

International Banking and Liquidity Risk Transmission: Lessons from Across Countries

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Speaker: Claudia Buch, Deutsche Bundesbank. All errors and inconsistencies are solely my own. The presentation represent my personal opinion and does not necessarily reflect the views of the *Deutsche Bundesbank*.

Prologue:

**The International Banking Research Network
(IBRN)**

What is the scope of the International Banking Research Network (IBRN)?

- The International Banking Research Network brings together **central bank researchers** to analyze issues pertaining to global banks.
- The **2007-09 financial crisis** provided the impetus for the group, underscoring both the need to examine **how cross-border banking** might contribute to the transmission of financial shocks and the value of analyzing **micro-banking data**.
 - **Shock transmission** through internationally active banks,
 - Analyze **bank-level datasets** at national levels and share results to facilitate joint insights from different banking systems,
 - Analyze consequences of **macroprudential tools** and policies to global banks, and
 - Study **heterogeneity** in the adjustment of banks to liquidity and other shocks.

What is the scope of the International Banking Research Network (IBRN)?

- **Micro-banking data are key.**
 - Provide an ability to see the balance sheets of banks, with domestic, internal, and international lending.
 - Challenges: Getting data; designing analytical experiments; providing insights beyond case studies.
- **The network has been established in 2012.**
 - Austria, Germany, UK, US
- **First project in 2013 with 11 central banks + BIS, IMF**
 - International banking and liquidity risk transmission
- **Current project 2014 involves 23 central banks + BIS, IMF, ESRB**
 - International banking and regulatory arbitrage

Country teams

Central Bank of
Australia

Central Bank of Austria

Banco Central do Brazil

Bank of Canada

Central Bank of Chile

Banque de France

Deutsche Bundesbank

Hong Kong Monetary Authority

Central Bank of India

Central Bank of Ireland

Banca D'Italia

Bank of Korea

De Nederlandsche Bank

National Bank of Poland

Banco de España

Sveriges Riksbank

Central Bank of the Republic of Turkey

Bank of England

US Federal Reserve
Board

Bank for International Settlements

International Monetary
Fund

The IBRN's first joint research initiative:
International banking and liquidity risk
transmission

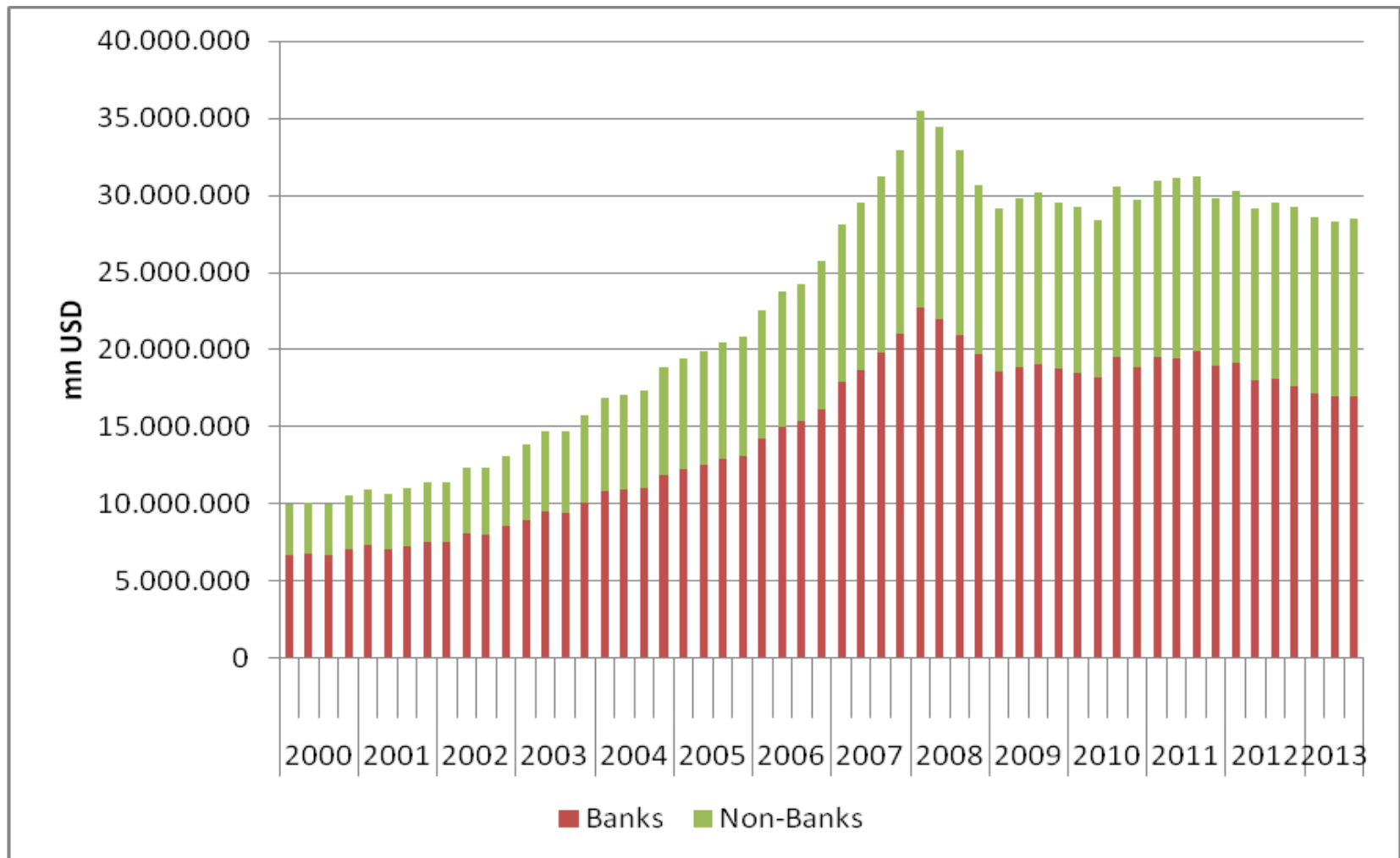
The Issue

- **Over the past 30 years, the typical large bank has become a global entity with branches and subsidiaries in many countries.**
- **Global banks were central to the financial crises and Eurozone crisis, and some flows through these banks were volatile.**
- **Various questions are posed about the behavior of such banks:**
 - How do **liquidity conditions** affecting the parent bank transmit into domestic and foreign lending?
 - How does the ex-ante **balance sheet composition** of banks influence responses to liquidity risk?
 - How important are banks' **internal capital markets**?
 - Did the use of **official sector liquidity** provision influence the cross-sectional differences across banks in domestic and foreign lending?

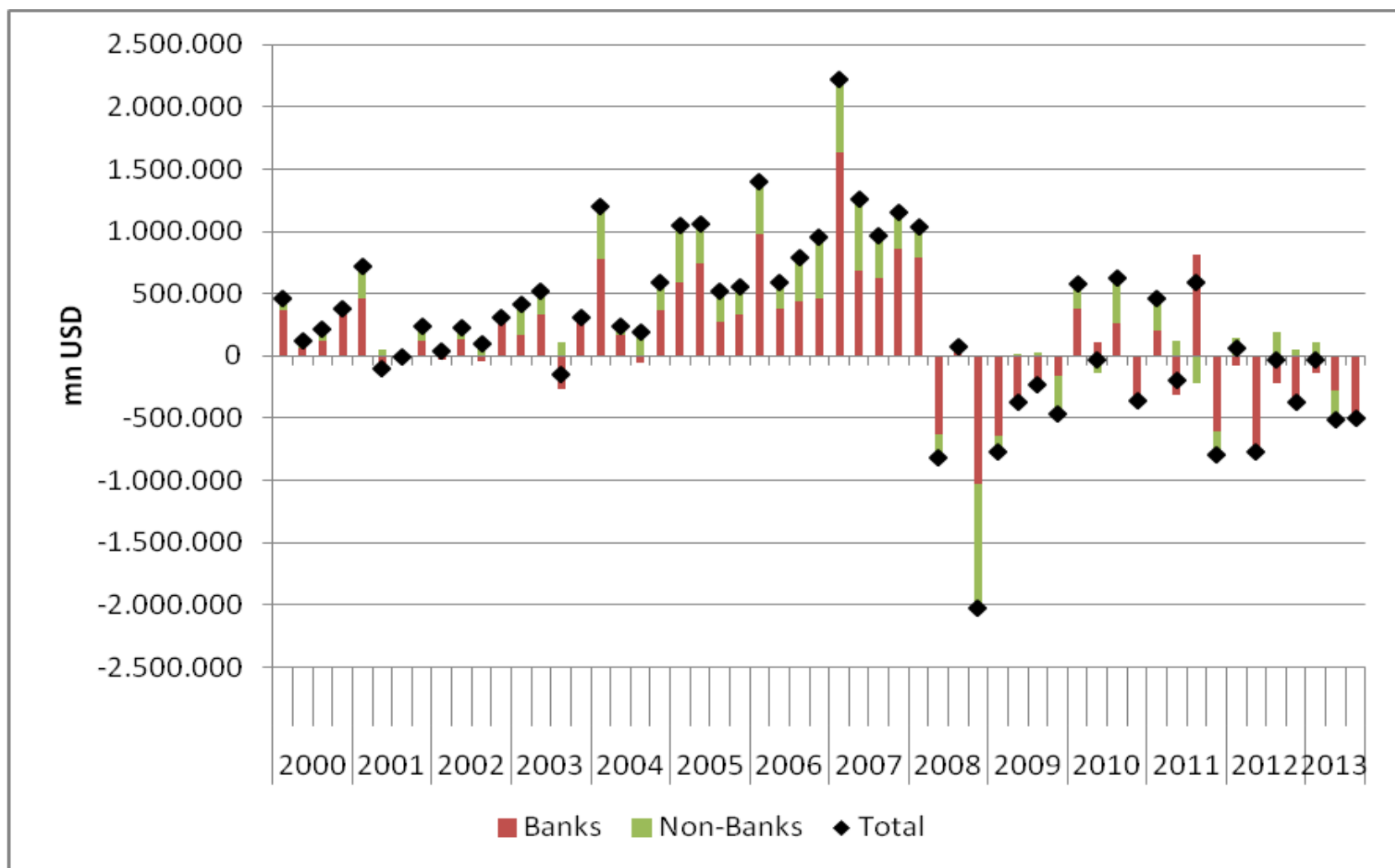
The Data

- **Bank-level data on banks' foreign exposures, their domestic activities, and their balance sheet characteristics.**
 - Dependent variables: cross-border loans, foreign office claims, domestic loans, net due to
 - Explanatory variables: illiquid asset share, commitment ratio, deposits, tier-1 capital, net due to
- **Case studies of 11 countries:**
 - Australia, Austria, Canada, France, Germany, Hong Kong, Ireland, Italy, Poland, United Kingdom, United States
 - Countries differ with regard to the internationalization of their banks and their exposure to the subprime and sovereign debt crisis.
- **Quarterly data, 2006-2013**

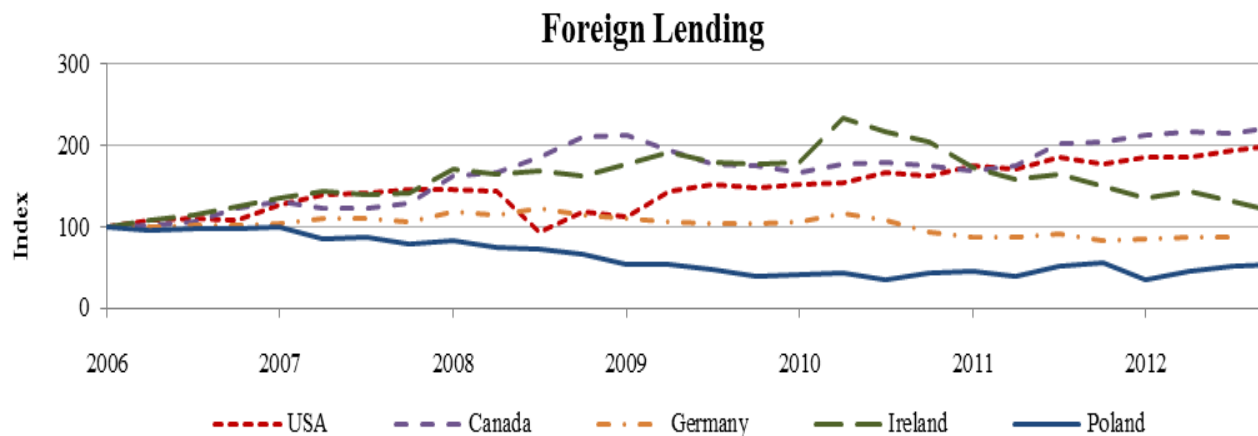
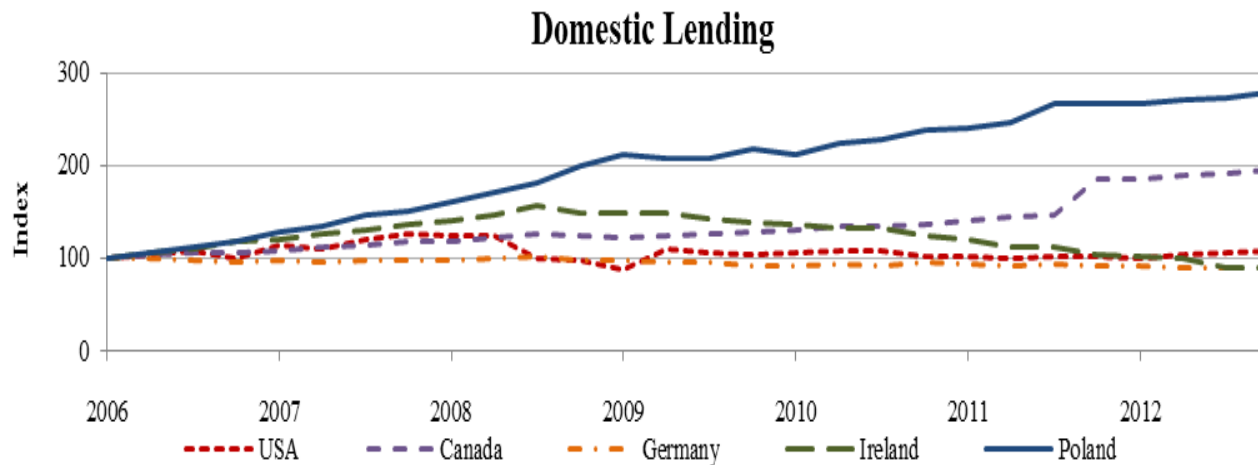
Stocks of banks' foreign assets have increased before the financial crisis – and contracted thereafter.



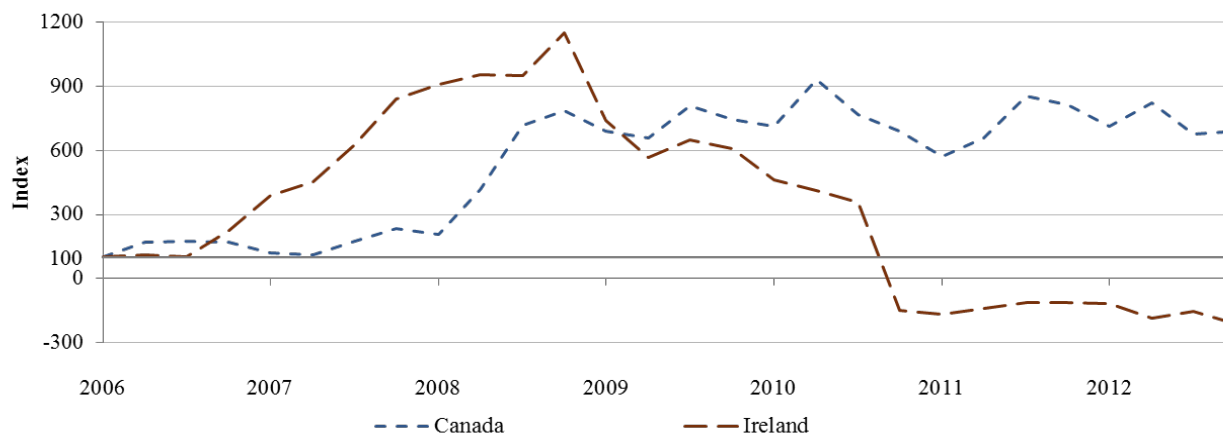
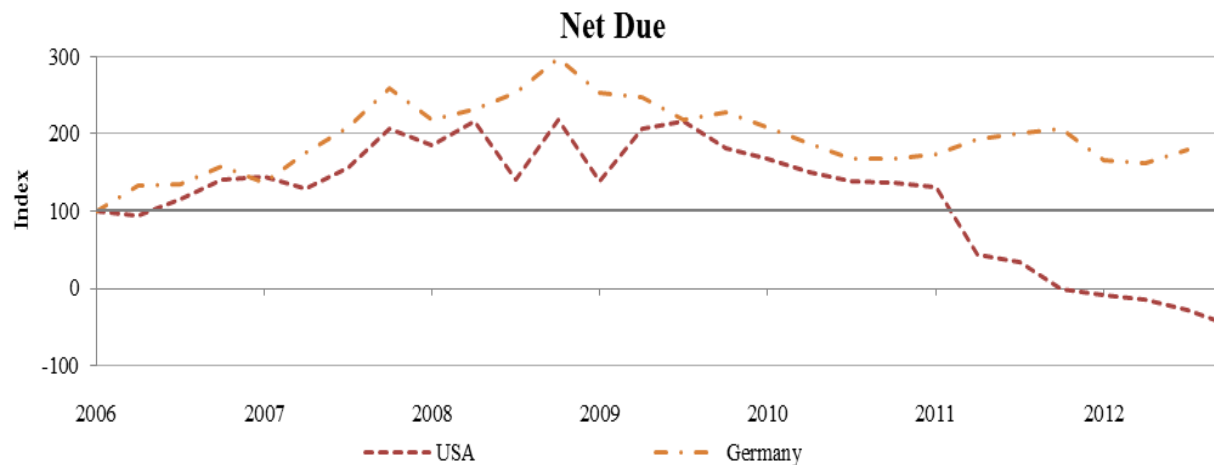
The IBRN has analyzed whether the **flows** of cross-border lending have been affected by liquidity conditions.



The evolution of domestic and foreign lending has differed across countries.



For some countries, we can use information on „net due to“ as a proxy for the intrabank market.



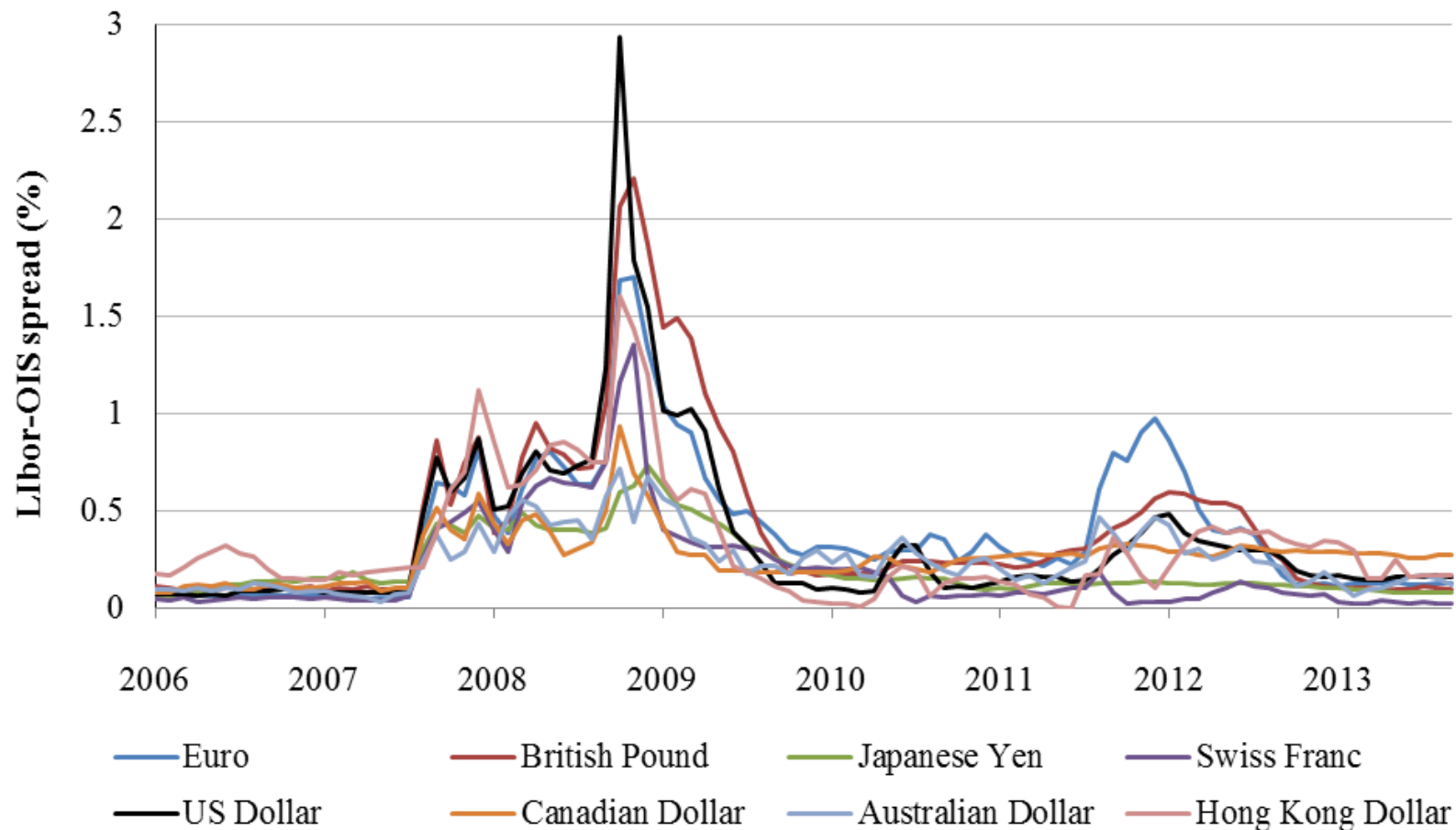
The empirical model

- **Panel regression decomposing banks' responses to liquidity risk:**

$$\Delta Y_{it} = \gamma_i + \mu_t + \left(\beta^0 + \beta^1 LIB_OIS_t \right) \chi_{i,t-1} + \left(\alpha^0 + \alpha^1 LIB_OIS_t \cdot \chi_{i,t-1} \right) F_{it} + \varepsilon_{it}$$

- Constant = common shock (time or country-time fixed effect)
 - Effect of changes in funding costs (LIB_OIS), conditional upon bank balance sheet conditions (χ)
 - Idiosyncratic factors
 - Official liquidity support (F)
- **The model is similar to Khwaja & Mian (2008) and Cornett, McNatt, Strahan, and Tehranian (2011).**

Measuring the market price of liquidity: LIBOR over OIS spread



Counts of regressions in the meta analysis

Dependent variable Regression sample	Δ domestic loans		Δ x-border loans		Δ foreign office claims		Δ net due to parent	
	#Country	#Regs	#Country	#Regs	#Country	#Regs	#Country	#Regs
Specifications including bank FEs								
Banks w foreign affiliates	10	19	9	19	4	8	7	13
Banks wo foreign affiliates	5	7	4	6	0	0	1	1
Specifications excluding bank FEs								
Banks w foreign affiliates	10	14	9	14	4	6	7	10
Banks wo foreign affiliates	5	5	4	4	0	0	1	1

Sample regression for Germany

Kerl / Koch (2014): „Internal Capital Markets, Government Support and How German Banks Adjust to Liquidity Shocks”

Δ x-border loans	Government support		Difference
	Not Utilized	Utilized	
Panel A: Cross-border Loans of <i>Large</i> German Parent Banks			
Illiquid Assets/Assets	-0.1582*	-0.35	-0.1923
Commitments/(Commitments+Assets)	0.0383	0.414	0.3762
Log Real Assets	-1.4337**	-0.0121	1.4216
Deposits/Liabilities	0.2025**	-3.308	-3.5104
Capital/Assets	0.7431	-2.065	-2.8085*
Liabilities to own affiliates/Liabilities	-0.0027	-0.337	-0.3345
Time FE / Bank FE / Obs. / # of banks / Adj. R2	yes / yes / 465 / 20 / 0.0632		
Panel B: Cross-border Loans of <i>Small</i> German Parent Banks			
Illiquid Assets/Assets	-0.0018	0.626***	0.6281***
Commitments/(Commitments+Assets)	-0.1558	-1.024***	-0.8678***
Log Real Assets	-0.3637	-1.645***	-1.2816***
Deposits/Liabilities	-0.0177	-16.72***	-16.6975***
Capital/Assets	0.166	-0.475	-0.6414**
Liabilities to own affiliates/Liabilities	0.0401	-1.696***	-1.7356***
Time FE / Bank FE / Obs. / # of banks / Adj. R2	yes / yes / 1204 / 56 / 0.0473		

When is the interaction between “net due” and liquidity risk more likely to be significant?

Explanatory Variable	(1)	(2)	(3)	(4)	(5)
	Net Due				
Bank fixed effects included	-.124	-.138	-.132	-.129	-.143
Log banks	.630***	.710***	.629***	.641***	.641***
Dependent variable Net Due		-1.213**			-1.464**
Dependent variable Cross-Border Loans			.401		-.233
Dependent variable Domestic Loans				.767**	
Constant	-2.802***	-2.833***	-2.929***	-3.101***	-2.327***
Observations	85	85	85	85	73
R^2	.108	.190	.124	.165	.211

When is the interaction between “deposit share” and liquidity risk more likely to be significant?

Specification \ Explanatory Variable	(6)	(7)	(8)	(9)	(10)
	Deposits				
Bank fixed effects included	.106	.102	.105	.111	.111
Log banks	-.162	-.167	-.157	-.172	-.199
Banks without foreign affiliates	1.06***	1.05***	1.08***	1.04***	1.03***
Dependent variable Cross-Border Loans		.286			.060
Dependent variable Foreign Office Claims			.121		-.058
Dependent variable Domestic Loans				.190	
Constant	-.830	-.916*	-.864	-.869	-.586
Observations	127	127	127	127	102
R ²	.0938	.102	.0944	.0975	.0912

When is the interaction term between “official support” and liquidity risk more likely to be significant?

Specification \ Explanatory Variable	(11)	(12)	(13)	(14)	(15)
	Official Support				
Bank fixed effects included	-0.015	-0.018	-0.015	-0.021	-0.013
Log banks	.270**	.271**	.268**	.310**	.276**
Banks without foreign affiliates	-0.486	-0.537	-0.492	-0.456	-0.464
Dependent variable Net Due		-0.252			
Dependent variable Cross-Border Loans			0.050		
Dependent variable Foreign Office Claims				0.523	
Dependent variable Domestic Loans					-0.155
Constant	-0.551	-0.501	-0.561	-0.753	-0.521
Observations	103	103	103	103	103
R ²	0.0304	0.0343	0.0307	0.0436	0.0328

Summing Up:

How do banks respond to liquidity risk?

- **Results reveal a substantial degree of heterogeneity of responses to liquidity risk, both across countries and banks:**
 - Across countries, no single balance sheet characteristic appeared to be a consistent driver of vulnerabilities and for all types of banks.
 - Parent banks' balance sheets matter more for cross-border claims than for local claims of affiliates.
- **Global banks differ from domestic banks:**
 - Loan growth of banks without foreign affiliates depends on deposit share.
 - Loan growth of global banks depends on liquidity management within the organization.

Next steps

- **Three topics considered in the IBRN member questionnaire in 2014:**
 1. Regulatory changes and international banking
 2. Cross-border recovery and resolution
 3. Market structure and international banking

- **The IBRN organizes regular internal meetings, involving external researchers and policy-makers.**

- **Homepage of the IBRN:** <http://www.newyorkfed.org/IBRN/index.html>
 - Information on network projects and contact details
 - Cross-country studies on liquidity risk and international banking