



Workshop on

“The Costs and Benefits of International Banking”

Eltville, 18 October 2010

Alexander Lipponer
Deutsche Bundesbank

Presentation to

“Cross-border bank lending, risk aversion and the financial crisis“

Cross-border bank lending, risk aversion and the financial crisis

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Deutsche Bundesbank

Eltville, 18 October 2011



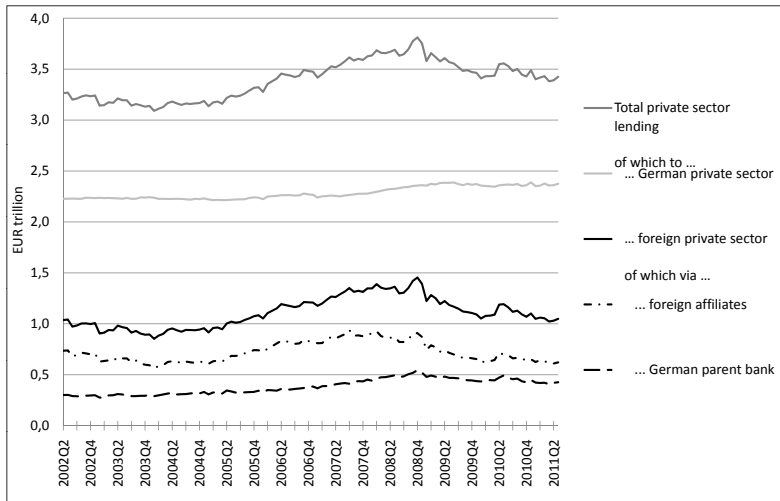
Outline

- 1 Introduction
 - Motivation
 - Literature
 - Contribution
- 2 Empirical Model
 - Approach
 - Data
- 3 Results
 - Regression results
 - Conclusion

Research questions

- 1 Driving forces of x-border lending (supply / demand / risk)
- 2 Role of supply channel (parent / affiliate)
- 3 Impact of financial crisis

German bank lending to the private sector





Literature I

- Relevance of external (**push**) and internal (**pull**) factors for international bank lending (macro level)
 - Calvo et al (IMF 1993), Chuhan et al (JDE 1998)
 - Jeanneau and Micu (BIS 2002)
 - Deutsche Bundesbank (2009)
- Relevance of **parent bank-specific** factors (micro level)
 - De Haas and van Lelyveld (JBF 2006 and JFI 2010)
 - Altunbas, Gambacorta and Marques-Ibanez (ECB 2009)
 - Hempell and Sorensen (ECB 2010)

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Literature II

- Importance of considering both **parent and affiliate lending**
 - Buch (FMII 2000)
 - Peek and Rosengren (NEER 2000)
 - De Haas and van Horen (EBRD 2011)
- Literature on **foreign affiliate lending**
 - Navaretti et al (EP 2010)
 - McGuire and Tarashev (BIS 2008)
 - Buch, Koch and Kötter (unp. WP 2011)

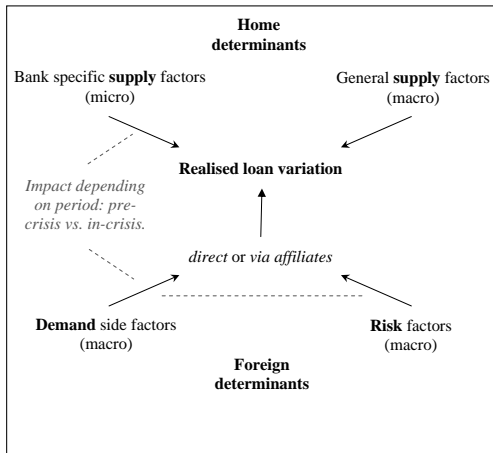
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Our contribution

- relevance of **banks' risk position**
- role of **macroeconomic risk** in destination countries
- situation prior / during the **crisis**
- relevance of **loan supply channel** (parent \leftrightarrow affiliates)
- **transaction data**, no valuation effects

Impact on loan provision



$$\Delta Loan_{ikt} = \alpha_0 + \alpha_1 Bank_{it-1} + \alpha_2 GenHome_{t-1} + \alpha_3 FrgnDemand_{kt-1} + \alpha_4 FrgnRisk_{kt-1} + \alpha_5 Affiliate_{ikt-1} + \eta_i + \gamma_k + \varepsilon_{ikt}$$

Accounting for affiliates' relevance and crisis

- Measuring of **affiliate relevance** by
 - first, including *Affiliate* in the regression
 - second, interacting with *FrgnDemand* and *FrgnRisk*
 - *Affiliate* = Proportion of respective bank's lending to a country via foreign affiliates (bank-country specific)
- Measuring the **crisis' impact** by interaction with
 - general *crisis* dummy (2007Q3 on),
 - »pre-Lehman« vs. »post-Lehman« *crisis* split

Data sources

- **Bundesbank micro data (and availability)**
 - External positions data ([AUSIS](#), 2002, monthly)
 - Banks' balance sheet statistics ([BISTA](#), 1992, monthly)
 - Banks' profit and loss accounts ([GuV](#), 1996, yearly)
 - Banking supervision data ([BAKIS](#), 1993, monthly)
- **Macro data**
 - International financial statistics (IFS, IMF)
 - World economic outlook (WEO, IMF)
 - Balance of payments (BoP, BBk)
 - Bloomberg, Datastream
 - Bank lending survey (BLS, €uSy)

Advertisement: Bundesbank (micro) data

- **On site access only ! Agreed research projects only !**
- Bank data
 - AUSIS, BISTA, GuV, BAKIS (compare prev. slide)
 - Interest rates (MIR) since 2003, monthly sample
 - Large credit data (MiMiK)
German banks' loans > €1.5m worldwide; since 1993
 - Securities deposits (SecuStat) since 2005, quarterly
- Firm data (partially including banks)
 - Micro database Direct Investment (MiDi)
FDI-Stock data, since 1989, yearly
 - Balance of payments w/o trade in goods (DIKAP)
services, ..., FPI flows, FDI flows, ..., since 1995
 - Corporate balance sheets (Ustan) since 1987 (1972), yearly
- Household data
 - Panel on household and finance (HFCS) since 2011, biennial

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More information on the web-site

www.bundesbank.de → Research Centre → Research Data



The screenshot shows the website interface for the Deutsche Bundesbank Research Centre. The top navigation bar includes links for 'Homepage', 'Research Centre', 'Research data', and 'Micro data'. The left sidebar lists various sections: 'Research Centre', 'Current research projects', 'Research data' (with sub-items 'Micro data' and 'Aggregate data'), 'Annual report', 'Researchers', 'Visiting researchers', 'Panel on Household Finances', 'Conferences', 'Discussion papers', and 'International Journal of Central Banking'. The main content area is titled 'Micro data' and contains three links: 'Direct investment data', 'Corporate balance sheet data', and 'Bank data'. Below this, there is a section for 'Microdatabase Direct investment (MiDi)' with a paragraph of text and a partially visible second paragraph.

You are here: [Homepage](#) | [Research Centre](#) | [Research data](#) | [Micro data](#)

Research Centre

- Current research projects
- Research data
 - Micro data
 - Aggregate data
- Annual report
- Researchers
 - Visiting researchers
- Panel on Household Finances
- Conferences
- Discussion papers
- International Journal of Central Banking

Micro data

- [Direct investment data](#)
- [Corporate balance sheet data](#)
- [Bank data](#)

Microdatabase Direct investment (MiDi)

The Bundesbank has been collating annual statistics on foreign direct investment stocks Payments Regulation (*Außenwirtschaftsverordnung*) since 1976.

For several years, the importance of the database for research purposes has been c
economy. An [active research network of Bundesbank and non-Bundesbank experts](#) has

Data selection (endogenous variable)

Transaction based real changes of long-term loans

- 2002Q1 to 2010Q4
- quarterly transaction data (no valuation effects)
- in real terms
- start: 100 largest German banks
less promotional and foreign-owned banks: 69 banks
- 91% of cross-border lending to non-bank private sector
- 80 countries with largest amounts outstanding,
exclusion of predominant financial centers
(US, UK, IE, LU, SG and HK) ⇒ end: ~50% of total



Exogenous variables

Variable	Expd	Variable	Expd
<i>Foreign Demand</i>		<i>Supply side: Bank level ...</i>	
Investment / GDP	+	Relative bank size	+
GDP growth (other rel to local)	-	Capital market activity	+
Bilateral trade openness	+	Profits / equity	+
<i>Foreign Risk</i>		Change in CCR	-
Stock market volatility	-	CCR change x level	+
Exchange rate volatility	-	Lending at home	+ / -
Liabilities / GDP	+ / -	Affiliate relevance	+ → 0
		<i>... and aggregate level</i>	
		Home interest margin	-
		Credit standards	-

Exogenous variables

Variable	Result	Variable	Result
<i>Foreign Demand</i>		<i>Supply side: Bank level ...</i>	
Investment / GDP	+ (A)	Relative bank size	+ (C1)
GDP growth (other rel to local)	- (P,C)	Capital market activity	+
Bilateral trade openness	+ (A,bC)	Profits / equity	+
<i>Foreign Risk</i>		Change in CCR	- (C2)
Stock market volatility	- (A)	CCR change x level	+
Exchange rate volatility	+ (P)	Lending at home	+
Liabilities / GDP	+ (P)	Affiliate relevance	+ → o
		<i>... and aggregate level</i>	
		Home interest margin	-
		Credit standards	- (bC)

Regression results I

	(1a)	(1b)	(2)	
	Baseline		Affiliate relevance	
<i>Dependent variable:</i>				
<i>Transactions of long-term loans</i>				
<i>Foreign country determinants: demand and risk</i>				
			<i>Interactions</i> <i>(x Affiliate relevance)</i>	
Fixed capital formation/GDP	0.000 (0.002)	0.000 (0.002)	-0.002 (0.002)	0.056* (0.030)
Other countries' real GDP growth relative to local	-3.53e-08 (0.000)	-3.62e-08 (0.000)	-9.35e-08* (0.000)	2.65e-07 (0.000)
Bilateral trade openness	-0.002 (0.006)	-0.002 (0.006)	-0.010 (0.007)	0.136** (0.063)
Stock market volatility	-1.17e-05 (0.000)	-1.18e-05 (0.000)	1.83e-05** (0.000)	-4.33e-04*** (0.000)
Exchange rate volatility	7.39e-05*** (0.000)	7.36e-05*** (0.000)	8.63e-05*** (0.000)	-3.28e-04 (0.001)
Liabilities/GDP	0.001 (0.001)	0.001 (0.001)	0.002** (0.001)	-0.004 (0.006)
Affiliate relevance	0.006*** (0.002)	0.006*** (0.002)	-0.008 (0.010)	
<i>Home country determinants: general and bank-specific supply</i>				
Home interest margin	-0.151*** (0.020)	-0.150*** (0.020)	-0.156*** (0.020)	
Tightening credit standards due to liquidity position	-8.44e-06 (0.000)	-7.29e-06 (0.000)	-7.27e-06 (0.000)	
Change in core capital ratio	-0.053*** (0.020)	-0.090*** (0.032)	-0.085*** (0.032)	
Core capital ratio		0.000 (0.002)	0.001 (0.002)	
Core capital ratio: change x level		0.139*** (0.046)	0.131*** (0.047)	
Profits/equity	0.034** (0.016)	0.035** (0.015)	0.027* (0.015)	
Capital market activity	0.006*** (0.002)	0.007*** (0.002)	0.007*** (0.002)	
Bank size (relative)	3.17e-05 (0.000)	3.14e-05 (0.000)	3.96e-05* (0.000)	
Lending at home	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	
Constant	0.003 (0.009)	-0.003*** (0.001)	-0.003*** (0.001)	
Observations	148392	148392	148392	
Number of bank-country pairs (clusters)	4898	4898	4898	
adj. R-squared	0.360416	0.360819	0.374057	

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Regressions are cluster-robust OLS with fixed effects for banks and countries. Seasonal dummies included. Time period covered by regressions: 2003Q3 to 2010Q4. All explanatory variables are lagged one period. Affiliate relevance is the share of affiliate business in total long-term credit allocation of a bank to a foreign country's private sector.

Regression results I: Predominant supply-side

	(1a)	(1b)	(2)	
<i>Dependent variable:</i>	Baseline		Affiliate relevance	
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Regression results I: Affiliate relevance

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Other countries' real GDP growth relative to local	-3.53e-08 (0.000)	-3.62e-08 (0.000)	-9.35e-08* (0.000)	2.65e-07 (0.000)
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Liabilities/GDP	0.001 (0.001)	0.001 (0.001)	0.002** (0.001)	-0.004 (0.006)
Affiliate relevance	0.006*** (0.002)	0.006*** (0.002)	-0.008 (0.010)	

Regression results II: Financial crisis' impact

Dependent variable: Transactions of long-term loans	(3) Crisis		(4) Crisis pre- vs. post-Lehman		
	(3/1)	(3/2) <i>Interacted terms (x Crisis)</i>	(4/1)	(4/2) <i>Interacted terms (x Crisis pre Lehman)</i>	(4/3) <i>Interacted terms (x Crisis post Lehman)</i>
<i>Foreign country determinants: demand and risk</i>					
Fixed capital formation/GDP	-0.003 (0.002)	-0.003 (0.003)	-0.004* (0.002)	-0.004 (0.003)	0.001 (0.004)
Other countries' real GDP growth relative to local	-7.19e-08 (0.000)	-3.81e-07** (0.000)	-6.42e-08 (0.000)	-6.15e-05 (0.000)	-2.29e-07 (0.000)
Bilateral trade openness	-0.011 (0.008)	0.003 (0.004)	-0.010 (0.008)	0.009 (0.006)	-0.001 (0.004)
Stock market volatility	-1.76e-06 (0.000)	3.37e-05* (0.000)	-5.99e-06 (0.000)	1.37e-05 (0.000)	3.46e-05* (0.000)
Exchange rate volatility	8.16e-05*** (0.000)	3.55e-05 (0.000)	5.94e-05** (0.000)	-1.16e-04* (0.001)	2.61e-06 (0.001)
Liabilities/GDP	0.002* (0.001)	0.001 (0.001)	0.002* (0.001)	0.000 (0.001)	0.001 (0.001)
... via <i>Affiliate Relevance</i>					
Fixed capital formation/GDP x Affiliate relevance	0.024 (0.035)	0.048 (0.060)	0.025 (0.035)	0.017 (0.077)	0.014 (0.076)
Other countries' real GDP growth x Affiliate relevance	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Bilateral trade openness x Affiliate relevance	0.173** (0.073)	-0.124 (0.107)	0.173** (0.073)	0.107 (0.126)	-0.276* (0.157)
Stock market volatility x Affiliate relevance	-4.58e-04* (0.000)	2.22e-05 (0.000)	-4.56e-04** (0.000)	-7.66e-06 (0.001)	3.86e-04 (0.000)
Exchange rate volatility x Affiliate relevance	-4.49e-04 (0.001)	1.77e-05 (0.001)	-4.76e-04 (0.001)	3.72e-05 (0.002)	-3.97e-04 (0.001)
Liabilities/GDP x Affiliate relevance	-0.005 (0.008)	0.002 (0.009)	-0.005 (0.008)	0.006 (0.011)	0.001 (0.010)
Affiliate relevance	-0.004 (0.011)	0.000 (0.009)	-0.140*** (0.024)	-0.010 (0.022)	0.011 (0.027)
<i>Home country determinants: general and bank-specific supply</i>					
Home interest margin	-0.131*** (0.023)	-0.062 (0.047)	-0.140*** (0.024)	0.074 (0.158)	-0.067 (0.059)
Tightening credit standards due to liquidity position	-3.09e-05* (0.000)	6.55e-06 (0.000)	-2.99e-05 (0.000)	4.78e-05 (0.000)	-1.84e-05 (0.000)
Change in core capital ratio	-0.026 (0.019)	-0.059** (0.025)	-0.022 (0.019)	0.014 (0.025)	-0.114** (0.049)
Profits/equity	0.017 (0.019)	0.025 (0.024)	0.014 (0.019)	-0.051 (0.027)	0.009 (0.030)
Capital market activity	0.007*** (0.002)	0.001 (0.001)	0.005** (0.002)	-0.002 (0.002)	0.001 (0.002)
Bank size (relative)	3.25e-05 (0.000)	7.37e-06 (0.000)	2.06e-05 (0.000)	5.191e-05*** (0.000)	5.371e-07 (0.000)
Lending at home	0.001*** (0.000)	-0.000 (0.001)	0.001** (0.000)	0.001 (0.001)	-0.000 (0.001)
Constant	0.004 (0.009)		0.009 (0.009)		
Observations	148392		148392		
Number of bank-country pairs (clusters)	4898		4898		
adj. R-squared	0.877722		0.807898		

Regression results II: Crisis \Rightarrow Bank-specific factors

Dependent variable: Transactions of long-term loans	(3) Crisis		(4) Crisis pre- vs. post-Lehman		
	(3/1)	(3/2) <i>Interacted terms (x Crisis)</i>	(4/1)	(4/2) <i>Interacted terms (x Crisis pre Lehman)</i>	(4/3) <i>Interacted terms (x Crisis post Lehman)</i>
<i>Foreign country determinants: demand and risk</i>					
Fixed capital formation/GDP	-0.003 (0.002)	-0.003 (0.003)	-0.004* (0.002)	-0.004 (0.003)	0.001 (0.004)
Other countries' real GDP growth relative to local	-7.19e-08 (0.000)	-3.81e-07** (0.000)	-6.42e-08 (0.000)	-6.15e-05 (0.000)	-2.29e-07 (0.000)
Bilateral trade openness	-0.011 (0.008)	0.003 (0.004)	-0.010 (0.008)	0.009 (0.006)	-0.001 (0.004)
Stock market volatility	-1.76e-06 (0.000)	3.37e-05* (0.000)	-5.99e-06 (0.000)	1.37e-05 (0.000)	3.46e-05* (0.000)
Exchange rate volatility	8.16e-05*** (0.000)	3.55e-05 (0.000)	5.94e-05** (0.000)	-1.16e-04* (0.000)	2.61e-06 (0.000)
Liabilities/GDP	0.002* (0.001)	0.001 (0.001)	0.002* (0.001)	0.000 (0.001)	0.001 (0.001)
<i>... via Affiliate Relevance</i>					
Fixed capital formation/GDP x Affiliate relevance	0.024 (0.035)	0.048 (0.060)	0.025 (0.035)	0.017 (0.077)	0.014 (0.076)
Other countries' real GDP growth x Affiliate relevance	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Bilateral trade openness x Affiliate relevance	0.173** (0.073)	-0.124 (0.107)	0.173** (0.073)	0.107 (0.126)	-0.276* (0.157)
Stock market volatility x Affiliate relevance	-4.58e-04* (0.000)	2.22e-05 (0.000)	-4.56e-04* (0.000)	-7.66e-06 (0.001)	3.86e-04 (0.000)
Exchange rate volatility x Affiliate relevance	-4.49e-04 (0.001)	1.77e-05 (0.001)	-4.76e-04 (0.001)	3.72e-05 (0.002)	-3.97e-04 (0.001)
Liabilities/GDP x Affiliate relevance	-0.005 (0.008)	0.002 (0.009)	-0.005 (0.008)	0.006 (0.011)	0.001 (0.010)
Affiliate relevance	-0.004 (0.011)	0.000 (0.019)	-0.149** (0.024)	-0.010 (0.022)	0.011 (0.027)
<i>Home country determinants: general and bank-specific supply</i>					
Home interest margin	-0.131*** (0.023)	-0.062 (0.047)	-0.140*** (0.024)	0.074 (0.158)	-0.067 (0.059)
Tightening credit standards due to liquidity position	-3.09e-05* (0.000)	6.55e-06 (0.000)	-2.97e-05 (0.000)	4.78e-05 (0.000)	-1.84e-05 (0.000)
Change in core capital ratio	-0.026 (0.019)	-0.059** (0.025)	-0.022 (0.019)	0.014 (0.025)	-0.114** (0.049)
Profits/equity	0.017 (0.019)	0.025 (0.024)	0.014 (0.019)	-0.051 (0.027)	0.009 (0.030)
Capital market activity	0.007*** (0.002)	0.001 (0.001)	0.005** (0.002)	-0.002 (0.002)	0.001 (0.002)
Bank size (relative)	3.25e-05 (0.000)	7.37e-06 (0.000)	2.06e-05 (0.000)	1.91e-05*** (0.000)	5.731e-07 (0.000)
Lending at home	0.001*** (0.000)	-0.000 (0.001)	0.001** (0.000)	0.001 (0.001)	-0.000 (0.001)
Constant	0.004 (0.009)		0.009 (0.009)		
Observations	148392		148392		
Number of bank-country pairs (clusters)	4898		4898		
adj. R-squared	0.877722		0.807898		

Regression results II: Crisis \Rightarrow Bank-specific factors

<i>Home country determinants: general and bank-specific supply</i>					
Home interest margin	-0.131*** (0.023)	-0.062 (0.047)	-0.140*** (0.024)	0.074 (0.158)	-0.067 (0.059)
Tightening credit standards due to liquidity position	-3.09e-05* (0.000)	6.55e-06 (0.000)	-2.59e-05 (0.000)	4.78e-05 (0.000)	-1.84e-05 (0.000)
Change in core capital ratio	-0.026 (0.019)	-0.059** (0.025)	-0.022 (0.019)	0.014 (0.025)	-0.114** (0.049)
Profits/equity	0.017 (0.019)	0.025 (0.024)	0.014 (0.019)	-0.031 (0.027)	0.009 (0.030)
Capital market activity	0.007*** (0.002)	0.001 (0.001)	0.005** (0.002)	-0.002 (0.002)	0.001 (0.002)
Bank size (relative)	3.25e-05 (0.000)	7.37e-06 (0.000)	2.06e-05 (0.000)	1.91e-05*** (0.000)	5.71e-07 (0.000)
Lending at home	0.001*** (0.000)	-0.000 (0.001)	0.001** (0.000)	0.001 (0.001)	-0.000 (0.001)

Regression results II: Crisis \Rightarrow Foreign country determinants

Dependent variable: Transactions of long-term loans	(3) Crisis		(4) Crisis pre- vs. post-Lehman		
	(3/1)	(3/2) <i>Interacted terms (x Crisis)</i>	(4/1)	(4/2) <i>Interacted terms (x Crisis pre Lehman)</i>	(4/3) <i>Interacted terms (x Crisis post Lehman)</i>
	<i>Foreign country determinants: demand and risk</i>				
Fixed capital formation/GDP	-0.003 (0.002)	-0.003 (0.003)	-0.004* (0.002)	-0.004 (0.003)	0.001 (0.004)
Other countries' real GDP growth relative to local	-7.19e-08 (0.000)	-3.81e-07** (0.000)	-6.42e-08 (0.000)	-6.15e-05 (0.000)	-2.29e-07 (0.000)
Bilateral trade openness	-0.011 (0.008)	0.003 (0.004)	-0.010 (0.008)	0.009 (0.006)	-0.001 (0.004)
Stock market volatility	-1.76e-06 (0.000)	3.37e-05* (0.000)	-5.99e-06 (0.000)	1.37e-05 (0.000)	3.46e-05* (0.000)
Exchange rate volatility	8.16e-05*** (0.000)	3.55e-05 (0.000)	5.94e-05** (0.000)	-1.16e-04* (0.000)	2.61e-06 (0.000)
Liabilities/GDP	0.002* (0.001)	0.001 (0.001)	0.002* (0.001)	0.000 (0.001)	0.001 (0.001)
<i>... via Affiliate Relevance</i>					
Fixed capital formation/GDP x Affiliate relevance	0.024 (0.035)	0.048 (0.060)	0.025 (0.035)	0.017 (0.077)	0.014 (0.076)
Other countries' real GDP growth x Affiliate relevance	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Bilateral trade openness x Affiliate relevance	0.173** (0.073)	-0.124 (0.107)	0.173** (0.073)	0.107 (0.126)	-0.276* (0.157)
Stock market volatility x Affiliate relevance	-4.58e-04* (0.000)	2.22e-05 (0.000)	-4.56e-04** (0.000)	-7.66e-06 (0.001)	3.86e-04 (0.000)
Exchange rate volatility x Affiliate relevance	-4.49e-04 (0.001)	1.77e-05 (0.001)	-4.76e-04 (0.001)	3.72e-05 (0.002)	-3.97e-04 (0.001)
Liabilities/GDP x Affiliate relevance	-0.005 (0.008)	0.002 (0.009)	-0.005 (0.006)	0.006 (0.011)	0.001 (0.010)
Affiliate relevance	-0.004 (0.011)	0.000 (0.019)	-0.149*** (0.024)	-0.010 (0.022)	0.011 (0.027)
<i>Home country determinants: general and bank-specific supply</i>					
Home interest margin	-0.131*** (0.023)	-0.062 (0.047)	-0.140*** (0.024)	0.074 (0.158)	-0.067 (0.059)
Tightening credit standards due to liquidity position	-3.09e-05* (0.000)	6.55e-06 (0.000)	-2.99e-05 (0.000)	4.78e-05 (0.000)	-1.84e-05 (0.000)
Change in core capital ratio	-0.026 (0.019)	-0.059** (0.025)	-0.022 (0.019)	0.014 (0.025)	-0.114** (0.049)
Profits/equity	0.017 (0.019)	0.025 (0.024)	0.014 (0.019)	-0.051 (0.027)	0.009 (0.030)
Capital market activity	0.007*** (0.002)	0.001 (0.001)	0.005** (0.002)	-0.002 (0.002)	0.001 (0.002)
Bank size (relative)	3.25e-05 (0.000)	7.37e-06 (0.000)	2.06e-05 (0.000)	5.191e-05*** (0.000)	5.371e-07 (0.000)
Lending at home	0.001*** (0.000)	-0.000 (0.001)	0.001** (0.000)	0.001 (0.001)	-0.000 (0.001)
Constant	0.064 (0.009)		0.009 (0.009)		
Observations	148392		148392		
Number of bank-country pairs (clusters)	4898		4898		
adj. R-squared	0.877722		0.487898		

Regression results II: Crisis \Rightarrow Foreign country determinants

Dependent variable: Transactions of long-term loans	(3) Crisis		(4) Crisis: pre- vs. post-Lehman		
	(3/1)	(3/2) <i>Interacted terms</i> (x Crisis)	(4/1)	(4/2) <i>Interacted terms</i> (x Crisis pre Lehman)	(4/3) <i>Interacted terms</i> (x Crisis post Lehman)
<i>Foreign country determinants: demand and risk</i>					
Fixed capital formation/GDP	-0.003 (0.002)	-0.003 (0.003)	-0.004* (0.002)	-0.004 (0.003)	0.001 (0.004)
Other countries' real GDP growth relative to local	-7.19e-08 (0.000)	-3.81e-07** (0.000)	-6.42e-08 (0.000)	-6.15e-05 (0.000)	-2.29e-07 (0.000)
Bilateral trade openness	-0.011 (0.008)	0.003 (0.004)	-0.010 (0.008)	0.009 (0.006)	-0.001 (0.004)
Stock market volatility	-1.76e-06 (0.000)	3.37e-05* (0.000)	-5.99e-06 (0.000)	1.37e-05 (0.000)	3.46e-05* (0.000)
Exchange rate volatility	8.16e-05*** (0.000)	3.55e-05 (0.000)	5.94e-05** (0.000)	-1.16e-04* (0.000)	2.61e-06 (0.000)
Liabilities/GDP	0.002* (0.001)	0.001 (0.001)	0.002* (0.001)	0.000 (0.001)	0.001 (0.001)
<i>... via Affiliate Relevance</i>					
Fixed capital formation/GDP x Affiliate relevance	0.024 (0.035)	0.048 (0.060)	0.025 (0.035)	0.017 (0.077)	0.014 (0.076)
Other countries' real GDP growth x Affiliate relevance	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Bilateral trade openness x Affiliate relevance	0.173** (0.073)	-0.124 (0.107)	0.173** (0.073)	0.107 (0.126)	-0.276* (0.157)

Summary of results

- bank-specific variables play crucial role
 - parent banks' stance vis-à-vis risk gains relevance in crisis
 - core capital ratio \uparrow , credit standards \uparrow , home interest margin \uparrow
 \Rightarrow lending abroad \downarrow
- lending abroad and at home in parallel
- parent banks redirect lending to more promising markets
- broad demand and risk in foreign economies
 - only limited importance for parent banks' cross-border lending
 - but: important for affiliates' business abroad
(in addition to parent risk factors)

List of countries

Country	Number of German banks active in cross-border lending*	Volume of cross-border lending by the largest 69 German banks (in Euros)*			
1 United States (US) **	69	243 231 219	41 Malta (MT)	25	1 390 120
2 United Kingdom (UK) **	69	166 355 114	42 Indonesia (ID)	30	1 207 416
3 Luxembourg (LU) **	65	46 771 884	43 Slovak Republic (SK)	42	1 126 246
4 Ireland (IE) **	61	41 319 120	44 Slovenia (SI)	35	1 073 475
5 France (FR)	68	40 632 255	45 South Africa (ZA)	54	1 068 215
6 Spain (ES)	67	38 021 744	46 Mauritius (MU)	15	1 015 977
7 Italy (IT)	63	37 184 532	47 Malaysia (MY)	30	983 491
8 Netherlands (NL)	69	35 802 393	48 Croatia (HR)	43	959 140
9 Poland (PL)	53	22 814 701	49 Republic of Korea (KR)	30	858 208
10 Switzerland (CH)	68	15 612 722	50 Iran (IR)	27	841 595
11 Australia (AU)	58	14 887 368	51 Israel (IL)	45	780 611
12 Japan (JP)	44	14 504 422	52 Kuwait (KW)	16	593 690
13 Denmark (DK)	60	12 298 532	53 Latvia (LV)	26	580 051
14 Sweden (SE)	63	10 788 302	54 Thailand (TH)	47	560 927
15 Russian Federation (RU)	47	10 775 524	55 Taiwan (TW)	21	452 177
16 Hungary (HU)	50	10 367 725	56 Bulgaria (BG)	30	451 266
17 Canada (CA)	60	8 249 914	57 Egypt (EG)	28	428 899
18 Belgium (BE)	65	8 137 506	58 Uruguay (UY)	13	422 531
19 Singapore (SG) **	53	7 841 208	59 Oman (OM)	15	419 006
20 Cyprus (CY)	42	7 088 111	60 Republic of Serbia (RS)	29	395 052
21 Norway (NO)	61	6 829 921	61 Trinidad and Tobago (TT)	10	391 724
22 Portugal (PT)	57	6 790 016	62 Macao (MO)	8	353 452
23 Turkey (TR)	59	6 582 163	63 Estonia (EE)	17	331 400
24 Greece (GR)	60	6 259 136	64 Argentina (AR)	33	306 291
25 Austria (AT)	67	5 173 132	65 Kazakhstan (KZ)	19	276 261
26 Czech Republic (CZ)	53	4 946 243	66 Azerbaijan (AZ)	14	251 393
27 India (IN)	38	4 018 714	67 Colombia (CO)	23	217 869
28 Hong Kong (HK) **	41	3 914 820	68 Bahrain (BH)	18	186 594
29 United Arab Emirates (AE)	54	3 736 370	69 Peru (PE)	22	150 841
30 Mexico (MX)	41	3 343 853	70 Macedonia (MK)	15	117 583
31 Finland (FI)	45	3 324 059	71 Lithuania (LT)	17	117 389
32 Iceland (IS)	24	2 443 195	72 Pakistan (PK)	13	117 143
33 Saudi Arabia (SA)	25	2 328 016	73 Algeria (DZ)	7	97 178
34 China (CN)	52	1 883 197	74 Nigeria (NG)	18	95 914
35 Ukraine (UA)	21	1 875 544	75 Belarus (BY)	11	92 644
36 Brazil (BR)	52	1 838 943	76 Venezuela (VE)	23	92 418
37 Romania (RO)	45	1 758 661	77 Bosnia and Herzegovina (BA)	18	68 029
38 New Zealand (NZ)	38	1 583 551	78 Vietnam (VN)	21	66 516
39 Chile (CL)	34	1 424 967	79 Montenegro (ME)	7	50 724
40 Qatar (QA)	25	1 416 024	80 Ghana (GH)	20	48 137

* Cross-border lending is lending to the private sector of the respective country as of 12/2009. It includes lending by the German parent bank itself and by its affiliates located abroad.

** Due to their special character as financial centers, these countries are excluded from the empirical analysis.

Foreign private sector lending (our sub sample)

