Online Appendix

Table OA1: Correlation Matrix

Panel A

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Credit constrained	(1)	1.000									
Credit constrained II	(2)	0.858***	1.000								
Credit constrained III	(3)	0.928***	0.978***	1.000							
Trade credit	(4)	-0.003	0.001	-0.096***	1.000						
Bilateral competition	(5)	0.049***	0.015	0.026	0.042***	1.000					
Bilateral competition j	(6)	0.036**	0.007	0.014	0.033**	0.877***	1.000				
Bilateral competition i	(7)	0.036**	0.006	0.011	0.045***	0.946***	0.926***	1.000			
Foreign banks	(8)	0.000	-0.032**	-0.046*	-0.005	0.162***	0.261***	0.185***	1.000		
Foreign bank wholesale funding	(9)	-0.019	0.010	0.003	0.017	0.035***	0.093***	0.096***	0.036***	1.000	
Wholesale funding	(10)	-0.040***	-0.026*	-0.035	-0.020	-0.073***	-0.056***	-0.080***	0.122***	-0.027**	1.000
Relationship banks	(11)	-0.024*	0.006	0.007	0.025*	0.098***	0.147***	0.164***	0.007	-0.022	0.103***
Tier 1 capital	(12)	0.037**	-0.012	-0.012	0.025*	0.112***	0.178***	0.139***	0.147***	-0.036***	0.182***
Tier 1 capital (parents)	(13)	0.040***	-0.002	0.003	-0.008	0.092***	0.072***	0.067***	-0.049***	-0.128***	-0.058***
Small banks	(14)	-0.003	-0.008	-0.003	0.014	-0.503***	-0.372***	-0.458***	0.033**	0.074***	-0.267***
State banks	(15)	0.049***	-0.003	-0.007	0.012	0.070***	0.052***	0.076***	-0.314***	-0.223***	0.171***
HHI	(16)	0.024*	-0.016	-0.019	0.024*	0.589***	0.538***	0.583***	-0.021	-0.066***	-0.023*
Bank density	(17)	0.010	0.023	0.031	-0.006	0.187***	0.011	0.150***	-0.091***	0.060***	-0.025*
Branch density	(18)	-0.054***	0.009	0.017	-0.007	-0.190***	-0.190***	-0.159***	0.035***	0.104***	0.015
Lerner Index	(19)	0.008	-0.002	0.033	0.019	0.384***	0.369***	0.363***	0.018	0.098***	0.063***
Large firm	(20)	-0.105***	-0.056***	-0.166***	0.094***	0.012	0.010	0.009	-0.003	-0.011	0.038***
Public firm	(21)	-0.020	0.012	-0.016	-0.002	-0.005	-0.002	-0.004	-0.011	0.017	0.007
Proprietorship	(22)	-0.013	-0.018	-0.021	-0.033**	0.055***	0.028**	0.045***	-0.023*	0.002	-0.019
Exporter	(23)	-0.037***	0.012	-0.038	0.041***	-0.027**	-0.031**	-0.032**	-0.015	-0.003	0.029**
Audited	(24)	-0.094***	-0.019	-0.104***	0.059***	-0.005	0.005	0.007	0.030**	-0.017	0.015
Mature firm	(25)	-0.012	-0.024	-0.071**	0.009	0.017	0.003	0.010	-0.001	0.015	0.015

Panel B

		(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
Relationship banks	(11)	1.000														
Tier 1 capital	(12)	0.051***	1.000													
Tier 1 capital (parents)	(13)	-0.022*	0.437***	1.000												
Small banks	(14)	-0.043***	-0.075***	-0.175***	1.000											
State banks	(15)	0.034**	0.148***	0.258***	-0.298***	1.000										
HHI	(16)	0.043***	0.170***	0.137***	-0.433***	0.185***	1.000									
Bank density	(17)	-0.032**	-0.080***	0.038***	-0.220***	-0.008	-0.026**	1.000								
Branch density	(18)	0.011	-0.032**	-0.211***	0.243***	-0.224***	-0.307***	0.484***	1.000							
Lerner Index	(19)	0.016	0.127***	0.077***	-0.213***	0.132***	0.298***	0.047***	-0.112***	1.000						
Large firm	(20)	0.003	0.003	0.014	-0.043***	0.040***	0.018	0.005	-0.021	0.017	1.000					
Public firm	(21)	0.004	-0.039***	-0.001	-0.034**	0.006	0.012	0.016	-0.023**	-0.023*	0.091***	1.000				
Proprietorship	(22)	-0.013	0.001	0.027**	-0.064***	0.013	0.050***	0.042***	-0.032**	0.010	-0.119***	-0.052***	1.000			
Exporter	(23)	-0.018	-0.018	-0.025*	0.016	-0.004	-0.020	0.007	0.028**	-0.023*	0.219***	0.045***	-0.059***	1.000		
Audited	(24)	0.024*	-0.013	-0.022*	-0.031**	0.014	-0.015	0.012	0.007	-0.017	0.258***	0.079***	-0.075***	0.125***	1.000	
Mature firm	(25)	0.013	-0.026*	-0.008	-0.024*	0.020	-0.001	0.007	-0.029**	0.011	0.119***	0.054***	0.008	0.034**	0.038***	1.000

Notes: The correlation matrix shows correlations after removing country fixed effects from all variables. ***, **, *indicates statistical significance at the 1%, 5% and 10% level, respectively.

Table OA2: Determinants of bilateral bank competition in SME lending

Dependent variable: Dummy = 1 if Bank i perceives Bank j as a Top 3 competitor in SME lending

	Sample weighted probit							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intensive branch overlap ij	0.060***	0.060***	0.058***	0.117***	0.103***	0.146***	0.145***	0.144***
	(0.005)	(0.005)	(0.005)	(0.012)	(0.013)	(0.017)	(0.017)	(0.016)
Extensive branch overlap ij	0.128***	0.122***	0.119***	0.200***	0.210***	0.295***	0.299***	0.295***
	(0.014)	(0.013)	(0.012)	(0.024)	(0.022)	(0.028)	(0.030)	(0.029)
Local branch density i	-0.072***	-0.067***	-0.067***	-0.127***	-0.114***	-0.161***	-0.160***	-0.160***
	(0.005)	(0.006)	(0.006)	(0.011)	(0.012)	(0.015)	(0.014)	(0.014)
Small i-Small j		0.010	0.011	0.023	0.015	0.016	0.016	0.015
		(0.008)	(0.008)	(0.018)	(0.018)	(0.023)	(0.023)	(0.023)
Large i-Large j		0.010	0.009	0.017	0.015	0.022	0.023*	0.023*
		(0.006)	(0.006)	(0.013)	(0.010)	(0.014)	(0.014)	(0.013)
Foreign i-Foreign j			0.023***	0.036***	0.046***	0.064***	0.059***	0.060***
			(0.007)	(0.012)	(0.012)	(0.016)	(0.017)	(0.016)
Domestic i-Domestic j			0.005	0.013	-0.003	-0.002	-0.001	0.001
			(0.008)	(0.014)	(0.012)	(0.016)	(0.017)	(0.016)
Capitalization j				-0.002				
				(0.001)				
Wholesale j				0.001***				
				(0.000)				
Interest margin j				0.006				
				(0.004)				
(SME) Customer overlap					0.076***			
					(0.009)			
(SMEs) Hierarchical efficiency ij						0.033***		0.032***
						(0.012)		(0.012)
(SMEs) Relation i-Relation j							0.028***	0.028***
							(0.009)	(0.009)
(SMEs) Transaction i-Transaction j							-0.028*	-0.028*
							(0.015)	(0.014)
Observations	14,873	14,873	14,873	7,222	7,200	6,182	6,182	6,182
Pseudo R	0.27	0.27	0.27	0.23	0.26	0.24	0.24	0.24
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table reports marginal effects from from sample-weighted probit regressions. The dependent variable is a dummy that is one if Bank i perceives Bank j as one of its three main competitors for lending to SMEs; and zero otherwise. Appendix Table A1 contains all variable definitions. Robust standard errors are clustered by country and shown in parentheses. ***, **, * indicate statistical significance at the 1%, 5% and 10% level.

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Table OA3: Local bank characteristics and local firm characteristics

	Bilateral competition	HHI	Branch density	Bank density
	(1)	(2)	(3)	(4)
Large firm (local)	-0.0036	0.0146	-0.2109	0.0404
	(0.0182)	(0.0111)	(0.2046)	(0.1426)
Informal payment (local)	0.0007	-0.0080	-0.2522	-0.3428
	(0.0201)	(0.0198)	(0.3953)	(0.2923)
Proprietorship (local)	0.0228	0.0075	-0.1970	0.2262
	(0.0202)	(0.0182)	(0.4355)	(0.3602)
Exporter (local)	0.0158	-0.0039	0.0248	-0.0513
	(0.0242)	(0.0135)	(0.1924)	(0.1254)
Audited firm (local)	0.0178	-0.0087	-0.0395	0.1008
	(0.0149)	(0.0082)	(0.2095)	(0.1343)
R-squared	0.41	0.18	0.13	0.07
Observations	868	872	872	872
Country FE	Yes	Yes	Yes	Yes
p-value of Wald test	0.687	0.723	0.811	0.402

Notes: This table reports estimates from linear locality-level regressions. The column heading indicates the locality-level dependent variable which is regressed on several firm characteristics averaged by locality. p-value refers to the p-value of a Wald test for joint significance of the locality-level firm covariates. Robust standard errors are clustered by country and shown in parentheses. ***, **, * indicate statistical significance at the 1%, 5% and 10% level.

Table OA4: Robustness – Clustering of standard errors

Dependent variable: Credit constrained					
	(1)	(2)	(3)	(4)	(5)
Bilateral competition	0.164**	0.164***	0.164***	0.164***	0.164***
	(0.065)	(0.061)	(0.034)	(0.050)	(0.060)
HHI	-0.009	-0.009	-0.009	-0.009	-0.009
	(0.112)	(0.097)	(0.062)	(0.158)	(0.153)
Lerner index	-0.140	-0.140	-0.140	-0.140	-0.140
	(0.169)	(0.129)	(0.129)	(0.180)	(0.167)
Relationship banks	-0.119	-0.119**	-0.119**	-0.119	-0.119*
	(0.074)	(0.060)	(0.052)	(0.076)	(0.066)
Branch density	-0.021**	-0.021***	-0.021***	-0.021***	-0.021***
	(0.008)	(0.007)	(0.005)	(0.004)	(0.006)
Observations	4,370	4,370	4,370	4,370	4,370
Pseudo R2	0.09	0.09	0.09	0.09	0.09
Clustering	GADM	None	Industry	Country	Country-Industry
Country FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Firm covariates	Yes	Yes	Yes	Yes	Yes
Regional GDP growth	Yes	Yes	Yes	Yes	Yes

Notes: The table reports estimates from probit regressions. The dependent variable is *Credit constrained* which equals one if a firm is credit constrained; zero otherwise. Unreported firm covariates are *Large firm*, *Public firm*, *Proprietorship*, *Exporter*, *Audited firm* and *Mature firm*. Column (1) replicates column (9) of Table 2. In column (2), robust standard errors are not clustered. In columns (3), (4) and (5), robust standard errors are clustered by industry, country, and double clustered by industry and country, respectively. Appendix Table A1 contains all variable definitions. The table reports marginal effects. ***, **, * indicate statistical significance at the 1%, 5% and 10% level.

Table OA5: Robustness – Varying the size of local banking markets

Dependent variable: Credit constrained	(1)	(2)	(3)	(4)
Bilateral competition (7.5km)	0.186**			
	(0.084)			
HHI (7.5km)	-0.285**			
	(0.129)			
Lerner index (7.5km)	-0.013			
	(0.134)			
Relationship banks (7.5km)	-0.148*			
	(0.076)			
Branch density (7.5km)	-0.019***			
	(0.004)			
Bilateral competition (10km)		0.181**		
		(0.076)		
HHI (10km)		-0.269*		
		(0.140)		
Lerner index (10km)		0.060		
		(0.127)		
Relationship banks (10km)		-0.171**		
		(0.081)		
Branch density		-0.030***		
		(0.007)		
Bilateral competition (1km pop density based)			0.147*	
			(0.075)	
HHI (1km pop density based)			-0.231**	
			(0.109)	
Lerner index (1km pop density based)			-0.004	
			(0.124)	
Relationship banks (1km pop density based)			-0.188***	
			(0.072)	
Branch density (1km pop density based)			-0.009***	
			(0.003)	
Bilateral competition (5km pop density based)				0.135*
				(0.076)
HHI (5km pop density based)				-0.233**
				(0.101)
Lerner index (5km pop density based)				-0.039
				(0.119)
Relationship banks (5km pop density based)				-0.159**
				(0.071)
Branch density (5km pop density based)				-0.010***
				(0.003)
Observations	4,483	4,618	4,381	4,360
Pseudo R2	0.10	0.10	0.10	0.09
Country FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Firm covariates	Yes	Yes	Yes	Yes
Regional GDP growth	Yes	Yes	Yes	Yes

Notes: The table reports estimates from probit regressions. The dependent variable is *Credit constrained* which equals one if a firm is credit constrained; zero otherwise. Unreported firm covariates are *Large firm*, *Public firm*, *Proprietorship*, *Exporter*, *Audited firm* and *Mature firm*. In columns (1) and (2), local banking markets are defined using a radius of 7.5km or 10km, respectively, around each firm. In columns (3) and (4), the size of the local banking market depends on the population density at the geo-location of the firm. Firms in each country are divided into three buckets: those located in areas with a population density below the 33rd percentile; those in areas between the 33rd and 66th percentile; and those located in the most densely populated areas of the country (> 66th percentile). Banking markets are then defined using a radius of 10 km, 7.5 km, or 5 km radius around firms in the least, medium, and most densely populated areas, respectively. Firms are grouped based on the population density in either the 1 km (column 3) or the 5 km (column 4) grid cell in which they are located. Appendix Table A1 contains all variable definitions. The table reports marginal effects. Robust standard errors are clustered at the regional (GADM) level. ***, **, * indicate statistical significance at the 1%, 5% and 10% level.

Table OA6: SME-bank links in the BEEPS V sample and Orbis

| | **Bulgaria** | | | **Croatia** | | | **Hungary** | |
Bank name	% SMEs in BEEPS V	% SMEs in Orbis	Bank name	% SMEs in BEEPS V	% SMEs in Orbis	Bank name	% SMEs in BEEPS V	% SMEs in Orbis
	(1)	(2)		(3)	(4)		(5)	(6)
UniCredit Bulbank	24.4	21.1	Zagrebacka banka (Unicredit)	25.26	11.21	OTP Bank	16.50	15.7
Raiffeisenbank (Bulgaria)	15.7	11.0	Privredna Banka Zagreb (Intesa)	18.56	13.68	K&H Bank	15.53	13.9
United Bulgarian Bank	9.4	9.0	Erste & Steiermarkische Bank	16.49	16.97	Budapest Bank	14.56	8.2
Eurobank EFG Bulgaria	9.4	7.7	Hypo Alpe-Adria-Bank	10.31	10.7	CIB Bank	8.74	6.5
DSK Bank	7.9	6.5	Raiffeisenbank Austria	10.31	9.42	Erste Bank	7.77	4.3
Allianz Bank Bulgaria	5.5	2.3	Splitska Banka d.d. (SocGen)	4.64	4.01	Raiffeisen Bank	7.77	10.2
ProCredit Bank	4.7	0.9	Croatian Bank for Recon. & Dev.	2.58	n.a.	Takarekbank	6.80	3.3
Societe Generale Expressbank	3.9	4.8	OTP Bank Croatia	2.58	5.12	MKB Bank	5.83	5.1
International Asset Bank	3.1	1.2	Volksbank	1.55	0.85	Unicredit Bank	4.85	8.4
Corporate Commercial Bank	2.4	0.7	Croatian Postal Bank	1.03	4.52	Citibank	1.94	2.9
Spearman's rho (rank test)	0.94			0.85			0.72	
P-value	0.00			0.00			0.02	

| | **Serbia** | | | **Ukraine** | |
Bank name	% SMEs in BEEPS V	% SMEs in Orbis	Bank name	% SMEs in BEEPS V	% SMEs in Orbis
	(7)	(8)		(9)	(10)
Banca Intesa	23.53	13.22	PrivatBank	23.57	8.55
Komercijalna Banka	11.76	7.25	Raiffeisen Bank Aval	13.57	10.09
Raiffeisen Banka	9.09	9.13	Ukrsotsbank (Unicredit)	12.86	4.78
UniCredit Bank Serbia	6.95	9.79	JSIB UkrSibbank (BNP Paribas)	11.43	3.23
ProCredit Bank	5.88	3.57	Oschadny Bank Ukrainy	6.43	2.69
Societe Generale Banka Srbija	4.81	5.39	Alfa Bank	3.57	2.13
Vojvodjanska Banka	4.81	6.90	State Export-Import Bank of Ukraine	3.57	2.89
Credit Agricole	4.28	2.51	OTP Bank	3.57	3.23
Hypo Alpe-Adria-Bank	3.74	3.88	First Ukrainian International Bank	2.14	1.53
Cacanska banka	3.74	0.52	Kredobank	2.14	0.87
Spearman's rho (rank test)	0.84			0.91	
P-value	0.00			0.00	

Notes: This table compares the incidence of bank-SME lending relationships in the BEEPS V sample (odd columns) with the incidence of bank-SME relationships among all SMEs (firms with at most 250 employees) in the Orbis database (even columns). For example, column (1) shows that of all Bulgarian SMEs that were surveyed as part of BEEPS V and which had a loan outstanding, 24.4 percent received that loan from UniCredit Bulbank. Column (2) shows that this percentage is 21.1 among the full population of Bulgarian SMEs in Orbis.

Table OA7: Robustness – Excluding doubtful responses and the largest cities

Dependent variable: Credit constrained						
	Truthful responses only			Excluding the largest cities		
	(1)	(2)	(3)	(4)	(5)	(6)
Bilateral competition	0.176***			0.141***		
	(0.055)			(0.053)		
Bilateral competition j		0.177***			0.137**	
		(0.069)			(0.063)	
Bilateral competition i			0.150**			0.110*
			(0.061)			(0.056)
Observations	4,662	4,662	4,662	3,773	3,773	3,773
Pseudo R2	0.09	0.09	0.09	0.11	0.11	0.11
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm covariates	Yes	Yes	Yes	Yes	Yes	Yes
Regional GDP growth	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table reports estimates from probit regressions. The dependent variable is *Credit constrained* which equals one if a firm is credit constrained; zero otherwise. Unreported firm covariates are *Large firm*, *Public firm*, *Proprietorship*, *Exporter*, *Audited firm* and *Mature firm*. Columns (1) to (3) exclude all firm-level observations where the surveyor doubted the veracity of (some of) the answers given by the firm manager during the survey. Columns (4) to (6) exclude all firms located in the largest cities (those with over 1 million inhabitants). Appendix Table A1 contains all variable definitions. The table reports marginal effects. Robust standard errors are clustered at the regional (GADM) level. ***, **, * indicate statistical significance at the 1%, 5% and 10% level.

Table OA8: Robustness – Locality credit demand

	Needed credit			Applied for credit		
	(1)	(2)	(3)	(4)	(5)	(6)
Bilateral competition (local)	0.067	0.072	0.144*	0.008	0.007	0.087
	(0.074)	(0.072)	(0.078)	(0.075)	(0.075)	(0.080)
HHI (local)			-0.345***			-0.259***
			(0.084)			(0.085)
Branch density (local)			-0.075*			-0.014
			(0.037)			(0.034)
Observations	896	896	888	901	901	893
R-squared	0.108	0.112	0.120	0.113	0.117	0.122
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	Yes	No	Yes	Yes
Firm covariates	Yes	Yes	Yes	Yes	Yes	Yes
Regional GDP growth	No	Yes	Yes	No	Yes	Yes

Notes: This table reports estimates from linear regressions. The column heading indicates the locality-level dependent variable which is regressed on several firm characteristics averaged by locality. The dependent variable in columns (1)–(3) is *Needed credit* which equals one if a firm needed credit; zero otherwise. The dependent variable in columns (4)–(6) is *Applied for credit* which equals 1 if a firm applied for credit; zero otherwise. Unreported firm covariates are *Large firm*, *Public firm*, *Proprietorship*, *Exporter*, *Audited firm* and *Mature firm*. Appendix Table A1 contains all variable definitions. The table reports marginal effects. Robust standard errors are clustered at the country level. ***, **, * indicate statistical significance at the 1%, 5% and 10% level.