Tables for "Collateral versus Bank Lending Channel: Evidence from a massive earthquake"

Table 1: Overall damage of the Great East Japan (Tohoku) earthquake

Numbers of	
deaths	19575
people missing	2577
injured	6230
houses totally destroyed	121776
houses half destroyed	280326
houses partially destroyed	744269
damaged non-residential buildings	106587

Report on the Great East Japan Earthquake issued by the Fire Department on September 8, 2017.

Table 2: Definition of variables

Variables	Definition	Winsorized
Credit constraint variables		
Constrained1	1: a firm does not procure either sufficient or necessary amount of funds, 0: it procures sufficient amount of funds	No
Constrained2	3: a firm neither obtains new loans nor procures necessary amount of funds, 2: it obtains new loans but does not procure sufficient amount of funds, 1: it obtains new loans and procures sufficient amount of funds	No
Firm activity variables		
Activity_Level	Level of a firm's activities in a year relative to the level in the previous year before the Tohoku Earthquake. 100% if it is the same as in the pre-earthquake year.	Yes
Investment	Amount of tangible investment (including land and structures) in a year/amount of tangible assets outstanding at the end of the previous year	Yes
Loan_Ratio	Amount of loans outstanding / amount of total assets outstanding at the end of year	Yes
Variables on damage		
F_Damage_Tangibles	Amount of damage on a firm's non-land tangible assets / total amount of the firm's assets before the earthquake. The damage is measured by the replacement costs.	Yes
F_Damage_Land	Amount of damage on a firm's land assets / total amount of the firm's assets before the earthquake. The damage is measured by the loss in the appraisal value of land.	Yes
B_Special_Loss	Special loss for a firm's primary bank in the fiscal year of 2010/ total asset amount of the bank at the end of the fiscal year. Primary bank is the one that extends the largest amount of loans to the firm.	No
dB_CapRatio_Basel	Change in the capital ratio of a firm's primary bank from fiscal year 2009 to 2010. For the ratio, the amount of capital is divided by the risk-asset amount.	No
dB_CapRatio	Change in the capital ratio of a firm's primary bank from fiscal year 2009 to 2010. For the ratio, the amount of capital is divided by the total asset amount in the balance sheet.	No
B_Branch_Reloc	1: the branch of the primary bank that a firm used to transact with before the earthquake has been relocated, and 0: otherwise	No
B_Branch_Reloc_sum	Number of relocated branches of the primary bank / total number of branches of the bank	No
B_Branch_Closed	1: the branch of the primary bank that a firm used to transact with before the earthquake has been closed at least one day, and 0: otherwise	No
B_Branch_Closed_sum	Number of closed branches of the primary bank / total number of branches of the bank	No
B_Branch_Closed_Duration	Number of days the branch of the primary bank a firm used to transact with has been closed	No
B_Branch_Closed_Long_sum	Number of branches of the primary bank that have been closed for no less than 60 days / total number of branches of the bank	No
Cus_Damage	1: a firm is indirectly affected by the damage on its customers, and 0: otherwise	No
Sup_Damage	1: a firm is indirectly affected by the damage on its suppliers, and 0: otherwise	No
Damaged_Area	1: a firm is located in an area designated by the Act concerning Special Financial Support to Deal with the Designated Disaster of Extreme Severity, and 0: otherwise	No
Tsunami_Area	1: a firm is located in an area inundated by the tsunami, and 0: otherwise	No
Evacuation_Area	1: a firm is located in an area within a 20km diameter from the Fukushima Dai-ichi Nuclear Power Plant, and 0: otherwise	No

Table 2 (continued)

Variables	Definition	Winsorized
Variables on financial support		
Injection	1: the primary bank for a firm receives capital injection by the government after the earthquake, and 0: otherwise	No
Insurance	1: a firm had purchased insurance policies for earthquakes, and 0: otherwise	No
Subsidy	1: a firm receives subsidies for recovery from the government, and 0: otherwise	No
Num_bank	Number of banks a firm used to transact with before the earthquake	No
Duration_bank	Number of transaction years with the primary bank	No
Control variables		
Employment	Number of employees for a firm	No
Business_Condition	Current business conditions for a firm. 1: very good, 2: good, 3: fair, 4: bad, and 5: very bad	No
Leverage	Amount of liabilities in the previous year / amount of total assets in the previous year	Yes
Industry dummies	2: Construction (default), 3: Manufacturing, 4: Utilities, IT, and Transportation, 7: Wholesale, 8: Retail sales, and 9: Services and other industries	No

Table 3 Summary statistics

	N	mean	sd	min	p25	p50	p75	max
Credit constraint variables								
Constrained1	1190	0.4933	0.5002	0	0	0	1	1
Constrained2	1122	1.5036	0.5749	1	1	1	2	3
Firm activity variables								
Activity_Level	958	93.4438	30.1284	0	80	96	100	300
Investment	504	0.2509	0.4807	0	0.0179	0.0686	0.2719	4.5320
Loan_Ratio	995	0.5978	0.7004	0	0.2336	0.4603	0.7018	5
Damage variables								
F_Damage_Tangibles	1190	0.1541	0.3932	0	0	0.0188	0.1133	3.2787
F_Damage_Land	1190	0.0198	0.0841	0	0	0	0	0.6093
B_Special_Loss	1190	0.0037	0.0033	0.0000	0.0008	0.0027	0.0083	0.0090
dB_CapRatio_Basel	1176	-0.0054	0.0102	-0.0291	-0.0160	-0.0040	-0.0002	0.0671
dB_CapRatio	1188	-0.0052	0.0047	-0.0117	-0.0111	-0.0033	-0.0021	0.0138
B_Branch_Closed	1190	0.3387	0.4735	0	0	0	1	1
B_Branch_Closed_sum	1190	0.2330	0.2228	0	0.0734	0.2027	0.3451	1
B_Branch_Reloc	1190	0.1420	0.3492	0	0	0	0	1
B_Branch_Reloc_sum	1190	0.1021	0.1248	0	0.0690	0.0789	0.1197	0.6667
Cus_Damage	1190	0.4782	0.4997	0	0	0	1	1
Sup_Damage	1190	0.3782	0.4851	0	0	0	1	1
Damaged_Area	1190	0.8319	0.3741	0	1	1	1	1
Tsunami_Area	1190	0.2059	0.4045	0	0	0	0	1
Evacuation_Area	1190	0.0118	0.1079	0	0	0	0	1
Financial support variables								
Injection	1190	0.3924	0.4885	0	0	0	1	1
Insurance	1190	0.2815	0.4499	0	0	0	1	1
Subsidy	1190	0.2370	0.4254	0	0	0	0	1
Num_bank	1088	2.5983	1.8493	0	1	2	3	19
Duration_bank	1067	30.9428	15.9727	0	20	30	40	100
Control variables								
Employment	1190	33.6370	71.8974	1	8	18	35	1637
Business_Condition	1190	3.2101	1.0709	1	2	3	4	5
Leverage	1190	0.8647	0.6623	0.0002	0.5749	0.7979	0.9657	6.5
Ind3=2(Construction)	1190	0.3025	0.4593	0	0	0	1	1
=3(Manufacturing)	1190	0.1714	0.3769	0	0	0	0	1
=4(Utilities, IT, and Transpor	1190	0.0840	0.2774	0	0	0	0	1
=7(Wholesale)	1190	0.1437	0.3508	0	0	0	0	1
=8(Retail)	1190	0.1294	0.3357	0	0	0	0	1
=9(Services)	1190	0.1689	0.3747	0	0	0	0	1

Table 4 Damage to banks

Bank name	Category of banks	bankcode	B_Special _Loss	dB_CapR atio_Base l	dB_Capra tio	B_Branch _Closed_ sum	B_Branch _Closed_ Long_su m	B_Branch _Reloc_s um	Injection
Fukushima	2nd-tier regional	513	0.00900	-0.014	-0.0110	0.2364	0	0.0727	0
77	regional	125	0.00825	-0.016	-0.0111	0.3451	0.0282	0.1197	1
Tohoku	regional	124	0.00695	-0.0106	-0.0082	0.1379	0	0.0690	1
Kitanihon	2nd-tier regional	509	0.00538	-0.006	-0.0064	0.1235	0	0.0864	0
Ishinomaki	shinkin	1172	0.00412	-0.0077	-0.0071	1	0	0.6667	1
Sendai	2nd-tier regional	512	0.00411	-0.0185	-0.0112	0.1690	0.0282	0.1268	1
Iwate	regional	123	0.00273	-0.0002	-0.0033	0.0734	0.0734	0.0734	0
Daito	2nd-tier regional	514	0.00264	0.0031	-0.0023	0.1111	0	0.0794	0
Iwaki	credit cooperative	2092	0.00199	-0.002	-0.0029	0.6842	0	0.2632	1
Sen-nan	shinkin	1174	0.00168	0.0005	0.0001	0.0625	0	0.0625	0
Kesennuma	shinkin	1175	0.00167	-0.0291	-0.0117	0.9167	0	0.6667	1
Morinomiyako	shinkin	1170	0.00163	0.0025	0.0011	0.2667	0	0.2667	0
Soso	credit cooperative	2095	0.00150	-0.0065	-0.0017	0.8750	0.5000	0.5000	1
Ishinomaki shoko	credit cooperative	2061	0.00147	0.0134	-0.0002	0.2500	0.1667	0.1667	0
Miyako	shinkin	1152	0.00144	-0.004	-0.0017	0.7778	0.2222	0.6667	1
Aizu shoko	credit cooperative	2096	0.00109	0.0016	-0.0006	0	0	0	0
Sukagawa	shinkin	1185	0.00108	-0.0008	-0.0016	0.0769	0	0.0769	0
Kirayaka	2nd-tier regional	508	0.00098	-0.0104	-0.0022	0.0339	0	0.0254	1
Himawari	shinkin	1186	0.00096	-0.0001	-0.0005	1	0.0625	0.0625	0
Asuka	credit cooperative	2060	0.00096	0.0009	-0.0015				0
Toho	regional	126	0.00075	-0.0004	-0.0021	0.3070	0.0526	0.0789	0
Aoimori	shinkin	1105	0.00072	0.0113	-0.0004	0.0137	0	0	0
Ichinoseki	shinkin	1153	0.00067	0.0076	-0.0001	0	0	0	0
Development bank of Japan	government-affiliated	9930	0.00063	0.0142	0.0138	0	0	0	0
Miyagi Dai-ichi	shinkin	1171	0.00055	0.0024	0.0026	0.0769	0	0	0
Aomori	regional	117	0.00040	-0.0097	-0.0017	0	0	0	0
Nihonmatsu	shinkin	1189	0.00037	0.0014	-0.0001	0	0	0	0
Japan Finance Corporation	government-affiliated	9932	0.00037		-0.0091				0
Fukushimaken Shoko	credit cooperative	2090	0.00028		-0.0011	0.0625	0	0	0
Fukushima	shinkin	1190	0.00025	0.0028	-0.0022	0.0385	0	0	0
Ashikaga	regional	129	0.00024			0	0	0	0
Yamanashi Chuo	regional	142	0.00024	0.0076	-0.0016	0	0	0	0
Akita	regional	119	0.00022	-0.0013	-0.0030	0	0	0	0
Senhoku	credit cooperative	2063	0.00021	-0.0071	-0.0045	0	0	0	0
Joyo	regional	130	0.00019	-0.0001	-0.0007	0.0400	0	0.0057	0
Mitsubishi-Tokyo-UFJ	city	5	0.00018	0.0027	-0.0009	0	0	0	0
Michinoku	regional	118	0.00017	-0.0103	-0.0018	0	0	0	0
Risona	city	10	0.00015	0.0074	-0.0002	0	0	0	0
Norinchukin	agricultural	3000	0.00014	0.0671	0.0051	0	0	0	0
Shonai	regional	121	0.00012	0.0257	-0.0025	0.1059	0.0118	0.0471	0
Daishi	regional	140	0.00011	-0.0084	-0.0022	0	0	0	0
Shokochukin	government-affiliated	2004	0.00011	0.0097	0.0007	0	0	0	0
Morioka	shinkin	1150	0.00010	-0.0051	-0.0042	0	0	0	0
Yamagata	regional	122	0.00008	0.0049	-0.0008	0.0500	0	0	0
Mitsui-Sumitomo	city	9	0.00008	0.0317	-0.0040	0	0	0	0
Mizuho	city	1	0.00007	0.0266	0.0073	0	0	0	0
Tokyo Tomin	regional	137	0.00007	-0.0053	-0.0019	0	0	0	0
Koriyama	shinkin	1182	0.00007	0.0077	0.0005	0.0526	0.0526	0.0526	0
Shirakawa	shinkin	1184	0.00006	-0.0036	-0.0075	0	0	0	0
Mizuho Corporate	city	16	0.00005	0.0205	0.0056	0	0	0	0
Mizusawa	shinkin	1156	0.00004	0.0073	0.0063	0	0	0	0
Kitakami	shinkin	1154	0.00004	0.0001	-0.0009	0	0	0	0
Aizu	shinkin	1181	0.00003	0.0077	-0.0006	0	0	0	0
Yokohama	regional	138	0.00003	0.0006	-0.0010	0	0	0	0
Aomori-ken	credit cooperative	2030	0.00001		-0.0002	0	0	0	0
Hanamaki	shinkin	1155	0.00001	0.0093	-0.0007	0	0	0	0
Kanagawa	2nd-tier regional	530	0.00001	0.0038	-0.0014	0	0	0	0
Abukuma	shinkin	1188	0.00001	0.0018	-0.0023	0.4286	0.4286	0.2143	1
Furukawa	credit cooperative	2062	0.00000		-0.0035	0	0	0	0

Table 5 Credit constraint estimation (a) Baseline

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Dependent variable=Constrained1					
	Probit model estimation					
F_Damage_Tangibles	0.467***		0.450***	0.459***	0.479***	0.450***
	(0.128)		(0.127)	(0.127)	(0.126)	(0.124)
F_Damage_Land		0.992*				
		(0.509)				
B_Special_Loss	37.91***	38.47***			40.18***	38.58***
	(12.04)	(11.99)			(12.22)	(11.95)
dB_CapRatio_Basel			-12.35***			
			(4.077)			
dB_CapRatio				-23.83***		
				(8.593)		
B_Branch_Reloc	-0.0883	-0.0361	-0.0710	-0.0729		
	(0.123)	(0.121)	(0.123)	(0.123)		
B_Branch_Reloc_sum	0.211	0.318	0.102	0.133		
	(0.336)	(0.332)	(0.344)	(0.342)		
B_Branch_Closed					-0.0554	
					(0.0943)	
B_Branch_Closed_sum					-0.0917	
					(0.193)	
B_Branch_Closed_Duration						0.000538
						(0.000361)
B_Branch_Closed_Long_sum						0.306
						(0.694)
Cus_Damage	-0.0952	-0.0872	-0.0786	-0.0887	-0.0969	-0.0993
	(0.0838)	(0.0835)	(0.0844)	(0.0839)	(0.0839)	(0.0839)
Sup_Damage	0.0790	0.0698	0.0807	0.0775	0.0738	0.0774
	(0.0832)	(0.0829)	(0.0836)	(0.0832)	(0.0831)	(0.0831)
Damaged_Area	0.0605	0.0812	0.0552	0.0582	0.0743	0.0584
	(0.106)	(0.106)	(0.107)	(0.106)	(0.107)	(0.106)
Tsunami_Area	0.151	0.194*	0.176*	0.158	0.166	0.135
	(0.104)	(0.103)	(0.105)	(0.104)	(0.104)	(0.101)
Evacuation_Area	-0.0210	-0.159	-0.0243	-0.0364	-0.0152	-0.668
	(0.363)	(0.368)	(0.363)	(0.363)	(0.362)	(0.560)
Employment	-0.00372***	-0.00381***	-0.00349***	-0.00361***	-0.00379***	-0.00364***
	(0.000956)	(0.000958)	(0.000943)	(0.000950)	(0.000965)	(0.000949)
Business_Condition	0.280***	0.284***	0.282***	0.278***	0.277***	0.278***
	(0.0378)	(0.0377)	(0.0381)	(0.0378)	(0.0377)	(0.0378)
Leverage	0.281***	0.299***	0.274***	0.279***	0.285***	0.285***
	(0.0636)	(0.0634)	(0.0634)	(0.0635)	(0.0635)	(0.0636)
Manufacturing	0.103	0.117	0.117	0.0973	0.0963	0.0986
	(0.119)	(0.119)	(0.120)	(0.119)	(0.120)	(0.120)
Utilities, IT, and Transportati	-0.0789	-0.0704	-0.108	-0.0866	-0.0905	-0.0898
	(0.154)	(0.153)	(0.156)	(0.154)	(0.154)	(0.154)
Wholesale	-0.217*	-0.224*	-0.212	-0.216*	-0.226*	-0.218*
	(0.129)	(0.128)	(0.129)	(0.129)	(0.128)	(0.129)
Retail	-0.207	-0.194	-0.224*	-0.215*	-0.207	-0.199
	(0.129)	(0.128)	(0.130)	(0.129)	(0.129)	(0.129)
Services	-0.0245	-0.0210	-0.0313	-0.0381	-0.0286	-0.0161
	(0.118)	(0.117)	(0.119)	(0.118)	(0.118)	(0.118)
Constant	-1.269***	-1.298***	-1.201***	-1.239***	-1.232***	-1.268***
	(0.182)	(0.182)	(0.179)	(0.181)	(0.182)	(0.184)
Number of observations	1,190	1,190	1,176	1,188	1,190	1,190

Standard errors in parenthes
*** p<0.01, ** p<0.05, * p<0.1

Table 5 Credit constraint estimation (b) *Constrained2* employed as a dependent variable

VARIABLES	(7)	(8)	(9)	(10)	(11)	(12)
	Dependent variable = Constrained2					
	Ordered probit model estimation					
F_Damage_Tangibles	0.390***		0.379***	0.387***	0.394***	0.376***
	(0.0986)		(0.0985)	(0.0985)	(0.0977)	(0.0971)
F_Damage_Land		0.675				
		(0.477)				
B_Special_Loss	40.65***	41.87***			43.40***	40.44***
	(11.53)	(11.51)			(11.77)	(11.50)
dB_CapRatio_Basel			-13.70***			
			(4.022)			
dB_CapRatio				-25.11***		
				(8.269)		
B_Branch_Reloc	-0.132	-0.0801	-0.117	-0.117		
	(0.117)	(0.116)	(0.116)	(0.117)		
B_Branch_Reloc_sum	0.284	0.347	0.148	0.198		
	(0.318)	(0.317)	(0.324)	(0.323)		
B_Branch_Closed					-0.0629	
					(0.0904)	
B_Branch_Closed_sum					-0.122	
					(0.187)	
B_Branch_Closed_Duration						0.000271
						(0.000326)
B_Branch_Closed_Long_sum						0.0294
						(0.674)
Cus_Damage	-0.122	-0.102	-0.111	-0.116	-0.121	-0.120
	(0.0811)	(0.0807)	(0.0815)	(0.0811)	(0.0811)	(0.0810)
Sup_Damage	0.0421	0.0290	0.0417	0.0397	0.0313	0.0350
	(0.0804)	(0.0802)	(0.0808)	(0.0804)	(0.0803)	(0.0802)
Damaged_Area	0.00132	0.0256	-0.00688	-0.00225	0.0181	-0.00165
	(0.103)	(0.103)	(0.104)	(0.103)	(0.104)	(0.103)
Tsunami_Area	0.153	0.184*	0.181*	0.163*	0.166*	0.135
	(0.0986)	(0.0984)	(0.0990)	(0.0986)	(0.0979)	(0.0952)
Evacuation_Area	0.0475	-0.0334	0.0471	0.0343	0.0406	-0.337
	(0.351)	(0.354)	(0.351)	(0.351)	(0.351)	(0.546)
Employment	-0.00374***	-0.00384***	-0.00348***	-0.00364***	-0.00384***	-0.00369***
	(0.000956)	(0.000959)	(0.000940)	(0.000950)	(0.000966)	(0.000950)
Business_Condition	0.292***	0.294***	0.294***	0.290***	0.287***	0.287***
	(0.0369)	(0.0368)	(0.0372)	(0.0369)	(0.0368)	(0.0368)
Leverage	0.233***	0.249***	0.227***	0.230***	0.238***	0.236***
	(0.0548)	(0.0544)	(0.0548)	(0.0548)	(0.0548)	(0.0547)
Manufacturing	0.0891	0.0928	0.102	0.0862	0.0807	0.0811
	(0.113)	(0.113)	(0.113)	(0.113)	(0.113)	(0.113)
Utilities, IT, and Transportatio	-0.110	-0.108	-0.116	-0.115	-0.121	-0.117
	(0.151)	(0.150)	(0.153)	(0.151)	(0.150)	(0.150)
Wholesale	-0.191	-0.199	-0.186	-0.189	-0.201	-0.197
	(0.124)	(0.124)	(0.125)	(0.125)	(0.124)	(0.124)
Retail	-0.239*	-0.227*	-0.252**	-0.244*	-0.235*	-0.234*
	(0.127)	(0.126)	(0.127)	(0.127)	(0.127)	(0.127)
Services	-0.0450	-0.0514	-0.0534	-0.0545	-0.0479	-0.0392
	(0.114)	(0.114)	(0.115)	(0.114)	(0.114)	(0.114)
Constant cut1	1.252***	1.274***	1.174***	1.217***	1.200***	1.224***
	(0.173)	(0.173)	(0.171)	(0.172)	(0.173)	(0.175)
Constant cut2	3.101***	3.103***	3.021***	3.062***	3.050***	3.072***
	(0.195)	(0.194)	(0.192)	(0.193)	(0.194)	(0.196)
Number of observations	1,122	1,122	1,110	1,120	1,122	1,122

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5 Credit constraint estimation (c) Different periods

VARIABLES	period=	(13) 2 ~July 2012	(14) 3 ~Aug/Sep 2013	(15) 4 ~Aug/Sep 2014	(16) 5 ~Oct/Nov 2015
		Dependent variable = Constrained1			
		Probit model estimation			
F_Damage_Tangibles		0.467***	0.0877	-0.0613	0.0928
		(0.128)	(0.109)	(0.131)	(0.177)
B_Special_Loss		37.91***	30.75**	7.373	-21.64
		(12.04)	(13.29)	(19.36)	(21.77)
B_Branch_Reloc		-0.0883	-0.0892	-0.260	-0.146
		(0.123)	(0.159)	(0.213)	(0.250)
B_Branch_Reloc_sum		0.211	0.103	-0.0792	0.619
		(0.336)	(0.473)	(0.612)	(0.934)
Cus_Damage		-0.0952	-0.207**	-0.0650	0.0140
		(0.0838)	(0.0924)	(0.132)	(0.144)
Sup_Damage		0.0790	0.120	-0.0510	-0.0289
		(0.0832)	(0.0917)	(0.129)	(0.139)
Damaged_Area		0.0605	-0.0894	-0.0921	0.183
		(0.106)	(0.0986)	(0.144)	(0.151)
Tsunami_Area		0.151	0.0572	0.00790	0.0841
		(0.104)	(0.141)	(0.194)	(0.209)
Evacuation_Area		-0.0210	0.379		
		(0.363)	(0.601)		
Employment		-0.00372***	-0.00355***	-0.0103***	-0.00667***
		(0.000956)	(0.00101)	(0.00212)	(0.00193)
Business_Condition		0.280***	0.315***	0.398***	0.344***
		(0.0378)	(0.0418)	(0.0674)	(0.0761)
Leverage		0.281***	0.0869	0.447***	0.284**
		(0.0636)	(0.0551)	(0.121)	(0.111)
Manufacturing		0.103	-0.0749	0.182	0.122
		(0.119)	(0.133)	(0.201)	(0.205)
Utilities, IT, and Transportation		-0.0789	0.0450	0.260	0.371
		(0.154)	(0.186)	(0.254)	(0.287)
Wholesale		-0.217*	-0.361**	-0.0252	-0.193
		(0.129)	(0.145)	(0.199)	(0.222)
Retail		-0.207	0.0346	0.0230	0.0459
		(0.129)	(0.141)	(0.219)	(0.228)
Services		-0.0245	0.0631	-0.129	-0.103
		(0.118)	(0.131)	(0.188)	(0.196)
Constant		-1.269***	-0.974***	-1.341***	-1.361***
		(0.182)	(0.170)	(0.270)	(0.295)
Number of observations		1,190	953	506	427

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5 Credit constraint estimation (d) Effects of financial support

VARIABLES	(17)	(18)	(19)	(20)	(21)
	Dependent variable = Constrained1				
	Probit model estimation				
F_Damage_Tangibles	0.470***	0.401***	0.883***	0.952***	0.240
	(0.128)	(0.141)	(0.277)	(0.290)	(0.294)
B_Special_Loss	50.63**	39.88***	38.00***	42.97***	43.92***
	(23.81)	(12.11)	(12.07)	(12.56)	(12.65)
B_Branch_Reloc	-0.0894	-0.0720	-0.0699	-0.0817	-0.0539
	(0.123)	(0.124)	(0.126)	(0.129)	(0.130)
B_Branch_Reloc_sum	-0.0135	0.209	0.199	0.301	0.199
	(0.424)	(0.339)	(0.338)	(0.356)	(0.352)
Cus_Damage	-0.0937	-0.0925	-0.0977	-0.0473	-0.0264
	(0.0840)	(0.0844)	(0.0842)	(0.0883)	(0.0892)
Sup_Damage	0.0823	0.0832	0.0916	0.114	0.0888
	(0.0833)	(0.0834)	(0.0836)	(0.0874)	(0.0885)
Damaged_Area	0.0612	0.0594	0.0598	0.0464	0.0376
	(0.108)	(0.106)	(0.107)	(0.110)	(0.112)
Tsunami_Area	0.155	0.151	0.152	0.170	0.157
	(0.105)	(0.105)	(0.107)	(0.111)	(0.111)
Evacuation_Area	-0.0633	0.00245	-0.0389	-0.124	-0.0725
	(0.365)	(0.364)	(0.367)	(0.390)	(0.401)
Employment	-0.00372***	-0.00370***	-0.00358***	-0.00367***	-0.00367***
	(0.000957)	(0.000958)	(0.000949)	(0.00102)	(0.00103)
Business_Condition	0.280***	0.275***	0.284***	0.269***	0.262***
	(0.0379)	(0.0379)	(0.0379)	(0.0397)	(0.0399)
Leverage	0.277***	0.283***	0.280***	0.252***	0.223***
	(0.0638)	(0.0636)	(0.0638)	(0.0655)	(0.0650)
Manufacturing	0.104	0.0877	0.117	0.0988	0.0839
	(0.119)	(0.120)	(0.120)	(0.123)	(0.124)
Utilities, IT, and Transportation	-0.0743	-0.0889	-0.0682	-0.0431	-0.0646
	(0.154)	(0.154)	(0.154)	(0.166)	(0.171)
Wholesale	-0.212*	-0.234*	-0.211	-0.217	-0.283**
	(0.129)	(0.129)	(0.129)	(0.133)	(0.136)
Retail	-0.209	-0.206	-0.213	-0.238*	-0.296**
	(0.129)	(0.129)	(0.130)	(0.137)	(0.139)
Services	-0.0280	-0.0463	-0.0292	0.00897	-0.0390
	(0.118)	(0.118)	(0.118)	(0.122)	(0.123)
Injection	0.224				
	(0.240)				
B_Special_Loss*Injection	-38.02				
	(38.84)				
Insurance		-0.215**			
		(0.0958)			
F_Damage_Tangibles*Insurance		0.283			
		(0.304)			
Subsidy			-0.0470		
			(0.111)		
F_Damage_Tangibles*Subsidy			-0.520*		
			(0.310)		
Num_B				0.0266	
				(0.0238)	
F_Damage_Tangibles*Num_Banks				-0.216*	
				(0.112)	
Duration_B					-0.00426
					(0.00284)
F_Damage_Tangibles*Duration_B					0.00740
					(0.00899)
Constant	-1.283***	-1.203***	-1.295***	-1.353***	-1.059***
	(0.184)	(0.185)	(0.183)	(0.200)	(0.213)
Number of observations	1,190	1,190	1,190	1,088	1,067

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 6 Firm activity estimation (a) Activity level

Dependent variable:	(1) Activity_Level	(2) Constrained1	(3) Activity_Level	(4) Activity_Level
Esimation method:	Treatment regression		OLS	OLS
	Second stage	First stage		
Constrained1	-27.74***		-3.087	-3.540*
	(8.464)		(1.892)	(1.831)
F_Damage_Tangibles	-5.167**	0.383***	-7.562***	
	(2.506)	(0.114)	(2.109)	
B_Special_Loss		37.28***		
		(12.07)		
Cus_Damage	-2.717	0.0223	-2.717	-3.251*
	(2.066)	(0.0889)	(1.947)	(1.948)
Sup_Damage	-0.656	-0.00370	-0.202	0.184
	(2.041)	(0.0885)	(1.931)	(1.942)
Damaged_Area	0.0364	0.0439	-0.718	-1.241
	(2.589)	(0.110)	(2.444)	(2.296)
Tsunami_Area	-2.673	0.135	-5.085**	-6.633***
	(2.538)	(0.106)	(2.310)	(2.302)
Evacuation_Area	-17.04*	-0.139	-14.97*	-14.55
	(9.252)	(0.424)	(8.782)	(9.040)
Employment	-0.00709	-0.00353***	0.0121	0.0109
	(0.0144)	(0.000976)	(0.0123)	(0.0125)
Business_Condition	-4.946***	0.262***	-7.501***	-7.742***
	(1.219)	(0.0395)	(0.869)	(0.856)
Leverage	3.285**	0.273***	0.639	-0.0378
	(1.595)	(0.0654)	(1.328)	(1.214)
Manufacturing	-9.320***	0.115	-10.21***	-8.989***
	(3.015)	(0.130)	(2.852)	(2.762)
Utilities, IT, and Transportation	-8.314**	0.0291	-8.044**	-6.610*
	(3.861)	(0.168)	(3.673)	(3.630)
Wholesale	-12.07***	-0.271**	-10.29***	-9.042***
	(3.295)	(0.137)	(3.023)	(2.964)
Retail	-10.44***	-0.121	-8.510***	-8.056***
	(3.246)	(0.138)	(3.045)	(2.973)
Services	-8.935***	0.0406	-8.854***	-7.580***
	(2.810)	(0.121)	(2.650)	(2.534)
Constant	130.3***	-1.233***	129.2***	129.7***
	(4.115)	(0.188)	(3.868)	(3.690)
athrho	0.540***			
	(0.192)			
lnsigma	3.411***			
	(0.0537)			
	1,037	1,037	1,050	1,174
			0.146	0.127

Standard errors in parentheses   *** p<0.01, ** p<0.05, * p<0.1

Table 6 Firm activity estimation (b) Investment

	(5)	(6)	(7)	(8)
Dependent variable:	Investment	Constrained1	Investment	Investment
Estimation method:	Treatment regression		OLS	OLS
	Second stage	First stage		
Constrained1	0.169		0.130***	0.168***
	(0.129)		(0.0451)	(0.0475)
F_Damage_Tangibles	0.395***	0.151	0.403***	
	(0.0575)	(0.164)	(0.0558)	
B_Special_Loss		52.15***		
		(18.12)		
Cus_Damage	0.00241	-0.0754	0.00217	0.00405
	(0.0445)	(0.123)	(0.0457)	(0.0498)
Sup_Damage	-0.0437	-0.104	-0.0520	-0.0431
	(0.0439)	(0.122)	(0.0450)	(0.0490)
Damaged_Area	0.109**	-0.00289	0.112**	0.177***
	(0.0541)	(0.150)	(0.0561)	(0.0573)
Tsunami_Area	-0.0298	0.371**	-0.0358	0.0428
	(0.0567)	(0.147)	(0.0543)	(0.0577)
Evacuation_Area	0.139	-0.212	0.137	0.0874
	(0.217)	(0.631)	(0.225)	(0.251)
Employment	-0.000524	-0.00316***	-0.000618**	-0.000753**
	(0.000324)	(0.00112)	(0.000308)	(0.000335)
Business_Condition	-0.0229	0.285***	-0.0265	-0.0151
	(0.0228)	(0.0545)	(0.0201)	(0.0216)
Leverage	-0.0446	0.268***	-0.0447	-0.0303
	(0.0306)	(0.0899)	(0.0291)	(0.0321)
Manufacturing	0.00137	0.121	0.0115	-0.0346
	(0.0653)	(0.180)	(0.0675)	(0.0702)
Utilities, IT, and Transportation	0.0883	0.112	0.0965	0.0351
	(0.0799)	(0.222)	(0.0830)	(0.0895)
Wholesale	0.0759	-0.315	0.0735	0.00903
	(0.0736)	(0.205)	(0.0751)	(0.0794)
Retail	-0.0219	-0.0384	-0.0144	-0.0537
	(0.0716)	(0.198)	(0.0741)	(0.0803)
Services	0.0103	0.107	0.0283	-0.0141
	(0.0624)	(0.170)	(0.0636)	(0.0657)
Constant	0.177**	-1.337***	0.205**	0.180**
	(0.0855)	(0.252)	(0.0878)	(0.0912)
athrho	-0.0639			
	(0.158)			
lnsigma	-0.738***			
	(0.0307)			
Observations	552	552	563	621
R-squared			0.147	0.063

Standard errors in parentheses   *** p<0.01, ** p<0.05, * p<0.1

Table 6 Firm activity estimation (c) Loan Ratio

	(9)	(10)	(11)	(12)
Dependent variable:	Loan_Ratio	Constrained1	Loan_Ratio	Loan_Ratio
Estimation method:	Treatment regression		OLS	OLS
	Second stage	First stage		
Constrained1	-0.808***		0.0631	0.116***
	(0.0570)		(0.0400)	(0.0404)
F_Damage_Tangibles	0.571***	0.469***	0.468***	
	(0.0601)	(0.101)	(0.0503)	
B_Special_Loss		25.49***		
		(9.520)		
Cus_Damage	-0.0400	0.0283	-0.0500	-0.0374
	(0.0496)	(0.0848)	(0.0414)	(0.0432)
Sup_Damage	-0.0170	0.0342	-0.0351	-0.0416
	(0.0496)	(0.0850)	(0.0415)	(0.0435)
Damaged_Area	-0.0104	0.0707	-0.0225	0.0392
	(0.0614)	(0.104)	(0.0516)	(0.0501)
Tsunami_Area	0.111*	0.107	0.0566	0.155***
	(0.0602)	(0.103)	(0.0502)	(0.0518)
Evacuation_Area	-0.215	-0.637	0.00602	-0.0149
	(0.281)	(0.493)	(0.237)	(0.255)
Employment	-0.00154***	-0.00317***	-0.000387	-0.000546
	(0.000425)	(0.000837)	(0.000348)	(0.000365)
Business_Condition	0.152***	0.268***	0.0625***	0.0723***
	(0.0226)	(0.0385)	(0.0188)	(0.0192)
Leverage	0.553***	0.247***	0.482***	0.474***
	(0.0341)	(0.0602)	(0.0286)	(0.0272)
Manufacturing	0.0863	-0.0400	0.0818	0.0400
	(0.0730)	(0.125)	(0.0614)	(0.0627)
Utilities, IT, and Transportation	-0.0378	-0.0682	-0.0150	-0.0396
	(0.0922)	(0.156)	(0.0772)	(0.0785)
Wholesale	0.0528	-0.197	0.131**	0.0997
	(0.0768)	(0.132)	(0.0642)	(0.0652)
Retail	0.130*	-0.186	0.185***	0.130**
	(0.0768)	(0.132)	(0.0642)	(0.0654)
Services	0.0653	0.00395	0.0626	0.0503
	(0.0670)	(0.113)	(0.0559)	(0.0560)
Constant	-0.0214	-1.130***	-0.114	-0.137*
	(0.101)	(0.179)	(0.0843)	(0.0834)
athrho	0.998***			
	(0.0592)			
lnsigma	-0.302***			
	(0.0295)			
Observations	1,075	1,075	1,087	1,225
R-squared			0.310	0.245

Standard errors in parentheses   *** p<0.01, ** p<0.05, * p<0.1