Internet Appendix

A EBA–Bankscope Foreign and Domestic Loans

The EBA sovereign exposure data are provided at the consolidated (group) level, thus the matching with the balance sheet data from Bankscope has to be done in two separate steps. First, bank balance sheet controls are matched with the EBA data at consolidated level. Second, since Bankscope does not differentiate between domestic and foreign lending, I match the EBA data with loans from unconsolidated statements (as in Gennaioli et al. (2014b)). The assumption is that loans from unconsolidated statements are more likely to be issued to firms within the home country, so that credit demand can be controlled for with country–time fixed–effects in the country where the bank is headquartered.

Table 1 shows the geographical distribution of these subsidiaries: most are within Europe, but there are some in the Americas (I exclude four subsidiaries in Africa because of data limitations).

Table 1: Number of Subsidiaries (EBA–Bankscope matched sample)

ISO	Country Name	N of Subs.	ISO	Country Name	N of Subs.
BA	Bosnia–Herz.	2	IE	Ireland	4
BE	Belgium	2	LT	Lithuania	3
BG	Bulgaria	6	LU	Luxembourg	4
BR	Brazil	2	LV	Latvia	3
CA	Canada	2	MK	Macedonia	3
CY	Cyprus	2	MX	Mexico	3
CZ	Czech Republic	4	PL	Poland	12
DE	Germany	4	PT	Portugal	2
DK	Denmark	3	RO	Romania	9
EE	Estonia	4	RS	Serbia	5
ES	Spain	4	RU	Russia	2
FI	Finland	2	SI	Slovenia	2
GB	Great Britain	4	SK	Slovakia	3
GR	Greece	4	TR	Turkey	4
HR	Croatia	3	UA	Ukraine	2
HU	Hungary	5	US	United States	7
				Total	121

B LPC Dealscan: Loan Interest Rates

Syndicated deals (packageid) are a collection of loan tranches (facilityid). Interest rate spreads are given at the loan tranche level. However, in order to be able to compare the lending from syndicates of banks with different levels of sovereign exposures to the same firm, the relevant unit of observation is the loan package, not the loan tranche. Thus, the dependent variable in the regressions on loan interest rates will be the average of the interest charged across facilities within the same package. I will also construct an "artificial" average bank, averaging over balance sheet variables and, especially, the sovereign shock across banks in each syndicated loan (packageid). Given that usually the lead arrangers, rather than other participants, set lending rates, I can also restrict the sample to the lead arrangers only, as in Table **??** below:

Table 2: Interest Rate Loan Spreads: Lead Arrangers

This table reports the estimates for the model shown in equation (3) with quarterly data from 2010Q1 to 2012Q4. The dependent variable is the the all-in drawn spread on loans made by syndicate b to firm f in quarter t. The variable MTM_SOV is the bank–specific shock to MTM exposures defined in equation (1) averaged over all lead arrangers in a syndicate and divided by its standard deviation. Other bank controls (for a list see Table 1) are also averaged across banks in the syndicated. Standard errors are reported in parentheses and clustered at the syndicate level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
MTM_SOV	37.65**	37.81**	44.37**	45.31**
	(17.20)	(16.66)	(19.23)	(18.6)
N (of loan packages)	1,573	1,558	1,410	1,395
Firm FE	yes	yes	no	no
Firm–rating FE	no	no	yes	yes
Bank controls	yes	yes	yes	yes
Loan controls	no	yes	no	yes
Industry–Quarter FE	yes	yes	yes	yes

C EBA–Amadeus Banker Matching procedure

I start by downloading the entire dataset of Amadeus online 2015 (from WRDS), excluding all firms in the financial industry. Then I hand–match the names of banks associated to non–financial firms in Amadeus Banker to the set of EBA banks. For example, I do a string–search for words like "UniCredit" (not case sensitive) and match any firms that borrows from a bank containing the name UniCredit to the UniCredit group as it appears in the EBA data. I also include the names of the international subsidiaries of EBA banks to maximize firm coverage. Finally, I collect the following financial information at the firm–level: total assets, tangible assets, cash, short–term loans, sales (operating revenue), employment and net worth. The matched sample contains 1.2 million firms over 19 European countries between 2010 and 2012. Table 2 in the Appendix describes the firm–bank relationships for each country. The vast majority of firms have a relationship with only one bank in the EBA sample, although in some countries a significant proportion of firms also has a relationship with a bank not in the EBA sample (notably, no Italian firm reports the name of its banks in Amadeus Banker). Since there is no initial loan date, I cannot be sure that the bank–firm relationships I observe as of 2015 were present between 2009 and 2012, the period of the sovereign debt crisis. However bank–firm relationships are sticky (Chodorow–Reich (2014)) so that I am confident that the data capture a good share of pre–existing relationships.

Table 3: Description of the Firm–Bank Relationships by Country (Amadeus Banker)

This table describes the number of firm–bank relationships in the Amadeus Banker dataset by country.

Country	Obs.	N of Firms	% of firms 1 EBA bank	% of firms with 1 bank
Germany	729,559	267,352	0.822	0.466
Great Britain	597,642	202,917	0.998	0.993
Spain	558,453	192,156	0.579	0.493
Netherlands	373,603	122,976	0.901	0.794
Hungary	311,708	94,187	0.954	0.312
France	260,943	89,896	1	1
Portugal	144,721	50,719	0.801	0.303
Ireland	97,508	39,626	0.829	0.828
Denmark	75,166	32,888	0.845	0.703
Serbia	72,878	24,681	0.970	0.45
Slovenia	72,004	22,304	1	1
Austria	65,367	19,916	0.910	0.622
Bosnia Herzegovina	55,000	19,280	0.731	0.453
Greece	42,267	13,633	0.708	0.124
Croatia	24,716	8,804	0.891	0.495
Poland	21,311	6,864	0.993	0.953
Latvia	20,535	6,839	0.913	0.618
Lithuania	14,187	4,759	0.874	0.768
Estonia	14,085	4,737	0.841	0.522
Total	3,562,217	1,228,085	0.848	0.642

D Robustness

I will now present some robustness tests on the main result on the baseline regression on domestic loans (Table 4 in the paper).

Table 4: Robustness to Outliers, Credit Demand Controls and Coupon assumptions

This table shows robustness tests for the results in Table 4 in the paper. The dependent variable is the growth rate of bank domestic loans. The variable MTM_SOV is the bank–specific shock to MTM exposures defined in equation (1). Column (1) excludes Greek banks; column (2) controls for the Tier 1 ratio under the stress scenario instead of the Tier 1 ratio; column (3)–(4) substitute the country×year fixed–effects with, respectively: GDP growth interacted with country dummies and BLS demand questions (diffusion index, country aggregate) interacted with country dummies. Column (4) uses the zero coupon bond duration for the calculation of the shock to MTM exposures. Standard errors are reported in parentheses and clustered at the bank level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	No Greek Banks (1)	Tier1 Stressed (2)	$\Delta GDP_{c,t} \times D_c$ (3)	$BLS_{c,t} \times D_c$ (4)	Zero Coupon (5)	Par–Zero Average
MTM_SOV	-3.585^{**}	-4.691^{**}	-4.631^{***}	-3.683^{***}		
	(1.796)	(2.141)	(0.956)	(1.364)		
TIER1_STRESS_RATIO		2.445^{**}				
		(1.142)				
MTM_SOV/sd					-7.581^{***}	-8.170^{***}
					(1.776)	(2.211)
N	206	216	217	162	217	217
N of banks	83	89	89	68	89	89
bank FE	yes	yes	yes	yes	yes	yes
year FE	no	yes	yes	yes	no	no
country×year FE	yes	yes	no	no	yes	yes

First, I want to make sure that the results are not driven by a few very large outliers. Accordingly, column (1) excludes Greek banks that had the highest losses on sovereign bonds: the results are unchanged and the coefficient is only slightly smaller, -3.6 compared to -4.0.

Column (2) includes the Tier 1 ratio under the adverse scenario as a control, instead of the actual (lagged) capital ratio. I use both the 2010 and the 2011 Stress Tests to recover the Tier 1 ratio under the stress scenario. In particular for 2010Q4 TIER1_STRESS_RATIO is the one computed in the 2010 Stress Test, while for 2011Q4 and 2012Q4 I make use of the 1- and 2-year ahead projections in the 2011 Stress Test. Note that, by construction,

TIER1_STRESS_RATIO is dated at time t not at $t-1$ as the other bank balance sheet controls, but it is computed with the information set available as of $t-1$ (which becomes $t-2$ for the 2012Q4 projection). The results are barely affected, highlighting once again the fact that marked–to–market sovereign losses matter over and above losses on capital, as identified by the stress test.

Columns (3)–(4) verify the robustness of the result to alternative measures of credit demand at the country level: GDP growth and indicators of credit demand from survey data. The Euro Area Bank Lending Survey (BLS) provides European banks' perceptions on credit demand conditions for the previous three months at a quarterly frequency. The BLS data is available, at the aggregate level, for most European countries.[1] I introduce these alternative credit demand controls by interacting either measure with the respective country dummy (columns (4) and (5)). The coefficient is negative and significant in all specifications. The magnitude is very similar to the baseline model with country–time fixed effects. Finally, in column (4) and (5) I modify the coupon bond duration assumption used in the computation of the sovereign shock. Column (4) uses the zero coupon bond duration while (5) averages par and zero coupon bond. Since this alters the entire distribution of the sovereign shock, I divide by the standard deviation to ease comparison with the baseline result. The coefficient is remarkably similar to the one estimated with the par bond, implying that for a one standard deviation shock using the zero coupon assumption, loan growth decreases by 7.5% vis–a–vis 7.7% with the par bond. The average of the two, that should contain less measurement error than either of the two since it is a better approximation to real sovereign bonds, gives in fact an even larger effect (-8.5%), providing some evidence of an attenuation bias in the other estimates.

[1]The exceptions are non Euro countries such as the UK, Denmark, Norway and Hungary. For Greece and Finland no BLS data exist.

Table 5: The Capital and the Funding Channel: Continuous variable interaction

This table reports the estimates of equation (5) in the paper but using a continuous variable interaction rather than dummies based on percentiles. The dependent variable is the growth rate of domestic loans $\Delta L_{b,c,t}$. The main explanatory variables are the interaction terms of the variable MTM_SOV with variables measuring bank capitalization (short–term funding). Capitalization is defined in terms of: TIER1_RATIO in column (1); TIER1_STRESS_RATIO, the Tier1 ratio under the adverse scenario as of the 2010 and 2011 Stress Tests in column (2); LEVERAGE in column (3); market capitalization over total assets (MTK_CAP_ASSETS) in column (4). High dependence on short–term funding is defined in terms of: FUND_ASSETS in column (5); FUND_COST (cost of funding under the adverse scenario in the 2011 Stress Test) in column (6). Regression models are fully saturated, including all relevant double interaction between these variables and other bank controls (for a list see Table **??**). Standard errors are reported in parentheses and clustered at the bank level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Capital Channel: Regulatory (1)	Capital Channel: Stressed (2)	Capital Channel: Leverage (3)	Capital Channel: MktCap (4)	Funding Channel: S–T Fund (5)	Funding Channel: FundCost (6)	Funding Channel: 2006Q4 (7)	Both Channels (8)
MTM_SOV	-6.138**	-4.763***	-5.539***	-4.913**	-1.108	10.88*	-3.605*	-4.318
	(2.850)	(1.631)	(2.058)	(2.243)	(1.502)	(5.767)	(2.037)	(3.699)
MTM_SOV× TIER1_RATIO	0.190							0.267
	(0.211)							(0.265)
MTM_SOV× TIER1_STRESS_RATIO		0.0769*						
		(0.0408)						
MTM_SOV× LEVERAGE			0.339					
			(0.222)					
MTM_SOV× MKT_CAP_ASSETS				0.0241				
				(0.0189)				
MTM_SOV× FUND_ASSETS					-0.154**		-0.298	-0.145**
					(0.0642)		(0.191)	(0.0704)
MTM_SOV× FUND_COST						-0.0564**		
						(0.0223)		
N	217	216	214	141	216	213	196	216
N of banks	89	89	88	54	88	86	76	88
Bank FE	yes	yes	yes	yes	yes	yes	yes	yes
Country×year FE	yes	yes	yes	yes	yes	yes	yes	yes

Table 6: The Capital and the Funding Channel: Joint test

This table reports the estimates of equation (5) in the paper. The dependent variable is the growth rate of domestic loans $\Delta L_{b,c,t}$. The main explanatory variables are the interaction terms of the variable MTM_SOV with dummies equal to one for banks below the 25^{th} (above the 75^{th}) percentile of bank capitalization (short–term funding). Regression models are fully saturated, including all relevant double interaction between dummies and other bank controls (for a list see Table **??**). Standard errors are reported in parentheses and clustered at the bank level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	S–T Fund + Regulatory (1)	S–T Fund + Stressed (2)	S–T Fund + Leverage (3)	S–T Fund + MktCap (4)
MTM_SOV	-2.594	-3.135	-2.287	0.0189
	(2.157)	(1.952)	(1.674)	(2.794)
MTM_SOV×	-4.428***	-4.734***	-7.199***	-7.701***
HIGH_FUND	(1.638)	(1.731)	(1.905)	(2.817)
MTM_SOV×	0.496			
LOW_TIER1_RATIO	(0.926)			
MTM_SOV×		-1.392		
LOW_TIER1_STRESS_RATIO		(1.883)		
MTM_SOV×			2.544	
LOW_LEVERAGE			(3.804)	
MTM_SOV×				1.788
LOW_MKT_CAP_ASSETS				(3.505)
N	216	215	213	141
N of banks	88	88	87	54

Table 7: The Capital and the Funding Channel: Foreign Loans

This table reports the estimates of equation (5) in the paper. The dependent variable is the growth rate of foreign loans $\Delta L_{b,c,t}$. The main explanatory variables are the interaction terms of the variable MTM_SOV with dummies equal to one for banks below the 25^{th} (above the 75^{th}) percentile of bank capitalization (short–term funding). Regression models are fully saturated, including all relevant double interaction between dummies and other bank controls (for a list see Table **??**). Standard errors are reported in parentheses and clustered at the bank level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1) Capital	(2) Capital	(3) Funding	(4) Both
MTM_SOV	-8.901**	-6.074*	-11.76***	-11.57***
	(4.457)	(3.488)	(3.766)	(4.365)
MTM_SOV × HIGH_FUND	0.0325			0.0182
	(1.159)			(1.616)
MTM_SOV × LEVERAGE		-6.214		
		(5.480)		
MTM_SOV × HIGH_FUND			-4.474***	-4.771***
			(1.468)	(1.766)
N	327	327	327	327
N of banks	121	121	121	121

Table 8: Domestic and Foreign Lending and the Sovereign Shock

This table reports the estimate for the model shown in equation (2) with yearly data from 2010 to 2012 and shows that the baseline result on lending (Table 4 in the paper) also works if one allows the effect of leverage to vary across GIIPS and non-GIIPS banks The dependent variable is the growth rate of bank domestic loans in columns (1-5) and foreign loans in columns (6)-(8). The variable MTM_SOV is the bank–specific shock to MTM exposures defined in equation (1). MTM_GIIPS_SOV and MTM_NONGIIPS_SOV are the shocks to MTM exposures on GIIPS and non–GIIPS debt respectively. GIIPS_BANK and NONGIIPS_BANK are dummies for bank headquarter location. One–year lagged bank controls are: TIER_RATIO, LEVERAGE, ln(TOTAL_ASSETS), NPL_ASSETS, CASH_ASSETS and DEPOSITS_ASSETS. Standard errors are reported in parentheses and clustered at the bank level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Domestic Loans					Foreign Loans		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LEVERAGE×	0.0127	0.0127	0.0126	0.00104	-0.131	-0.0828	-0.160*	-0.120
NONGIIPS_BANK	(0.0359)	(0.0359)	(0.0359)	(0.0316)	(0.0862)	(0.0728)	(0.0848)	(0.0854)
LEVERAGE×	0.00993	0.00993	0.00990	0.00932	0.0144	-0.0527***	-0.0515**	-0.0781***
GIIPS_BANK	(0.0125)	(0.0125)	(0.0125)	(0.0123)	(0.0144)	(0.0156)	(0.0257)	(0.0239)
TIER1_RATIO×	2.956***	2.956***	2.951***	2.493***	1.326	-2.560	-0.485	-0.158
NONGIIPS_BANK	(0.413)	(0.413)	(0.417)	(0.505)	(4.169)	(3.310)	(4.198)	(4.534)
TIER1_RATIO×	1.569	1.569	1.553	1.771	1.758	3.521***	3.563	6.257***
GIIPS_BANK	(1.166)	(1.166)	(1.166)	(1.317)	(1.413)	(0.963)	(2.491)	(2.098)
MTM_SOV	-3.861***							
	(1.353)							
MTM_SOV/sd		-6.243***				-8.186***		
		(2.188)				(2.197)		
MTM_GIIPS_SOV/sd			-6.129***					
			(2.139)					
MTM_NONGIIPS_SOV/sd			-0.551					
			(1.735)					
MTM_GIIPS_SOV/sd×				-7.606***	-7.575**		-12.36***	-15.60***
GIIPS_BANK				(2.717)	(3.146)		(4.533)	(3.743)
MTM_GIIPS_SOV/sd×				-3.341**	-6.041		-2.564	-2.080
NONGIIPS_BANK				(1.502)	(3.633)		(1.724)	(2.260)
MTM_NONGIIPS_SOV/sd×				-1.738	-1.240		0.00101	-2.024
GIIPS_BANK				(1.425)	(1.405)		(1.751)	(1.463)
MTM_NONGIIPS_SOV/sd×				0.147	10.03		22.21***	24.38**
NONGIIPS_BANK				(2.415)	(10.94)		(7.396)	(9.545)
N	217	217	217	217	174	327	327	287
N of banks	89	89	89	89	73	121	121	107
bank fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
country×year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes