

SUPPLEMENTARY MATERIAL

INTERBANK RELATIONS, ENVIRONMENTAL UNCERTAINTY, AND CORPORATE CREDIT ACCESS IN CHINA

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Table S1 Robustness tests

VARIABLES	Credit access (10%)						Credit access (15%)		
	Alternative measurement			Sample with bank=1			(7)	(8)	(9)
	(1)	(2)	(3)	(4)	(5)	(6)			
Constraint	0.22*** (0.06)	0.25*** (0.06)	0.25*** (0.06)	0.37*** (0.10)	0.34*** (0.08)	0.33*** (0.08)	0.27** (0.09)	0.16** (0.06)	0.16* (0.06)
One bank dummy				-0.43*** (0.06)	-0.42*** (0.04)	-0.42*** (0.04)			
Market uncertainty	-0.07 (0.29)								
Constraint× Market uncertainty	0.73 (0.80)								
NERI Total Marketization index		0.01 (0.01)							
Constraint× NERI Total Marketization index		-0.08+ (0.04)							
NERI Legal environment index			0.00 (0.00)						
Constraint× NERI Legal environment index			-0.03* (0.02)						
Market stability				0.11 (0.12)			-0.04 (0.03)		
Constraint×Market stability				-0.72 (0.71)			-0.18 (1.03)		
Financial services index					0.08 (0.06)			0.13+ (0.08)	
Constraint×Financial services index					-0.32* (0.19)			-0.75* (0.34)	
Legal environment index						0.02 (0.11)			0.17 (0.13)
Constraint×Legal environment index						-1.96+ (1.17)			-1.08* (0.58)
Observations	786	1,052	1,052	827	1,845	1,845	471	1,047	1,047
Pseudo R2	0.28	0.25	0.25	0.30	0.28	0.28	0.25	0.23	0.23
Log pseudolikelihood	-226.9	-319.7	-319.1	-313.9	-760.3	-758.9	-195.9	-431.6	-432.4
Wald Chi2	130***	149***	150.9***	176.6***	351.1***	358.7***	216.8***	183.5***	185.3***

Note: Reported coefficients reflect the average marginal effect of the independent variable across all observed values for the other variables in the model. All models consider an intercept term. Robust standard errors clustered at firm identifier in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.1. Controls as in the baseline regressions in Table 2.

Table S2 Heckman probit model, corrected for selection bias (only final stage reported)

VARIABLES	Credit access						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constraint	1.46** (0.47)	1.65 (1.04)	1.26 (0.93)	1.37* (0.55)	1.14+ (0.59)	1.44** (0.52)	1.24* (0.52)
Number of banks>5 dummy	1.83*** (0.52)	1.55+ (0.85)	1.53+ (0.90)	1.71** (0.60)	1.60* (0.68)	1.81** (0.58)	1.79** (0.64)
Collateral requirement	0.06 (0.33)	1.19 (0.73)	1.19+ (0.72)	0.07 (0.30)	0.12 (0.28)	0.06 (0.32)	0.11 (0.31)
Firm size _{t-1}	-0.52*** (0.06)	-0.51 (0.41)	-0.48 (0.42)	-0.51*** (0.10)	-0.49*** (0.13)	-0.53*** (0.08)	-0.51*** (0.09)
State ownership	-0.07 (0.58)	-0.59 (0.51)	-0.56 (0.50)	0.11 (0.49)	0.14 (0.51)	-0.00 (0.57)	0.01 (0.57)
Young firm	0.16 (0.13)	0.29 (0.31)	0.29 (0.29)	0.16 (0.12)	0.15 (0.12)	0.16 (0.13)	0.17 (0.13)
Manufacturing sector	-0.03 (0.14)	0.24 (0.46)	0.24 (0.45)	-0.02 (0.14)	-0.01 (0.13)	-0.02 (0.14)	-0.01 (0.14)
Leverage _{t-1}	-2.73*** (0.81)	-3.09+ (1.71)	-3.16+ (1.86)	-2.51** (0.97)	-2.45* (1.17)	-2.68** (0.92)	-2.78** (1.04)
ROA _{t-1}	-0.17 (1.13)	-1.55 (1.61)	-1.61 (1.65)	-0.08 (1.12)	-0.26 (1.11)	-0.09 (1.14)	-0.24 (1.13)
Tangibility _{t-1}	0.04 (0.32)	0.63 (0.69)	0.77 (0.77)	0.10 (0.30)	0.12 (0.29)	0.08 (0.31)	0.16 (0.30)
Coastal province	0.09 (0.13)	0.10 (0.22)	0.08 (0.21)	-0.04 (0.13)	-0.07 (0.12)	0.03 (0.14)	0.02 (0.14)
Market stability		0.11+ (0.06)	7.03 (6.32)				
Constraint×Market stability			-13.36 (11.69)				
Financial services index				0.56 (0.38)	2.66* (1.28)		
Constraint×Financial services index					-4.68* (2.38)		
Legal environment index						0.46 (0.64)	3.77* (1.66)
Constraint×Legal environment index							-7.18* (3.43)
Year fixed effects	YES	YES	YES	YES	YES	YES	YES
Observations	1,052	471	471	1,047	1,047	1,047	1,047
Wald Chi2	127.6***	57.42***	51.35***	100.6***	93.81***	119.9***	112.3***
Rho	-0.326	0.551	0.600	-0.531	-0.630	-0.382	-0.440
P(Rho=0)	0.727	0.622	0.586	0.524	0.501	0.690	0.648

Note: Probit coefficients reported. All models consider an intercept term. Robust standard errors clustered at firm level in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.1.

Table S3 Results when controlling for S.D. in announcement months

VARIABLES	Credit access						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constraint	0.26*** (0.06)	0.29*** (0.07)	0.29*** (0.07)	0.26*** (0.06)	0.25*** (0.05)	0.26*** (0.06)	0.24*** (0.06)
SD in announcement months=0 (dummy)	-0.03 (0.02)	0.03 (0.03)	0.03 (0.03)	-0.03 (0.02)	-0.03 (0.02)	-0.03 (0.02)	-0.03 (0.02)
Number of banks>5 dummy	0.32*** (0.05)	0.26*** (0.05)	0.26*** (0.05)	0.32*** (0.05)	0.31*** (0.05)	0.32*** (0.05)	0.32*** (0.05)
Collateral requirement	0.02 (0.06)	0.18 (0.11)	0.19+ (0.11)	0.02 (0.06)	0.03 (0.06)	0.02 (0.06)	0.02 (0.06)
Firm size _{t-1}	-0.09*** (0.01)	-0.10*** (0.01)	-0.10*** (0.01)	-0.09*** (0.01)	-0.08*** (0.01)	-0.09*** (0.01)	-0.08*** (0.01)
State ownership	-0.04 (0.05)	-0.07 (0.08)	-0.06 (0.09)	-0.03 (0.05)	-0.03 (0.05)	-0.03 (0.05)	-0.03 (0.05)
Young firm	0.02 (0.02)	0.02 (0.03)	0.02 (0.03)	0.02 (0.02)	0.02 (0.02)	0.02 (0.02)	0.02 (0.02)
Manufacturing sector	-0.00 (0.02)	-0.01 (0.04)	-0.01 (0.04)	-0.00 (0.02)	0.00 (0.02)	-0.00 (0.02)	0.00 (0.02)
Leverage _{t-1}	-0.48*** (0.08)	-0.52*** (0.12)	-0.55*** (0.12)	-0.47*** (0.08)	-0.48*** (0.08)	-0.47*** (0.08)	-0.50*** (0.08)
ROA _{t-1}	-0.01 (0.21)	-0.29 (0.24)	-0.30 (0.25)	0.00 (0.22)	-0.03 (0.22)	0.01 (0.21)	-0.02 (0.21)
Tangibility _{t-1}	0.01 (0.06)	0.12 (0.09)	0.15 (0.10)	0.02 (0.06)	0.02 (0.06)	0.02 (0.05)	0.03 (0.05)
Market stability		0.02** (0.01)	0.14 (0.44)				
Constraint×Market stability			-2.58 (2.40)				
Financial services index				0.11 (0.07)	0.12+ (0.07)		
Constraint×Financial services index					-0.98* (0.41)		
Legal environment index						0.09 (0.11)	0.11 (0.12)
Constraint×Legal environment index							-1.32* (0.65)
Observations	1,052	471	471	1,047	1,047	1,047	1,047
Pseudo R2	0.25	0.31	0.32	0.25	0.26	0.25	0.26
Log pseudolikelihood	-321.6	-129	-128.1	-319.5	-314.3	-319.3	-316.1
Wald Chi2	154***	124.4***	120.8***	151.8***	155.9***	156.3***	156.7***

Note: Reported coefficients reflect the average marginal effect of the independent variable across all observed values for the other variables in the model. All models consider an intercept term and controls for coastal region and year. Robust standard errors clustered at firm level in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.1.

Table S4a Results when controlling for state-owned banks in a network

VARIABLES	Credit access						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constraint	0.20** (0.06)	0.21** (0.08)	0.20* (0.08)	0.20*** (0.06)	0.19*** (0.06)	0.19** (0.06)	0.18** (0.06)
At least one state-owned bank in a network (dummy)	0.08*** (0.02)	0.09** (0.03)	0.10** (0.03)	0.08*** (0.02)	0.08*** (0.02)	0.08*** (0.02)	0.08*** (0.02)
Number of banks>5 dummy	0.29*** (0.05)	0.21*** (0.05)	0.21*** (0.05)	0.29*** (0.05)	0.28*** (0.05)	0.29*** (0.05)	0.28*** (0.05)
Collateral requirement	0.00 (0.06)	0.17 (0.11)	0.17 (0.11)	0.00 (0.06)	0.01 (0.05)	-0.00 (0.06)	0.01 (0.05)
Firm size _{t-1}	-0.09*** (0.01)	-0.10*** (0.01)	-0.09*** (0.01)	-0.09*** (0.01)	-0.08*** (0.01)	-0.09*** (0.01)	-0.09*** (0.01)
State ownership	-0.05 (0.05)	-0.07 (0.09)	-0.07 (0.09)	-0.04 (0.05)	-0.04 (0.05)	-0.04 (0.05)	-0.04 (0.05)
Young firm	0.02 (0.02)	0.02 (0.03)	0.02 (0.03)	0.02 (0.02)	0.02 (0.02)	0.03 (0.02)	0.03 (0.02)
Manufacturing sector	-0.01 (0.02)	-0.02 (0.04)	-0.02 (0.04)	-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.02)	-0.00 (0.02)
Leverage _{t-1}	-0.49*** (0.08)	-0.51*** (0.12)	-0.54*** (0.12)	-0.49*** (0.08)	-0.50*** (0.08)	-0.49*** (0.08)	-0.51*** (0.08)
ROA _{t-1}	-0.06 (0.20)	-0.25 (0.25)	-0.28 (0.25)	-0.04 (0.22)	-0.07 (0.22)	-0.04 (0.21)	-0.06 (0.21)
Tangibility _{t-1}	0.01 (0.05)	0.10 (0.09)	0.14 (0.09)	0.02 (0.05)	0.02 (0.05)	0.02 (0.05)	0.03 (0.05)
Market stability		0.01* (0.01)	0.12 (0.09)				
Constraint×Market stability			-3.25 (2.45)				
Financial services index				0.11 (0.07)	0.12+ (0.07)		
Constraint×Financial services index					-0.92* (0.40)		
Legal environment index						0.12 (0.11)	0.14 (0.11)
Constraint×Legal environment index							-1.31* (0.63)
Observations	1,052	471	471	1,047	1,047	1,047	1,047
Pseudo R2	0.26	0.33	0.34	0.27	0.28	0.26	0.27
Log pseudolikelihood	-315.5	-124.9	-123.3	-313.4	-308.5	-312.8	-309.6
Wald Chi2	162.6***	149.3***	140.6***	160.5***	166.1***	163.7***	167.2***

Note: Reported coefficients reflect the average marginal effect of the independent variable across all observed values for the other variables in the model. All models consider an intercept term and controls for coastal region and year. Robust standard errors clustered at firm level in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.1.

Table S4b Results when controlling for state-owned bank being the provider of the biggest loan in a network

VARIABLES	Credit access						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constraint	0.19** (0.06)	0.20* (0.08)	0.19* (0.08)	0.19** (0.06)	0.18** (0.06)	0.18** (0.06)	0.17** (0.06)
State-owned bank provides most loans in a network (dummy)	0.06** (0.02)	0.07** (0.03)	0.08** (0.03)	0.06** (0.02)	0.06** (0.02)	0.06** (0.02)	0.06** (0.02)
Number of banks>5 dummy	0.31*** (0.05)	0.24*** (0.05)	0.24*** (0.05)	0.31*** (0.05)	0.30*** (0.05)	0.31*** (0.05)	0.31*** (0.05)
Collateral requirement	0.01 (0.06)	0.15 (0.11)	0.15 (0.10)	0.01 (0.06)	0.02 (0.05)	0.01 (0.06)	0.01 (0.05)
Firm size $t-1$	-0.09*** (0.01)	-0.10*** (0.01)	-0.10*** (0.01)	-0.09*** (0.01)	-0.09*** (0.01)	-0.09*** (0.01)	-0.09*** (0.01)
State ownership	-0.04 (0.05)	-0.06 (0.08)	-0.06 (0.08)	-0.03 (0.05)	-0.04 (0.05)	-0.04 (0.05)	-0.04 (0.05)
Young firm	0.02 (0.02)	0.02 (0.03)	0.02 (0.03)	0.02 (0.02)	0.02 (0.02)	0.02 (0.02)	0.02 (0.02)
Manufacturing sector	-0.01 (0.02)	-0.01 (0.04)	-0.01 (0.04)	-0.01 (0.02)	-0.00 (0.02)	-0.00 (0.02)	-0.00 (0.02)
Leverage $t-1$	-0.48*** (0.08)	-0.49*** (0.12)	-0.52*** (0.12)	-0.48*** (0.08)	-0.49*** (0.08)	-0.48*** (0.08)	-0.50*** (0.08)
ROA $t-1$	-0.02 (0.21)	-0.24 (0.27)	-0.27 (0.27)	-0.00 (0.23)	-0.04 (0.23)	-0.00 (0.22)	-0.03 (0.22)
Tangibility $t-1$	0.00 (0.06)	0.12 (0.09)	0.15 (0.09)	0.01 (0.06)	0.02 (0.06)	0.01 (0.05)	0.03 (0.05)
Market stability		0.02*** (0.00)	0.12+ (0.07)				
Constraint×Market stability			-2.89 (2.32)				
Financial services index				0.10 (0.07)	0.11+ (0.07)		
Constraint×Financial services index					-0.97* (0.40)		
Legal environment index						0.09 (0.11)	0.12 (0.11)
Constraint×Legal environment index							-1.33* (0.64)
Observations	1,052	471	471	1,047	1,047	1,047	1,047
Pseudo R2	0.25	0.32	0.33	0.26	0.27	0.26	0.26
Log pseudolikelihood	-318.6	-126.5	-125.1	-316.7	-311.2	-316.1	-312.7
Wald Chi2	173.9***	152.9***	133.7***	170.2***	173.3***	173.1***	176.8***

Note: Reported coefficients reflect the average marginal effect of the independent variable across all observed values for the other variables in the model. All models consider an intercept term and controls for coastal region and year. Robust standard errors clustered at firm level in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.1.

Table S5 Results when controlling for multiple loans from banks in a network

VARIABLES	Credit access						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constraint	0.21*** (0.06)	0.20** (0.07)	0.20** (0.07)	0.21*** (0.06)	0.20*** (0.05)	0.21*** (0.06)	0.19*** (0.05)
Number of loans/number of banks within a network	0.14*** (0.03)	0.15*** (0.03)	0.15*** (0.03)	0.15*** (0.03)	0.14*** (0.03)	0.14*** (0.03)	0.14*** (0.03)
Number of banks>5 dummy	0.26*** (0.04)	0.22*** (0.04)	0.22*** (0.04)	0.26*** (0.04)	0.25*** (0.04)	0.26*** (0.04)	0.26*** (0.04)
Collateral requirement	0.03 (0.05)	0.19+ (0.11)	0.19+ (0.10)	0.03 (0.05)	0.04 (0.05)	0.03 (0.05)	0.03 (0.05)
Firm size _{t-1}	-0.08*** (0.01)	-0.10*** (0.01)	-0.10*** (0.01)	-0.08*** (0.01)	-0.08*** (0.01)	-0.08*** (0.01)	-0.08*** (0.01)
State ownership	-0.05 (0.05)	-0.09 (0.09)	-0.09 (0.09)	-0.04 (0.05)	-0.04 (0.05)	-0.05 (0.05)	-0.05 (0.05)
Young firm	0.03 (0.02)	0.05 (0.03)	0.04 (0.03)	0.03 (0.02)	0.03 (0.02)	0.03 (0.02)	0.03 (0.02)
Manufacturing sector	-0.01 (0.02)	-0.02 (0.04)	-0.02 (0.04)	-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.02)
Leverage _{t-1}	-0.51*** (0.08)	-0.60*** (0.12)	-0.61*** (0.12)	-0.51*** (0.08)	-0.52*** (0.08)	-0.51*** (0.08)	-0.52*** (0.08)
ROA _{t-1}	-0.11 (0.18)	-0.32+ (0.19)	-0.34+ (0.20)	-0.09 (0.19)	-0.11 (0.19)	-0.08 (0.18)	-0.10 (0.18)
Tangibility _{t-1}	-0.02 (0.05)	0.04 (0.09)	0.06 (0.09)	-0.02 (0.05)	-0.01 (0.05)	-0.02 (0.05)	-0.00 (0.05)
Market stability		0.02*** (0.01)	0.07 (0.05)				
Constraint×Market stability			-1.39 (1.51)				
Financial services index				0.12+ (0.07)	0.14* (0.07)		
Constraint×Financial services index					-0.86* (0.38)		
Legal environment index						0.14 (0.11)	0.16 (0.12)
Constraint×Legal environment index							-1.15+ (0.60)
Observations	1,052	471	471	1,047	1,047	1,047	1,047
Pseudo R2	0.29	0.37	0.37	0.30	0.31	0.29	0.30
Log pseudolikelihood	-303	-117.9	-117.4	-300.3	-295.9	-300.5	-298
Wald Chi2	184.2***	141.6***	134.4***	185.2***	188***	187.7***	191.1***

Note: Reported coefficients reflect the average marginal effect of the independent variable across all observed values for the other variables in the model. All models consider an intercept term and controls for coastal region and year. Robust standard errors clustered at firm level in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.1.

Table S6: 2-year network constraints and contingency effects on credit access

VARIABLES	Credit access						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constraint (2-year)	0.20** (0.06)	0.21* (0.09)	0.19* (0.09)	0.20** (0.06)	0.19** (0.06)	0.20** (0.06)	0.20** (0.06)
Number of banks	0.05*** (0.01)	0.05*** (0.01)	0.04*** (0.01)	0.05*** (0.01)	0.05*** (0.01)	0.05*** (0.01)	0.05*** (0.01)
Collateral requirement	0.04 (0.05)	0.09 (0.10)	0.08 (0.10)	0.04 (0.05)	0.04 (0.05)	0.04 (0.05)	0.03 (0.05)
Firm size _{t-1}	-0.08*** (0.01)	-0.08*** (0.02)	-0.07*** (0.02)	-0.08*** (0.01)	-0.08*** (0.01)	-0.08*** (0.01)	-0.08*** (0.01)
State ownership	-0.07 (0.05)	-0.05 (0.09)	-0.05 (0.09)	-0.06 (0.05)	-0.06 (0.05)	-0.06 (0.05)	-0.07 (0.05)
Young firm	0.02 (0.02)	0.01 (0.04)	0.01 (0.04)	0.02 (0.02)	0.02 (0.02)	0.02 (0.02)	0.02 (0.02)
Manufacturing sector	-0.03 (0.02)	0.01 (0.04)	0.01 (0.04)	-0.03 (0.02)	-0.03 (0.02)	-0.03 (0.02)	-0.03 (0.02)
Leverage _{t-1}	-0.52*** (0.08)	-0.52*** (0.12)	-0.51*** (0.12)	-0.51*** (0.08)	-0.53*** (0.08)	-0.51*** (0.08)	-0.52*** (0.08)
ROA _{t-1}	0.03 (0.18)	-0.02 (0.27)	-0.01 (0.27)	0.04 (0.19)	0.02 (0.19)	0.05 (0.18)	0.04 (0.18)
Tangibility _{t-1}	-0.04 (0.05)	0.03 (0.09)	0.02 (0.08)	-0.04 (0.05)	-0.04 (0.05)	-0.04 (0.05)	-0.04 (0.05)
Coastal province	0.01 (0.02)	0.01 (0.03)	0.00 (0.03)	-0.01 (0.02)	-0.01 (0.02)	-0.00 (0.02)	-0.00 (0.02)
Market stability		0.05*** (0.01)	0.27* (0.13)				
Constraint×Market stability			1.04 (0.84)				
Financial services index				0.07 (0.07)	0.09 (0.06)		
Constraint×Financial services index					-1.03* (0.40)		
Legal environment index						0.09 (0.11)	0.09 (0.11)
Constraint×Legal environment index							-1.36* (0.63)
Year fixed effects	YES	YES	YES	YES	YES	YES	YES
Observations	1,109	488	488	1,104	1,104	1,104	1,104
Pseudo R2	0.25	0.27	0.28	0.25	0.26	0.24	0.25
Log pseudolikelihood	-345.7	-137.1	-136.1	-344.4	-340.2	-344.1	-342
Wald Chi2	181.9***	98.29***	101.2***	186.5***	196.7***	186.6***	191.2***

Note: Reported coefficients reflect the average marginal effect of the independent variable across all observed values for the other variables in the model. All models consider an intercept term. Robust standard errors clustered at firm level in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.1.