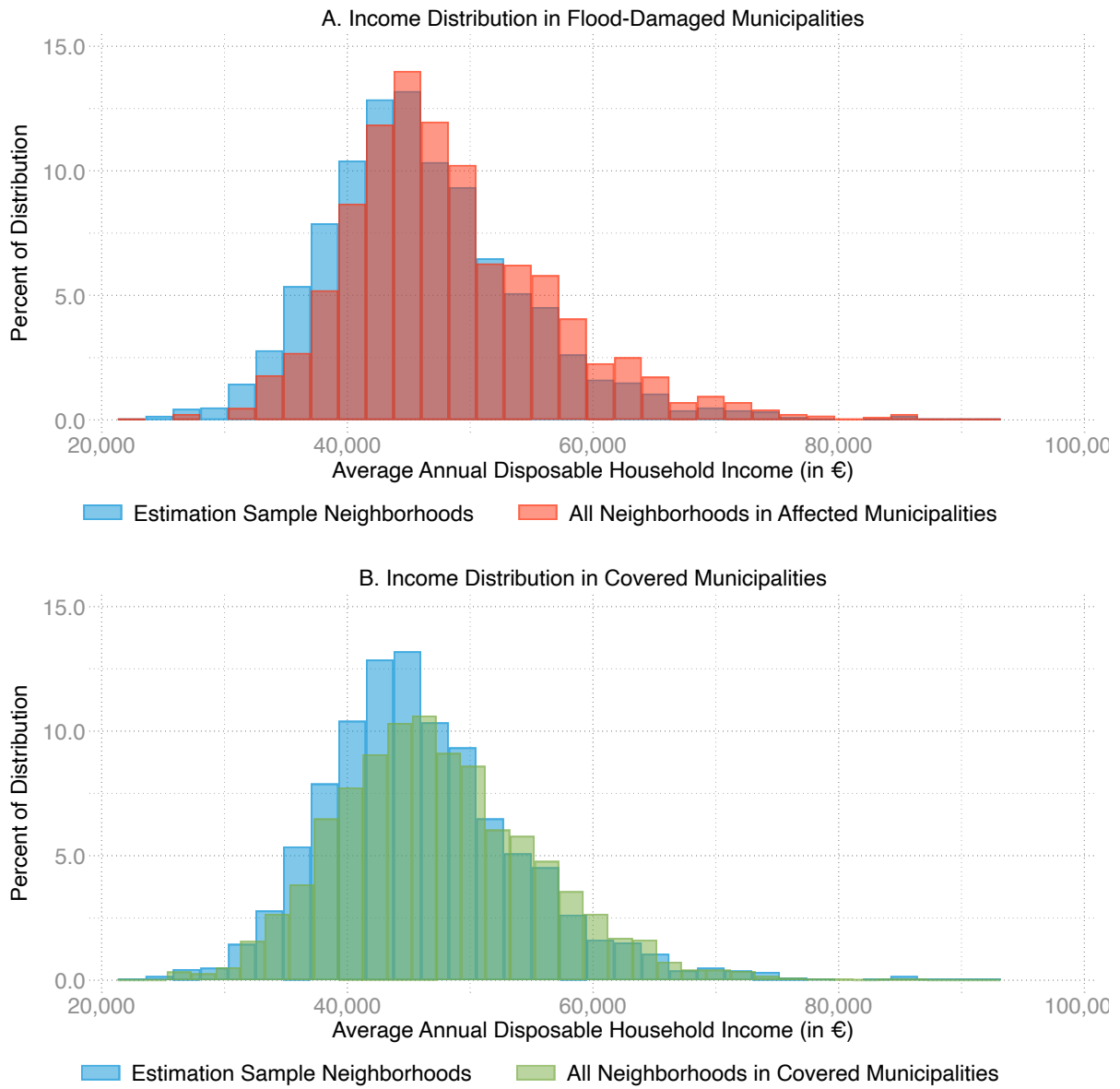


A Appendix: Additional Material

Figure A.1: Distribution of Average Income Across Neighborhoods



Notes: This graph shows the distribution of average annual disposable household income across neighborhoods. We depict the income distribution in the baseline estimation sample in blue ($N_{blue} = 1,787$). Panel A contrasts the base sample with the distribution of average incomes in all neighborhoods from all (somewhat) flood-damaged municipalities reported in the CEMS data, i.e., also neighborhoods outside the 3 km buffer ($N_{red} = 1,670$). Panel B relates the base sample to the income distribution in all neighborhoods from municipalities (partly) covered by the base sample, i.e., also more remote neighborhoods and municipalities without any flood damage that intersect with one of the 3 km buffer areas ($N_{green} = 4,057$).

Table A.1: Summary Statistics Conditional on at Least One Possibly Damaged Building

Panel A – Variables Based on CEMS Data Set

	<i>N</i>	Mean	SD	<i>P1</i>	<i>P25</i>	<i>P50</i>	<i>P75</i>	<i>P90</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Indicator: Any Building Reported?	201	1	0	1	1	1	1	1
Only Damaged or Destroyed	201	0	0	0	0	0	1	1
Only Destroyed Buildings	201	0	0	0	0	0	0	1
Share of Reported Buildings (in %)	201	33	38	0	2	13	61	100
Only Damaged or Destroyed	201	17	32	0	0	0	15	100
Only Destroyed Buildings	201	4	17	0	0	0	0	100
Distance to Closest Affected River (in km)	201	0	0	0	0	0	0	0
Distance to Closest Damage (in km)	201	0	0	0	0	0	0	1

Panel B – Variables from RWI-GEO-GRID Data Set

	<i>N</i>	Mean	SD	<i>P1</i>	<i>P25</i>	<i>P50</i>	<i>P75</i>	<i>P90</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Number of Buildings	201	250	258	3	58	169	350	1,173
Number of Households	188	468	591	11	105	247	600	3,179
Number of Inhabitants	201	878	1,119	5	143	454	1,133	4,970
Household Income 2019 (in EUR)	188	45,005	7,476	32,000	40,360	43,739	47,816	69,133
Household Income 2010 (in 2019 EUR)	188	46,204	7,908	32,726	41,984	45,129	49,081	69,789
Average Default Risk Rating	201	5	1	2	4	4	5	8
Local Unemployment Rate (in %)	201	5	2	1	4	5	6	13
Households with Private Pension	201	5	1	2	5	5	6	8
Households with Life Insurance	201	5	1	2	4	5	5	8
Private Health Insurance	201	5	2	2	4	5	6	9
Additional Health Insurance	201	5	2	2	4	5	6	9
Occupational Disability Insurance	201	5	2	2	3	4	5	9
Share of Children (in %)	201	16	3	3	15	16	17	20
Share of Elderly (in %)	201	24	7	15	20	23	25	41
Share with Foreign Household Head (in %)	201	9	5	1	6	9	12	24
Average Daily Rainfall (in l/m ²)	201	2	0	2	2	2	2	2
Average Temperature (in °C)	201	10	1	8	10	11	11	12
Indicator: Dike Infrastructure	127	0	0	0	0	0	1	1

Notes: This table presents descriptive statistics conditional on at least one damaged building. See Table 1 for corresponding descriptives of the full sample.

Table A.2: Exposure by Income Quantiles

	By Quintile (1)	By Decile (2)
Quintile 1	0.09*** (0.03)	
Quintile 2	0.08*** (0.03)	
Quintile 3	0.06** (0.03)	
Quintile 4	0.04 (0.03)	
Quintile 5	0.00 (0.03)	
Decile 1		0.06** (0.03)
Decile 2		0.12*** (0.04)
Decile 3		0.08** (0.03)
Decile 4		0.09*** (0.03)
Decile 5		0.06* (0.03)
Decile 6		0.07** (0.03)
Decile 7		0.06* (0.03)
Decile 8		0.02 (0.03)
Decile 9		-0.01 (0.03)
Decile 10		0.02 (0.03)
Number of Observations	1,781	1,781
Adjusted R-Squared	0.190	0.191

Notes: This table presents the estimates from regressing the dichotomous flood damage measure on five (ten) indicator variables for population-weighted average income quintiles (deciles) across neighborhoods. Coefficients are plotted in Panel B of Figure 3. All specifications include fixed effects for areas of interest and counties. Heteroskedasticity-robust standard errors are displayed in parentheses. Significance levels: * $p < .1$, ** $p < .05$, *** $p < .01$.

Table A.3: Robustness Checks Using Continuous Flood Damage Measure

	Baseline Estimate (1)	Mun. Ass. Fix. Eff. (2)	Municip. Fix. Eff. (3)	Log HH Income (4)	Income in 2010 (5)	Population Weighted (6)
Share Reported Buildings (in %)	-21.48*** (7.98)	-9.90 (7.13)	-15.10* (8.90)	-0.04** (0.02)	-15.51** (7.58)	-20.95** (9.68)
Number of Observations	1,780	1,776	1,720	1,780	1,753	1,780
Adjusted R-squared	0.285	0.498	0.548	0.274	0.359	0.245
	Control. Pop. Dens. (7)	Control. Weather (8)	Control. Dikes (9)	Controls Insurance (10)	All Controls (11)	Without Outliers (12)
Share Reported Buildings (in %)	-20.80*** (8.04)	-28.00*** (7.13)	-21.05*** (7.99)	-12.53* (6.75)	-15.50** (6.53)	-20.37* (11.97)
Number of Observations	1,780	1,780	1,780	1,780	1,780	1,755
Adjusted R-squared	0.297	0.317	0.285	0.538	0.557	0.283
	Regional Cluster (13)	25 km ² Cluster (14)	100 km ² Cluster (15)	Spat. HAC 10 km (16)	Spat. HAC 20 km (17)	Spat. HAC 30 km (18)
Share Reported Buildings (in %)	-21.48*** (7.56)	-21.48* (11.59)	-21.48 (14.05)	-21.48 (14.50)	-21.48 (15.35)	-21.48** (9.62)
Number of Observations	1,780	1,780	1,780	1,781	1,781	1,781
Adjusted R-squared	0.285	0.285	0.285			

Notes: This table shows the results of various robustness checks. Flood damage is measured as percentage share of damaged buildings in a given neighborhood. Column (1) replicates our preferred specification from Column (5) of Table 2. All other estimates are based on this specification with 3 km buffer around the river and fixed effects for areas of interest and counties if not stated otherwise (heteroskedasticity-robust standard errors in parentheses). Specifications in Columns (2) and (3) include fixed effects for municipal associations and municipalities, respectively, instead of using county fixed effects. We regress the logarithm of average household income on our flood damage measures in Column (4) (while rescaling the share of damaged buildings to run from zero to one for better readability). We use 2010 income (in 2019 prices) as outcome in Column (5). We present estimates from regressions with population weights in Column (6). In Columns (7)–(11) we add control variables: Column (7) controls for population density, Column (8) for rainfall and temperature, Column (9) for dike infrastructure, Column (10) for average insurance rates. Column (11) uses all these control variables jointly. In Column (12), we exclude neighborhoods for which the CEMS reports more damaged buildings than the total number of buildings according to the RWI-GEO-GRID data. Column (13) replicates the baseline specification but allows for clustered standard errors at the level of counties-by-areas of interest. Column (14) and (15) calculate cluster-robust standard errors in 5 km×5 km and 10 km×10 km grid areas. Inference in Columns (16)–(18) is based on spatial heteroskedasticity and autocorrelation consistent standard errors (“spatial HAC”) using cutoff values of 5 km, 15 km, and 25 km, respectively. Significance levels: * $p < .1$, ** $p < .05$, *** $p < .01$.