures when banks don't operate through foreign branches and subs

Policy implications

- Restoring a truly unified financial market is of vital importance to ensure an effective single monetary policy, adequate credit flows and the Euro Area macro financial stability
- To eliminate differences in countries micro (and macro) prudential policies:
  - Implement the Single Supervisory Mechanism
- To break the vicious bank-sovereign link:
  - Implement a common resolution and deposit insurance framework
  - Recognize sovereign risks in banks' portfolios
- To reduce the role for country risk:
  - Enhance the soundness of countries' fiscal position
  - Set-up of a clear roadmap toward the completion of the European project, with a common and solid fiscal and political infrastructure

Thank you