Fairness and demand for redistribution

Fairness and redistribution

- The literature has shown that the belief that everyone has the right to fully enjoy the fruits of her work leads to a lower support for progressivity.
- The effect of this principle, however, can be mitigated by the belief that market competition generates unfair outcomes.
- **If the opinion prevails that one's position on the social ladder mostly depends on luck or unworthy activities such as free-riding and rent seeking, a society will demand a greater redistribution to correct income disparities that do not reflect differences in talent and effort** (Alesina and Angeletos, 2005; Alesina and La Ferrara, 2005; Bénabou and Tirole, 2006).

A study on fairness and redistribution

- Following Alesina and Angeletos (2005) we assume that **social injustice can cause disutility according to a subjective sensitivity to fairness**.
- The aversion to unfair market outcomes is associated to an **other-regarding preference for redistribution** that, along with the selfish motives, determines the optimal tax rate of individuals.
- By extending the model used in Alesina and Angeletos (2005), we illustrate how the desire to live in a fair society that rewards merit instead of dishonesty generates an unselfish demand for redistribution, leading the well off prefer to higher taxes and the poor to reject extreme progressivity.

A study on fairness and redistribution

- We then provide evidence of these behaviours based on micro data collected by the Bank of Italy in its Survey on Household Income and Wealth.
- Our empirical analysis shows that **an increase in the aversion to unfair allocations caused by free-riding is associated with opposing attitudes towards redistribution depending on income**:
  - **high income individuals, in fact, tend to demand more redistribution** despite knowing they will bear its cost without enjoying the benefits;
  - **those with low income tend to demand less redistribution** even if they would benefit from it without bearing its cost.

Model

- The individual income of agent *i* is given by:

$$y_i = A_i + \eta_i,$$

Set of individual features determining income, such as talent and effort

Zero-mean i.i.d. shock to the individual income. This can be interpreted as the outcome of unworthy activities such as corruption and free-riding

- Agents live for one period and consume their whole income. We assume that individual features and unworthy activities are uncorrelated.

Model

- The public sector implements a redistributive scheme where incomes are taxed at rate *t*.
- Tax revenues are redistributed evenly among agents. Accordingly, disposable income is given by:

$$c_i = (1 - t)y_i + G,$$

Model

- Individual preferences are given by

$$U_i = c_i - \omega_i \Omega,$$

The parameter ω_i can be interpreted as the individual aversion (or sensitivity) to 'unfairness'.

Measures the disutility caused by social allocations perceived as 'unfair'. A social allocation is unfair when it deviates from what agents should get based on their individual talent and effort, for example because it is the fruit of free-riding.

$$\Omega = (1-t)^2 \sigma_\eta + t^2 \sigma_A$$

where $\sigma_\eta \equiv Var(\eta)$ and $\sigma_A \equiv Var(A)$.

Model

- After some manipulations we find the individual desired tax rate that maximizes the agent's expected utility, i.e. in our model the tax rate is the only variable of choice of individuals.

$$E[U_i] = E(c_i) - \omega_i \Omega = (1-t)A_i + t\overline{y} - \omega_i \left((1-t)^2 \sigma_\eta + t^2 \sigma_A\right) .$$

- The problem therefore is to find **the "optimal" tax rate**, i.e. the tax rate that maximizes utility. Or, in other words, how much agents want to pay to fund redistribution – which is a reasonable proxy of their demand for redistribution.

Model

- The tax rate affects individual expected utility in two ways.
  - First, it determines the expected disposable income. Agents gain from a positive tax rate as long as their expected income is less than the mean income: this is the **‘selfish’ motive for desiring redistribution**.
  - Second, individuals who care about social outcomes may desire a positive tax rate to reduce the ‘unfairness’ of the market allocation. This is the **‘unselfish’ motive for redistribution**.
- Ω is an increasing function of σ_η, i.e. the **variance in the outcome of unworthy activities** such as free-riding.

Model

- There will always be a positive demand for redistribution arising from the aversion to unfair outcomes, as long as there is a possibility of free-riding ($\sigma_\eta > 0$).
- However, a selfish demand for redistribution is positive only for agents with below-average expected income ($A_i < \bar{y}$).
- Agents with an above average expected income will demand redistribution if the fairness motive is stronger than the selfish one.

Model

- It is possible to show that **an increase in the aversion to unfairness increases individual demand for redistribution if and only if**
  $A_i > \bar{y}$.
- **Relatively rich agents demand more redistribution the greater is their aversion to unfair allocations.**
- **In other words, The affluent have zero 'selfish' demand for redistribution, while their demand for fairness yields the desired tax rate *t*.**
- **Their overall desired tax rate t is a (weighted) average of the two effects.**

Model

- In contrast, **selfish demand for redistribution for relatively poor agents would require a 100% tax rate**.
- An increase in the aversion to unfairness increases the weight agents give to unfairness in the distribution in their utility function.
- 'Poor' agents gain from redistribution and high taxes.
- However, **a strengthening of the belief that people should get what they deserve (again an increase in ω_i), will lead the poor to restrain their quest for redistribution from the rich and demand a lower tax rate**.

The predictions of the model

1. The greater is the aversion to unfair allocations, the higher is the demand for redistribution by the **rich** (the taxpayers)
2. The greater is the aversion to unfair allocations, the lower is the demand for redistribution by the **poor** (the welfare recipients)

Data

- Data are taken from the 2004 wave of the Survey on Household Income and Wealth (SHIW), which is conducted every two years by the Bank of Italy.
- The sample includes approximately 8,000 households and is representative of the Italian population at the national and regional level.

Measuring support for redistribution

- The indicator of support for redistribution is built using the five points-scale with respondents asked to respond to the following statements
  - "The more someone earns, the more (in percentage) he/she should contribute to government spending" vs.
  - "The Government should levy higher taxes on income (personal and company) and lower taxes on consumption (VAT)".
- The point scale ranged from 1 ("Not at all") to 5 ("Very much").
- Our dependent variable is the arithmetic mean of the two scores. Higher values measure a stronger support for redistribution.

Measuring aversion to unfairness

- To measure individual sensitivity to unfair allocations, we use indicators of the aversion to free-riding, which Alesina and Angeletos (2005) consider one of the typical sources of unfairness in the distribution of income and wealth.
- As explained in Guiso et al. (2010), judgments on free-riding fully capture the individuals' sensitivity to fairness: "The common features across all these measure is that they are value judgments on activities that result in the appropriation of (possibly limited) private benefits at the expense of (possibly much larger) costs imposed on other members of society".

Measuring aversion to unfairness

- In our empirical analysis, we use responses to the following questions:
- “Which of the following situations do you think are always justifiable, never justifiable, or justifiable to some extent? Please give your answer on a scale from 1 to 10, 1 being ’never justifiable’ and 10 ’always justifiable’:
    1. Not paying for your ticket on public transport;
    2. Keeping money you obtained by accident when it would be possible to return it to the rightful owne (for example, if you found a wallet with the owner’s name and address, or if you were given too much change at the supermarket check-out);
    3. Not leaving your name for the owner of a car you accidentally scraped while parking.”

Measuring aversion to unfairness

- Given the wording of this questions, lower values capture a greater aversion to unfairness.
- Our indicator of the aversion to unfairness is the arithmetic mean of the (inverted) scores given by respondents to the three statements.

Empirical strategy

- The study of individual behaviours and beliefs in a section of survey data entails relevant endogeneity problems.
- Sensitivity to unfairness and an individual support for redistribution may both be driven by common latent features of individuals such as unobservable attitudes and abilities.
- However, it was not possible to find appropriate instruments in the survey data, nor to retrieve the conditions for a natural experiment to identify the effect of the aversion to unfairness on the individual demand for redistribution.

Empirical strategy

- To provide consistent estimates despite the endogeneity issues related to the study of individual preferences in a section of data, we use a procedure proposed by Wooldridge (2002) that copes with the absence of external identifying information by exploiting instruments derived from a nonlinear first-stage. Basically we:
  - Estimate the sensitivity to fairness with an ordered probit regression on the covariates.
  - Work out the fitted probabilities of the ordered probit model.
  - Estimate a linear TSLS of the preference for redistribution on sensitivity to fairness by using the fitted probabilities as instrumental variables.
- This strategy of identification is not as straightforward and transparent as a random natural experiment.

Table 2: Sensitivity to fairness and preferences for redistribution

	TSLS estimates		LIML estimates	
	Low income (< 75%)	High income (> 75%)	Low income (< 75%)	High income (> 75%)
Fairness	-0.213**	0.249**	-0.221**	0.252**
	(0.0898)	(0.125)	(0.0929)	(0.127)
Gender	0.00154	0.0320	0.00149	(0.0424)
	(0.0263)	(0.0423)	(0.0264)	0.00309
Age	0.00134	0.00309	0.00135	0.00309
	(0.00101)	(0.00196)	(0.00101)	(0.00196)
Income	0.00453*	-0.00197***	0.00470*	-0.00198***
	(2.59e-06)	(4.82e-07)	(2.65e-06)	(4.82e-07)
Employee	-0.0512	0.150**	-0.0526	0.150**
	(0.0397)	(0.0621)	(0.0401)	(0.0622)
Self-employed	-0.240***	-0.0774	-0.240***	-0.0772
	(0.0583)	(0.0749)	(0.0586)	(0.0750)
Unemployed	-0.0752	0.147	-0.0770	0.147
	(0.0639)	(0.146)	(0.0645)	(0.147)
Constant	5.457***	1.421	5.520***	1.393
	(0.777)	(1.201)	(0.804)	(1.223)
Observations	6,528	2,175	6,528	2,175
P(F)	0	0	0	0
P (Sargan-J)	0.350	0.690	0.353	0.691

Robust standard errors in parentheses.

*p < 0.1, **p < 0.05, p*** < 0,01. Income coefficient * 1000.

Additional controls: regional dummies, education, civil status.

Results

- **The association between sensitivity to fairness and preferences for redistribution has an economically relevant size that counterbalances the ’selfish’ effect of income**.
- In the baseline specification, a one-point strengthening of the sensitivity to fairness is associated with a 25 percentage points higher likelihood of supporting redistribution for the well off and with a 21 percentage points lower likelihood for the poor.
- A €10,000 increase in income is significantly associated with a 2 percentage points lower likelihood to support redistribution for relatively rich agents.
- **The size of the association between low income individuals’ sensitivity to fairness and their support for redistribution is bigger and comparable in size to the marginal effect of self-employment**.

Luck and demand for redistribution

Luck and redistribution

- The literature suggests that if a society believes that socioeconomic success only depends on merit, and that everyone should fully enjoy the fruits of her work, it will demand low redistribution.
- If, instead, the belief prevails that wealth is mostly determined by random “luck”, such as the fortune of being born in the right place into the right family, society will support higher redistribution thus levying heavier taxes.

Luck and redistribution

- Even if agents largely inherit their beliefs from ancestors (Guiso et al., 2006), individual perceptions about the competing roles of luck and merit also are the outcome of a life-long learning process.
- Piketty (1995), for example, theoretically shows that unfortunate events can support the belief that luck, instead of merit, plays a decisive role in income distribution, thereby raising aversion to inequality and consensus for redistributive policies.

Luck and redistribution

- To study the relationship between adverse shocks and preferences for redistribution, we exploit a natural experiment provided by one of the strongest seismic events that occurred in Italy in the last decades, the L'Aquila earthquake in 2009.
- A natural disaster can be seen as a manifestation of random "bad luck", i.e. the misfortune of living in the wrong place in the wrong time, which demonstrates how exogenous events can frustrate the outcomes achieved with merit.

Model

- The individual income of agent *i* is given by:

$$y_i = A_i + \eta_i,$$

Set of individual features determining income, such as talent and effort

Zero-mean i.i.d. shock to the individual income, with σ_η variance. This can be interpreted **luck**!

- Agents live for one period and consume their whole income. We assume that individual features and luck are uncorrelated.

Model

- The public sector implements a redistributive scheme where incomes are taxed at rate *t*.
- Tax revenues are redistributed evenly among agents. Accordingly, disposable income is given by:

$$c_i = (1-t)y_i + G,$$

$$G = t\overline{y}, \qquad \overline{y} = \int_0^1 y_i di.$$

Model

- Individual preferences are given by

$$U_i = c_i - \gamma\Omega,$$

The parameter Y_i can be interpreted as the aversion to social injustice.

Measures the disutility caused by social allocations perceived as 'unfair'. A social allocation is unfair when it deviates from what agents should get based on their individual talent and effort, for example because it is the fruit of free-riding.

$$\Omega = (1-t)^2\sigma_\eta + t^2\sigma_A$$

where $\sigma_\eta \equiv Var(\eta)$ and $\sigma_A \equiv Var(A)$.

Model

- We assume that:

$$\Omega = \int_0^1 (c_i - \hat{y}_i)^2 \, di.$$

- Given the definition of G, after some manipulations we find that:

$$\Omega = (1-t)^2 \sigma_\eta + t^2 \sigma_A,$$

Model

- The utility function of individuals is:

$$E[U_i] = E(c_i) - \gamma\Omega = (1-t)A_i + t\overline{y} - \gamma\left((1-t)^2\sigma_\eta + t^2\sigma_A\right).$$

- Which suggests that individuals demand redistribution for 2 reasons:
  - **Selfish motive**: agents gain from a positive tax rate as long as their expected income is lower than the mean income.
  - **Altruistic motive**: if individuals care about social outcomes they demand a positive tax rate to reduce the 'unfairness' of the market allocation

Model

- The **disutility connected to the unfairness** of redistribution is minimized by:

$$t_{\Omega} = \sigma_{\eta} / (\sigma_{\eta} + \sigma_{A})$$

i.e. **it:**

1) **grows when bad luck shocks the variance of the non-merit-related part of the distribution**
2) **falls with a higher variability of merit, as agents do not want to reduce income dispersion when it is due to merit.**

- The desired tax rate that maximizes the utility function is:

$$t_i^* = \frac{2\gamma\sigma_\eta + \overline{y} - A_i}{2\gamma(\sigma_\eta + \sigma_A)}.$$

- There is always a positive demand for redistribution due to the fairness motive.
- On the other hand, **selfish demand for redistribution is a negative linear function of expected income A_i, and it is positive only for agents with below-average expected income (A_i < y)**.
- **Agents with above-average expected income will demand a positive tax rate if their altruistic motive for redistribution is stronger than their (negative) selfish one**.

Model

- Now, assume that an adverse shock such as an earthquake affects agents' perception of the relevance that 'luck' plays in economic outcomes.
- If the exact distribution of η_i, and in particular its variance, is unknown to the agents, it is reasonable to represent the effect of the shock as an increase in σ_η.

Model's prediction

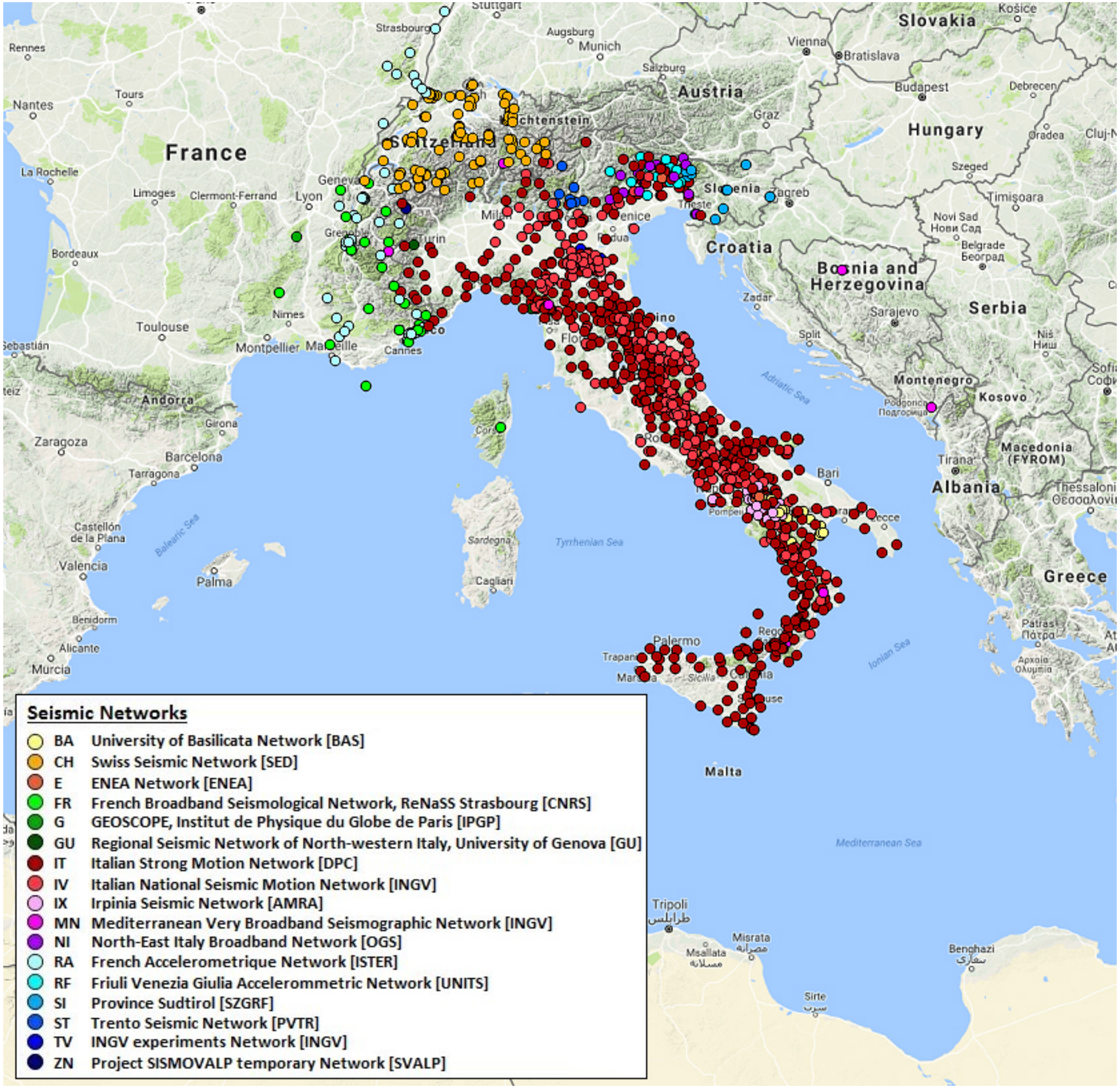
- In our empirical investigation, we assess **how the average support for redistribution, corresponding to the average tax rate, is affected by an adverse eogenous shock (i.e. bad luck).**
- **It is possible to show that the model's prediction is that the response is unambiguously positive**:

$$\frac{d}{d\sigma_\eta}\bar{t}^* = \frac{d\int_0^1 t_i^* di}{d\sigma_\eta} = \frac{\sigma_A}{(\sigma_\eta + \sigma_A)^2} > 0.$$

Empirical test:
Lessons from an earthquake

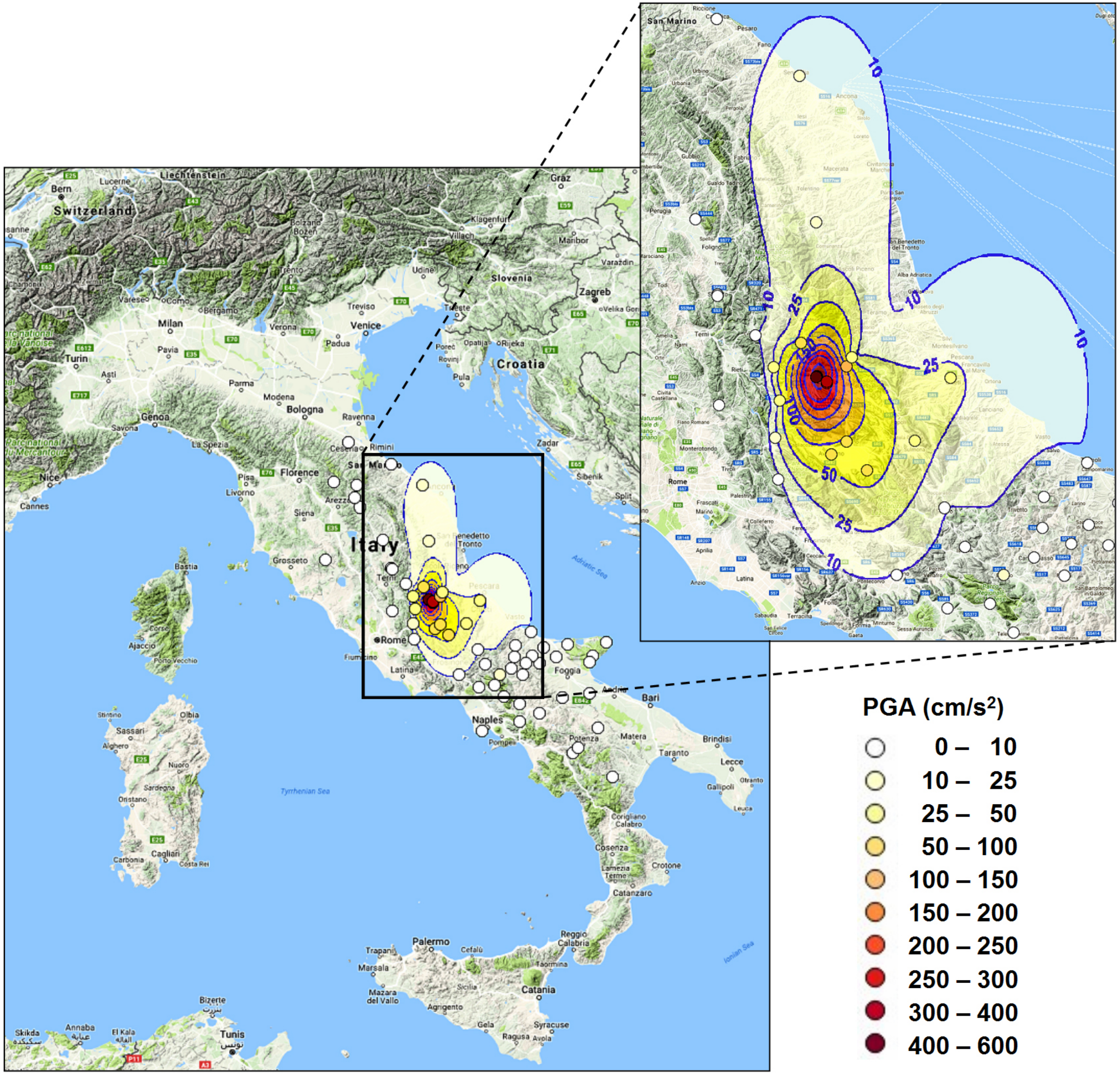
- 6 April 2009, L'Aquila: the strongest earthquake occurred in Italy in the last 30 years.
- 309 people died

- Data on the L’Aquila earthquake are drawn from the Italian strong motion database ITACA (ITalian Accelero-metric Archive).



PGA (Peak Ground Acceleration)

- PGA is the largest peak acceleration recorded at a site during a seismic event. Unlike the Richter and moment magnitude scales, it is not a measure of the total energy of the earthquake, but rather of **how hard the earth shakes on the surface at a given geographic point**. **It thus provides an objective indicator of the intensity with which the shakes are perceived by residents**.
- To trace the spatial variability of the ground motion in the epicentral area, we spatially interpolated the PGA values recorded by each station.
- Data interpolation was performed using the Kriging algorithm (Davis and Sampson, 1986), which predicts unknown values using variograms to express the spatial variation and minimizes the error of predicted values.


PGA (cm/s²)
0 – 10
10 – 25
25 – 50
50 – 100
100 – 150
150 – 200
200 – 250
250 – 300
300 – 400
400 – 600

Itanes survey data

- Italian National Election Studies (Itanes), an inter-university consortium promoting research on voting behavior in Italy.
- In this analysis we employ the “2011-2013 Interelectoral panel study” released in 2014. Even if the study provides longitudinal data covering the 2011-13 period, questions concerning the tax system were only asked in the first wave, making it impossible to exploit the panel dimension of the data for studying support for redistribution.

Itanes survey data

- As for our dependent variable, individual preferences about redistribution are measured by recoding responses to the question:

  “Tell me to what extent do you agree with the statement: “For a society to be fair, the government should reduce differences in the socio-economic conditions of people”

  possible responses being “Strongly agree”, “Agree”, “Not agree nor disagree”, “Disagree” and “Strongly disagree”. “Strongly agree” and “Agree”.
- Responses were coded as 1 to obtain a dummy variable capturing support for redistribution.

Empirical strategy

- OLS estimation
- Controls and fixed effects
- Check excluding the epicentral area from the sample
- Placebo tests

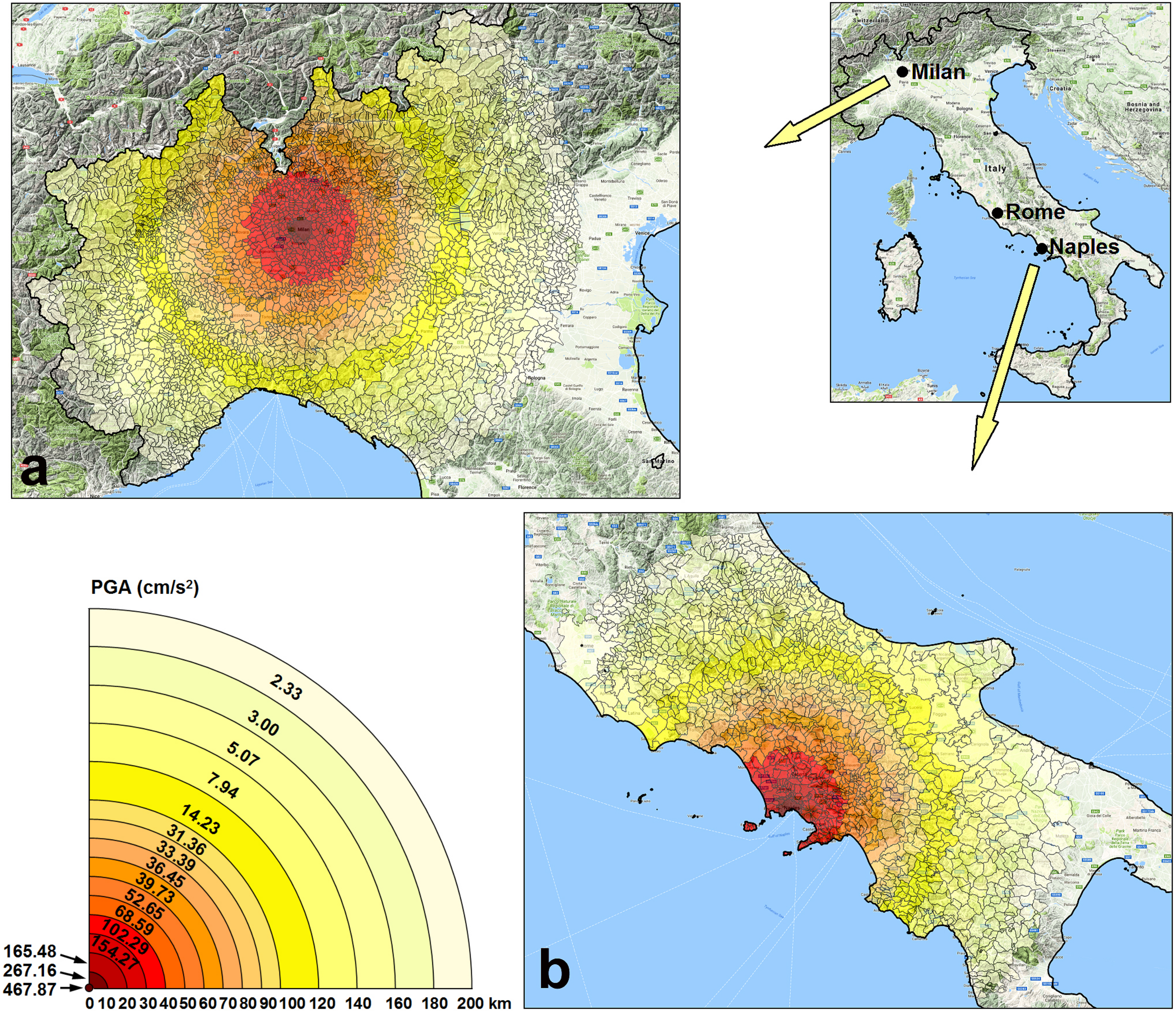
Table 3: L'Aquila earthquake and support for redistribution

	(1)	(2)	(3)	(4)	(5)	(6)
L'Aquila PGA	0.286***	0.212***	0.162***	0.190***	0.212***	0.211***
	(0.014)	(0.033)	(0.045)	(0.039)	(0.033)	(0.033)
Age	0.009	0.019	0.014	0.048	0.014	0.023
	(0.050)	(0.051)	(0.070)	(0.057)	(0.053)	(0.054)
Male	0.023	0.025	0.007	0.027	0.026	0.027
	(0.038)	(0.038)	(0.047)	(0.043)	(0.038)	(0.038)
Education	0.028	0.027	0.026	0.027	0.026	0.026
	(0.023)	(0.025)	(0.031)	(0.028)	(0.024)	(0.024)
Father's education		0.021	0.010	0.023	0.020	0.020
		(0.018)	(0.026)	(0.024)	(0.018)	(0.018)
Country econ. situation		-0.021	-0.019	-0.029	-0.020	-0.021
		(0.028)	(0.032)	(0.030)	(0.028)	(0.028)
Household econ. welfare		-.061**	-.069*	-.072*	-.062**	-.061**
		(0.027)	(0.040)	(0.038)	(0.027)	(0.027)
Right wing			-.017*			
			(0.009)			
Religion				-0.082		
				(0.056)		
TV news consumption					0.031	
					(0.046)	
Internet consumption						0.014
						(0.046)
Constant	0.385*	0.557**	0.746**	0.570*	0.551**	0.544**
	(0.216)	(0.246)	(0.349)	(0.295)	(0.247)	(0.252)
Observations	2,247	2,220	1,627	1,875	2,220	2,220
R-squared	0.597	0.606	0.684	0.649	0.607	0.606

Robust standard errors in parentheses; *, **, *** significant at 10%, 5% and 1% level respectively.

Counterfactual

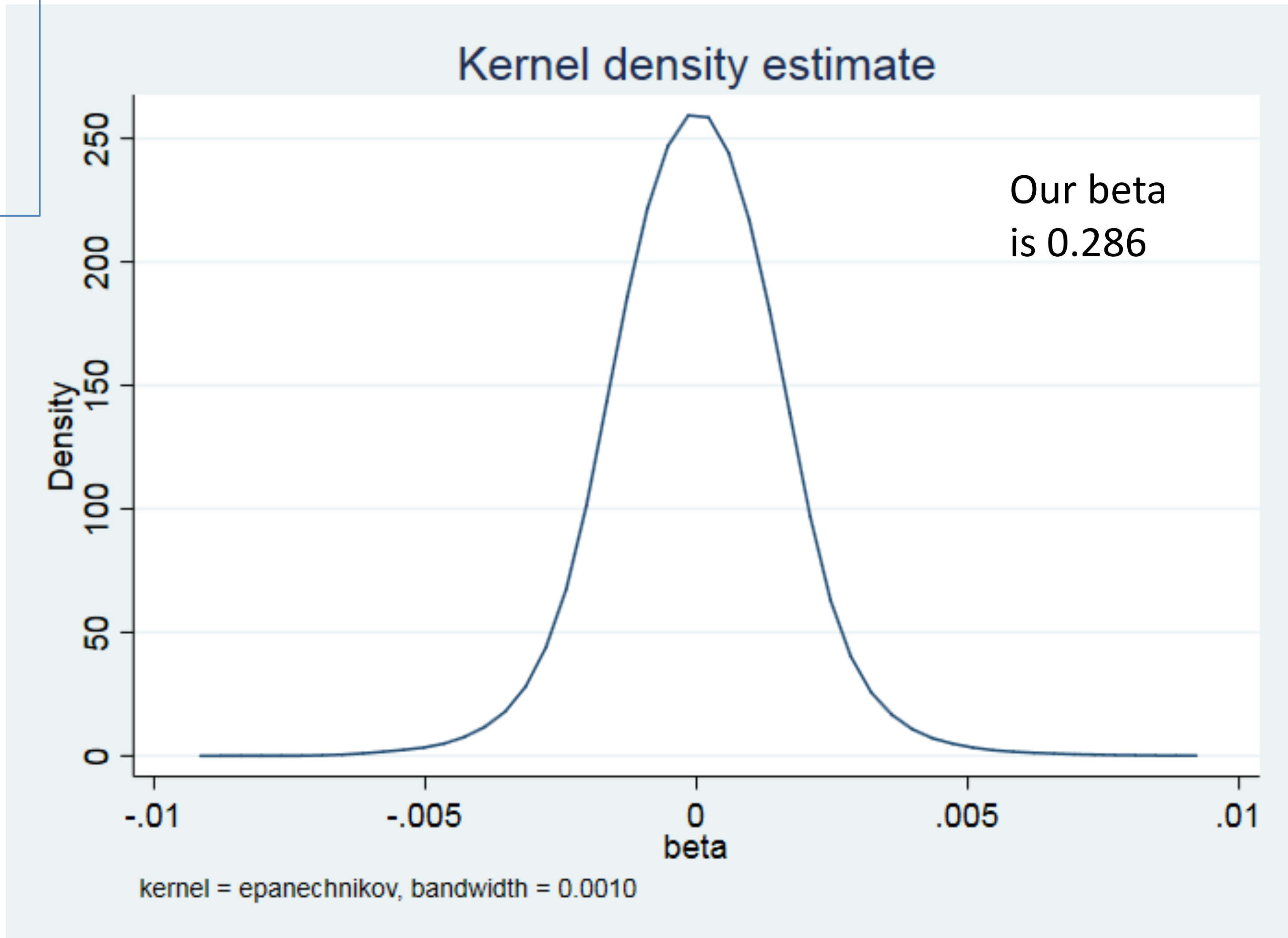
- We generate a series of placebo earthquakes with the same maximum intensity of the L’Aquila event but having their epicentre in the centroid of any of the 5,921 municipalities falling outside the actual epicentral area, i.e. those municipalities in which the strong motion network registered a null PGA during the earthquake.
- For each placebo event, we reconstruct a propagation pattern by calculating the PGA of the shakes striking each municipality laying in the counterfeit epicentral area based on the relationship between the distance from the epicentre and the ground acceleration observed in the L’Aquila event.


Milan
Rome
Naples
Italy
a
b
PGA (cm/s2)
2.33
3.00
5.07
7.94
14.23
31.36
33.39
36.45
39.73
52.65
68.59
102.29
154.27
165.48
267.16
467.87
0 10 20 30 40 50 60 70 80 90 100 120 140 160 180 200 km

Counterfactual

- We then randomly assign the epicentre of the placebo shake to the municipalities not hit by the L'Aquila event, and repeat this procedure 20,000 times.
- The purpose of the tests is to check how many times the randomly generated placebo estimates happen to be too close to our true estimate.
- If in our main results we were erroneously rejecting the null hypothesis that our coefficient of interest is equal to 0 (i.e., we were attributing to earthquakes an effect that does not exist in reality), we should observe placebo coefficients close to our true estimate.

The estimates generated in the placebo1 test are almost always to the left (meaning smaller in value than) the true estimated coefficient, equal to 0.286.



Our beta is 0.286

Thank you