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Cross-border bank flows, regional household credit booms, and bank risk-taking

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APPENDIX

Cross-Border Bank Flows, Regional Household Credit Booms, and Bank Risk-Taking

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A ADDITIONAL TABLES AND FIGURES

Table A1 Variable Definitions and Sources

Variable	Definition	Unit	Source
ΔConsumerloans	The log-difference in households' outstanding consumer credit volumes	%	HFCS or PHF
ΔMortgages	The log-difference in households' outstanding mortgage credit volumes	%	HFCS/PHF
Consumption(nondurable)	The logarithm of households' nondurable consumption	ln(x)	PHF
Consumption(durable)	The logarithm of households' durable consumption, defined as income less net saving less nondurable consumption	ln(x)	PHF
Consumption(food)	The logarithm of households' food at home consumption	ln(x)	PHF
Consumption(restaurant)	The logarithm of households' food outside home consumption	ln(x)	PHF
Net wealth	The logarithm of a household's net wealth (assets less liabilities)	ln(euro)	HFCS/PHF
Income	The logarithm of a household's total gross income	ln(euro)	HFCS/PHF
Renter	=1 if household is a renter in the main residence	0/1	HFCS/PHF
Foreign	=1 if a household's country of birth is outside of Germany	0/1	HFCS/PHF
Age	Age of the household head	-	HFCS/PHF
Income Exp.	=1 if a household expects its income to rise more than inflation	0/1	PHF
Self-Employed	=1 if a household generates self-employment income	0/1	PHF
Unemployed	=1 if a household receives unemployment benefits or any other regular social transfers	0/1	PHF
Noncore	Banks' sum of interbank deposits, as well as money market securities and bonds issued, over total assets	%	Deutsche Bundesbank
Gross Interbank	Banks' interbank deposits over total assets	%	Deutsche Bundesbank
Gross Domestic Interbank	Banks' standardized domestic interbank deposits over total assets	%	Deutsche Bundesbank
Gross EA Interbank	Banks' standardized within-euro area interbank deposits over total assets	%	Deutsche Bundesbank
Gross Non-EA Interbank	Banks' standardized non-euro area interbank deposits over total assets	%	Deutsche Bundesbank
Net Interbank	Banks' interbank deposits net of interbank loans over total assets	%	Deutsche Bundesbank
Ln(Noncore)	Banks' logarithm of noncore funding volumes	ln(euro)	Deutsche Bundesbank
Ln(Interbank)	Banks' logarithm of interbank funding volumes	ln(euro)	Deutsche Bundesbank
Size	Bank size, defined as the log of total assets	ln(euro)	Deutsche Bundesbank
ROA	Banks' return on assets	%	Deutsche Bundesbank
ROE	Banks' return on equity	%	Deutsche Bundesbank
Liquidity	Banks' sum of cash, central bank reserves and treasuries held over total assets	%	Deutsche Bundesbank
Capitalization	Banks' total capital over total assets	%	Deutsche Bundesbank
Other flows	Net other investment inflows over nominal GDP	%	International Financial Statistics
Portfolio flows	Net portfolio investment inflows over nominal GDP	%	International Financial Statistics
FDI Flows	Net foreign direct investment inflows over nominal GDP	%	International Financial Statistics
Bank flows	FX and break-adjusted change in banks' liabilities less the equivalent change in assets vis-a-vis all other banks over GDP	%	BIS-LBS

Source: Authors.

Table A2 Combined Summary Statistics: More and Less Exposed Banks

Variable	More		Less	
	Observations	Mean	Observations	Mean
Δ Mortgages	1,050	.	486	-41.89
Δ Consumerloans	1,050	-34.18	486	-24.51
Consumption(nondurable)	1,050	9.29	486	9.22
Consumption(durable)	1,004	9.76	464	9.87
Consumption(food)	1,050	8.52	486	8.55
Consumption(restaurant)	1,050	6.42	486	6.54
Net wealth	1,050	12.06	486	12.02
Income	1,050	10.88	486	10.79
Renter	1,050	0.30	486	0.33
Age	1,050	59.45	486	60.27
Foreign	1,050	0.07	486	0.05
Income Exp.	1,050	0.07	486	0.09
Unemployed	1,050	0.29	486	0.28
Self-employed	1,050	0.18	486	0.17
Noncore	1,050	16.37	486	7.22
Gross Interbank	1,050	15.18	486	6.84
Gross Domestic Interbank	1,050	0.47	486	-0.96
Gross EA Interbank	1,050	0.16	486	-0.29
Gross Non-EA Interbank	1,050	-0.02	486	-0.03
Net Interbank	1,050	8.01	486	-1.73
Size	1,050	14.50	486	14.38
ROA	1,048	0.16	486	0.14
Equity	1,050	5.70	486	5.61
Liquidity	1,050	1.32	486	1.57

Note: The table reports summary statistics for the German bank and household data set for households with its main relationship with a more exposed bank (upper 67% of the noncore distribution) and less exposed bank (lowest 33% of the noncore distribution). The mean for Δ Mortgages cannot be displayed due to data confidentiality reasons. Data definitions and sources are provided in Table A1.

Sources: PHF, GuV, and BISTA.

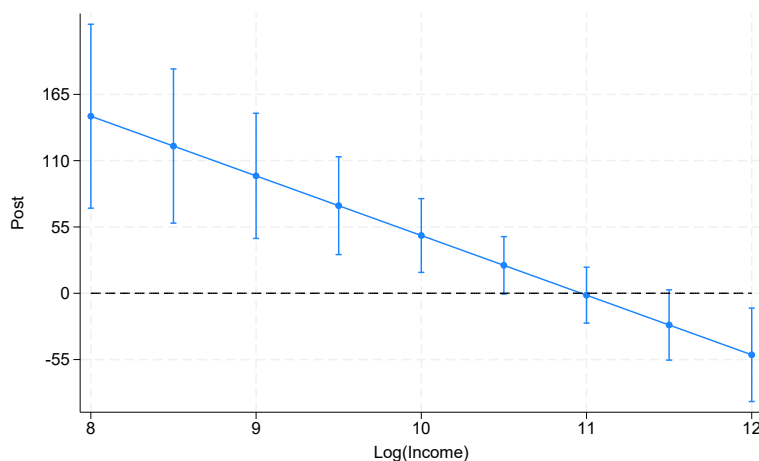
Table A3 Summary Statistics for European Households: Differences Between More and Less Exposed Countries

Variable	Less Exposed Countries		More Exposed Countries	
	Observations	Mean	Observations	Mean
Ln(ConsLoans)	23,542	2.1	11,438	2.7
Ln(Mortgages)	23,542	2.9	11,438	4.0
Net wealth	23,542	12.1	11,438	12.0
Income	23,542	10.5	11,438	10.9
Renter	23,542	0.2	11,438	0.2
Household age	23,542	57.8	11,438	55.7
Foreign citizenship	16,832	0.1	11,438	0.1
Bank flows	23,542	-1.1	11,438	4.1

Note: The table reports summary statistics for the European HFCS sample, separately for countries with positive bank inflows during 2016-17 (more exposed countries) and those with negative bank inflows (less exposed countries). The summary statistics are reported for all households that are included in Table 7, column (1). Data definitions and sources are provided in Section 2.2.

Source: HFCS.

Figure A1 The Bank Flow Shock-Consumer Credit Relationship as a Function of Household Income



Note: This figure shows the marginal effects corresponding to the regression in column (2) of Table 3, in which we regress consumer credit growth on the interaction between the post-inflow dummy and household-level log-income fixed at its wave 2 value.

Sources: PHF, GuV, and BISTA.

B EFFECT ON BANK PROFITABILITY

In this section, we study whether the increase in more exposed banks' lending to low-income households affects profitability. To this end, we employ annual bank-level data from 2010–2017 and regress banks' return on assets or equity on the interaction between the post-inflow dummy and banks' pre-shock noncore funding ratio.

Table A4, columns (1)–(2), includes all banks in the analysis, and the attendant coefficient estimates are statistically insignificant throughout. In columns (3)–(4), we focus on savings and cooperative banks, as in the household-level analysis. In this case, the double interaction of interest turns out as being positive and statistically significant at least at the 10% level. This is suggestive evidence that the consumer credit reallocations have a positive effect on the profitability of regional banks.

Table A4 Effects on Bank Profitability

	All Banks		Regional Banks	
	(1)	(2)	(3)	(4)
	ROA	ROE	ROA	ROE
Post × Noncore	-0.002 (0.002)	0.004 (0.025)	0.001** (0.000)	0.012* (0.007)
Bank FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Obs	13,242	13,242	11,549	11,549
R^2	0.82	0.91	0.83	0.73

Note: The dependent variable is a bank's return on assets or equity. The data cover 2010–2017 and originate from the Bundesbank's monthly balance sheet statistics (BISTA) and income statement statistics (GuV). The main regressor is the double interaction between a post-dummy equal to one for the third wave of the PHF survey and zero otherwise, and bank-level noncore funding ratios measured in wave 2. In columns (1) and (2), we include all banks in the analysis. Columns (3) and (4) only include regional banks. Data details can be found in Table A1. Time and bank fixed effects are included. Heteroscedasticity-robust standard errors clustered at the bank level are shown in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level.

Sources: GuV and BISTA.