Foreign and Domestic Loans over the Business Cycle
Online Appendix

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Table I re-runs Table 6 in the main text, replacing the clustering of standard errors at the (borrower country)*year level with the clustering at the lender level. While the clustering in the main text controlled for possible autocorrelation of various financial and macroeconomic conditions in the country of the borrower, the clustering in Table I controls for possible correlation among loans extended by the same lender. Table I combines this alternative way of clustering standard errors with the stricter set of fixed effects applied in Table 6 in the main text.

Table II re-runs the baseline estimations from Table 2 in the main text, dropping loans to U.S. borrowers. This takes into account the possibility raised in banking literature that loans to U.S. borrowers might be structurally different, especially when it comes to loans from foreign lenders.

The last three tables include additional loan characteristics from Table 3 in the main text into subsequent estimations. Table III re-runs Table 4 from the main text, Table IV re-runs Table 5 from the main text, and Table V re-runs Table 6 from the main text. Note that Table III includes only non-collateralized loans, so collateral is not included in the set of additional controls in this particular table.

Table I: Standard errors clustering at the lender level

	(1) All loans	(2) All loans	(3) All loans	(4) All loans
Opacity	0.081**	0.060*	0.038	0.032
	(0.031)	(0.034)	(0.026)	(0.023)
Borrower country recession	-0.12***	-0.084***	-0.087***	-0.071***
	(0.022)	(0.014)	(0.013)	(0.011)
Borrower country recession × Opacity	-0.075**	-0.15***	-0.066**	-0.051**
	(0.031)	(0.046)	(0.028)	(0.023)
Share of foreign sales	0.048***	0.095***	0.086***	0.044***
	(0.017)	(0.017)	(0.017)	(0.012)
Market cap.	0.0036	0.012***	0.010***	0.0075***
	(0.0033)	(0.0026)	(0.0029)	(0.0021)
Return on assets	-0.064*	-0.12***	-0.11***	-0.064**
	(0.037)	(0.035)	(0.036)	(0.027)
Total asset growth	0.014	0.021	0.022	0.0082
	(0.016)	(0.016)	(0.016)	(0.013)
Leverage	-0.044**	0.00020	-0.0026	-0.024*
	(0.022)	(0.016)	(0.015)	(0.013)
Firm age	-0.0074*	-0.012**	-0.0087*	-0.0043
	(0.0044)	(0.0048)	(0.0046)	(0.0039)
Log of Borrower country GDP/capita		-0.11*		
		(0.055)		
Constant	0.96***	0.45*	1.73***	0.18
	(0.19)	(0.25)	(0.34)	(0.39)
Fixed effects				
Borrower country	No	Yes	No	No
Year	No	Yes	No	No
Borrower country × Year	Yes	No	Yes	Yes
Lender country × Year	Yes	No	Yes	Yes
Borrower country × Lender country	Yes	No	No	Yes
Lender	No	Yes	No	No
Lender × Year	No	No	Yes	Yes
Loan type	Yes	Yes	Yes	Yes
Loan purpose	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
Observations	32,239	28,587	28,587	28,587
R-squared	0.554	0.583	0.679	0.765

In columns (1)-(2), the dependent variable is a foreign loan dummy variable equal to one if borrower country is different from lender country for lender, lender's parent or lender's global ultimate owner. In columns (3)-(4), the dependent variable is a direct cross-border loan dummy variable equal to one if borrower country is different from lender country. All regressions are estimated by a linear probability model, allowing us to include interaction terms and various fixed effects. Opacity is the ratio of intangible assets over total assets. Borrower country recession is a dummy variable measured on a monthly frequency from St. Louis Fed's FRED database. Share of foreign sales is the ratio of foreign sales to total geographic segment sales. Market capitalization is the natural logarithm of market capitalization in thousands of constant (2015) US dollars. Returns on assets is pre-tax income over total assets. Total asset growth is change in total assets divided by total assets in the previous period. Leverage is the ratio of total liabilities over total assets. Firm age is the natural logarithm of number of years since the firm was founded. Robust standard errors clustered at lender level are in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table II: Excluding U.S. loans

	(1) All loans	(2) All loans	(3) Direct c-b loans	(4) Direct c-b loans
Opacity	0.0012	0.036	0.0013	0.039
	(0.031)	(0.039)	(0.032)	(0.039)
Borrower country recession	-0.13***	-0.12***	-0.13***	-0.12***
	(0.022)	(0.022)	(0.022)	(0.022)
Borrower country recession × Opacity		-0.11**		-0.12**
		(0.049)		(0.049)
Share of foreign sales	0.080***	0.080***	0.088***	0.088***
	(0.017)	(0.017)	(0.017)	(0.017)
Market cap.	0.016***	0.016***	0.015***	0.015***
	(0.0036)	(0.0035)	(0.0035)	(0.0035)
Return on assets	-0.14**	-0.14**	-0.16***	-0.15***
	(0.056)	(0.056)	(0.057)	(0.057)
Total asset growth	0.045*	0.044*	0.046*	0.044*
	(0.023)	(0.023)	(0.023)	(0.023)
Leverage	-0.052**	-0.051**	-0.055**	-0.055**
	(0.024)	(0.024)	(0.024)	(0.024)
Firm age	-0.013**	-0.013**	-0.012**	-0.012**
	(0.0056)	(0.0056)	(0.0056)	(0.0056)
Constant	1.66***	1.64***	1.66***	1.64***
	(0.24)	(0.24)	(0.24)	(0.24)
Fixed effects				
Borrower country × Year	Yes	Yes	Yes	Yes
Lender country × Year	Yes	Yes	Yes	Yes
Loan type	Yes	Yes	Yes	Yes
Loan purpose	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
Observations	18,257	18,257	18,070	18,070
R-squared	0.597	0.597	0.597	0.597

In columns (1)-(2), the dependent variable is a foreign loan dummy variable equal to one if borrower country is different from lender country for lender, lender's parent or lender's global ultimate owner. In columns (3)-(4), the dependent variable is a direct cross-border loan dummy variable equal to one if borrower country is different from lender country. All regressions are estimated by a linear probability model, allowing us to include interaction terms and various fixed effects. All variables are defined in Table I. Robust standard errors clustered at (borrower country)×(year) level are in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table III: Additional loan characteristics: Non-collateralized loans only

	(1) All loans	(2) All loans	(3) Direct c-b loans	(4) Direct c-b loans
Opacity	0.0088	0.048	-0.0037	0.037
	(0.028)	(0.035)	(0.021)	(0.028)
Borrower country recession	-0.15***	-0.13***	-0.12***	-0.10***
	(0.021)	(0.021)	(0.017)	(0.017)
Borrower country recession × Opacity		-0.13***		-0.13***
		(0.040)		(0.038)
Share of foreign sales	0.095***	0.095***	0.10***	0.10***
	(0.016)	(0.016)	(0.015)	(0.016)
Market cap.	0.012***	0.013***	0.016***	0.016***
	(0.0030)	(0.0030)	(0.0027)	(0.0027)
Return on assets	-0.11***	-0.11***	-0.14***	-0.14***
	(0.040)	(0.040)	(0.037)	(0.037)
Total asset growth	0.033*	0.032*	0.042**	0.040**
	(0.019)	(0.018)	(0.017)	(0.017)
Leverage	-0.047***	-0.046***	-0.017	-0.017
	(0.018)	(0.018)	(0.016)	(0.016)
Firm age	-0.017***	-0.017***	-0.013***	-0.013***
	(0.0043)	(0.0043)	(0.0040)	(0.0040)
Performance pricing	0.0068	0.0068	0.019	0.019
	(0.016)	(0.016)	(0.014)	(0.014)
Number of covenants	0.0067	0.0066	-0.019**	-0.019**
	(0.012)	(0.012)	(0.0095)	(0.0095)
Number of lenders	0.00054	0.00067	0.0013	0.0014
	(0.0045)	(0.0045)	(0.0043)	(0.0042)
Constant	1.13***	1.12***	1.19***	1.18***
	(0.16)	(0.16)	(0.15)	(0.15)
Fixed effects				
Borrower country × Year	Yes	Yes	Yes	Yes
Lender country × Year	Yes	Yes	Yes	Yes
Loan type	Yes	Yes	Yes	Yes
Loan purpose	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
Observations	23,984	23,984	22,915	22,915
R-squared	0.469	0.469	0.533	0.534

In columns (1)-(2), the dependent variable is a foreign loan dummy variable equal to one if borrower country is different from lender country for lender, lender's parent or lender's global ultimate owner. In columns (3)-(4), the dependent variable is a direct cross-border loan dummy variable equal to one if borrower country is different from lender country. All regressions are estimated by a linear probability model, allowing us to include interaction terms and various fixed effects. Performance pricing is a dummy variable equal to one if interest rate (spread) of loan is connected to borrower's performance. Number of covenants is the natural logarithm of one plus the number of covenants included in the loan. Number of lenders is the natural logarithm of the number of lenders in the loan syndicate. Other variables are defined in Table I. Robust standard errors clustered at (borrower country)×(year) level are in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table IV: Additional loan characteristics: Technology vs Opacity

	(1) All loans	(2) All loans	(3) All loans	(4) All loans	(5) All loans	(6) All loans
Opacity	0.075***	0.045**	0.073***	0.14***	0.078**	0.14***
	(0.025)	(0.023)	(0.026)	(0.039)	(0.036)	(0.040)
Borrower country recession	-0.14***	-0.15***	-0.14***	-0.12***	-0.15***	-0.12***
	(0.022)	(0.022)	(0.022)	(0.024)	(0.027)	(0.025)
Borrower country recession × Opacity	-0.10***		-0.096***	-0.18***		-0.19***
	(0.030)		(0.031)	(0.046)		(0.046)
High-tech firm	0.0052	0.014	0.0089			
	(0.011)	(0.015)	(0.015)			
Borrower country recession × High-tech firm		-0.025	-0.010			
		(0.016)	(0.016)			
R&D				-0.25***	-0.28***	-0.31***
				(0.065)	(0.085)	(0.082)
Borrower country recession × R&D					0.074	0.15*
					(0.099)	(0.091)
Share of foreign sales	0.094***	0.094***	0.094***	0.050***	0.049***	0.050***
	(0.013)	(0.013)	(0.013)	(0.017)	(0.017)	(0.017)
Market cap.	0.012***	0.012***	0.012***	0.014***	0.014***	0.014***
	(0.0026)	(0.0026)	(0.0026)	(0.0036)	(0.0036)	(0.0036)
Return on assets	-0.077**	-0.078**	-0.078**	-0.087*	-0.082	-0.081
	(0.033)	(0.033)	(0.033)	(0.051)	(0.053)	(0.052)
Total asset growth	0.020	0.021	0.020	0.00044	0.0027	0.0012
	(0.014)	(0.014)	(0.014)	(0.018)	(0.018)	(0.018)
Leverage	-0.014	-0.014	-0.014	-0.046**	-0.048**	-0.046**
	(0.019)	(0.019)	(0.019)	(0.022)	(0.021)	(0.022)
Firm age	-0.013***	-0.013***	-0.013**	-0.016**	-0.016**	-0.016**
	(0.0049)	(0.0049)	(0.0049)	(0.0077)	(0.0078)	(0.0077)
Performance pricing	0.0037	0.0039	0.0037	-0.00056	0.00038	-0.00047
	(0.011)	(0.011)	(0.011)	(0.017)	(0.017)	(0.017)
Collateral	0.047***	0.047***	0.047***	0.035***	0.035***	0.035***
	(0.0092)	(0.0092)	(0.0092)	(0.011)	(0.012)	(0.011)
Number of covenants	0.018**	0.018**	0.018**	0.022*	0.021*	0.022*
	(0.0074)	(0.0074)	(0.0074)	(0.012)	(0.012)	(0.012)
Number of lenders	0.0021	0.0021	0.0021	0.00034	0.00022	0.00034
	(0.0041)	(0.0042)	(0.0041)	(0.0064)	(0.0064)	(0.0064)
Constant	1.11***	1.12***	1.11***	0.73**	0.77***	0.74**
	(0.14)	(0.14)	(0.14)	(0.29)	(0.30)	(0.29)
Fixed effects						
Borrower country × Year	Yes	Yes	Yes	Yes	Yes	Yes
Lender country × Year	Yes	Yes	Yes	Yes	Yes	Yes
Loan type	Yes	Yes	Yes	Yes	Yes	Yes
Loan purpose	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Observations	32,239	32,239	32,239	15,935	15,935	15,935
R-squared	0.443	0.442	0.443	0.483	0.482	0.483

In all columns, the dependent variable is a foreign loan dummy variable equal to one if borrower country is different from lender country for lender, lender's parent or lender's global ultimate owner. All regressions are estimated by a linear probability model, allowing us to include interaction terms and various fixed effects. High-tech firm is a dummy variable equal to one if the firm is from high-tech industry based on classification by Pagano et al. (2002). R&D is the ratio of R&D expenses over total revenue. Performance pricing is a dummy variable equal to one if interest rate (spread) of loan is connected to borrower's performance. Collateral is a dummy variable equal to one if the loan is collateralized. Number of covenants is the natural logarithm of one plus the number of covenants included in the loan. Number of lenders is the natural logarithm of the number of lenders in the loan syndicate. Other variables are defined in Table I. Robust standard errors clustered at (borrower country)×(year) level are in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table V: Additional loan characteristics: Alternative fixed effects

	(1) All loans	(2) All loans	(3) All loans	(4) All loans
Opacity	0.074***	0.053**	0.033	0.029
	(0.022)	(0.023)	(0.023)	(0.019)
Borrower country recession	-0.12***	-0.084***	-0.086***	-0.070***
	(0.020)	(0.011)	(0.012)	(0.010)
Borrower country recession × Opacity	-0.075***	-0.15***	-0.067**	-0.051**
	(0.023)	(0.034)	(0.029)	(0.021)
Share of foreign sales	0.048***	0.092***	0.084***	0.043***
	(0.011)	(0.013)	(0.013)	(0.011)
Market cap.	0.0046**	0.015***	0.012***	0.0081***
	(0.0022)	(0.0026)	(0.0025)	(0.0021)
Return on assets	-0.062**	-0.11***	-0.098***	-0.062**
	(0.029)	(0.028)	(0.027)	(0.024)
Total asset growth	0.011	0.018	0.020*	0.0072
	(0.015)	(0.013)	(0.012)	(0.011)
Leverage	-0.046***	-0.0050	-0.0060	-0.026*
	(0.017)	(0.016)	(0.015)	(0.014)
Firm age	-0.0066	-0.010**	-0.0073*	-0.0037
	(0.0047)	(0.0045)	(0.0041)	(0.0036)
Borrower country GDP/capita		-0.10***		
		(0.037)		
Performance pricing	0.0045	0.023***	0.021***	0.016**
	(0.011)	(0.0081)	(0.0079)	(0.0072)
Collateral	0.021***	0.050***	0.035***	0.014**
	(0.0076)	(0.010)	(0.0084)	(0.0068)
Number of covenants	0.020***	0.0066	0.0034	-0.00039
	(0.0065)	(0.0062)	(0.0058)	(0.0045)
Number of lenders	0.0039	-0.0040	-0.0043	-0.00088
	(0.0038)	(0.0038)	(0.0033)	(0.0026)
Constant	0.94***	0.43**	1.70***	0.16
	(0.17)	(0.21)	(0.32)	(0.44)
Fixed effects				
Borrower country	No	Yes	No	No
Year	No	Yes	No	No
Borrower country × Year	Yes	No	Yes	Yes
Lender country × Year	Yes	No	No	No
Borrower Country × Lender country	Yes	No	No	Yes
Lender	No	Yes	No	No
Lender × Year	No	No	Yes	Yes
Loan type	Yes	Yes	Yes	Yes
Loan purpose	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
Observations	32,239	28,587	28,587	28,587
R-squared	0.555	0.585	0.680	0.765

In all columns, the dependent variable is a foreign loan dummy variable equal to one if borrower country is different from lender country for lender, lender's parent or lender's global ultimate owner. All regressions are estimated by a linear probability model, allowing us to include interaction terms and various fixed effects. Borrower country GDP/capita is the logarithm of GDP per capita in the borrower country, measured in thousands of constant (2010) US dollars. Performance pricing is a dummy variable equal to one if interest rate (spread) of loan is connected to borrower's performance. Collateral is a dummy variable equal to one if the loan is collateralized. Number of covenants is the natural logarithm of one plus the number of covenants included in the loan. Number of lenders is the natural logarithm of the number of lenders in the loan syndicate. Other variables are defined in Table I. Robust standard errors clustered at (borrower country)×(year) level are in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.