

The Most Vulnerable Suffer Most: How Fear of Unemployment Exacerbates the Mental Health Gradient

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The Negative (Average) Impact of Job Insecurity on Mental Health

- **Reicher & Tauchmann (2017):** In Germany, extreme fear of job loss due to staff reduction reduces mental health (MCS) by 0.35 SD
 - **Cottini & Ghinetti (2018):** In Denmark, job insecurity reduces mental health (MHI-5) by 0.41 SD and increases by about 6 pp the probability to develop severe mental health problems
 - **Ahammer et al (2025):** In Austria, surviving a mass layoff increases retained workers' total healthcare expenditures by 10.8% and sick days by 18% within six quarters
- **Average effects might hide the severe psychological burden placed on workers with the lowest mental health reserves**

How does the causal impact of job insecurity on mental health vary across the distribution of mental health?

- **Diathesis-Stress Model** (Zuckerman, 1999): Responses to environmental stressors depends on the interaction between inborn genetic factors and acquired life experiences
- **Cumulative Risk Model** (Evans, 2003): The impact of a new stressor is determined by the total number of co-occurring risk factors

Hypothesis: the effect of job insecurity is stronger for those with an already deteriorated mental health condition, while it is weaker for those in the best mental health state

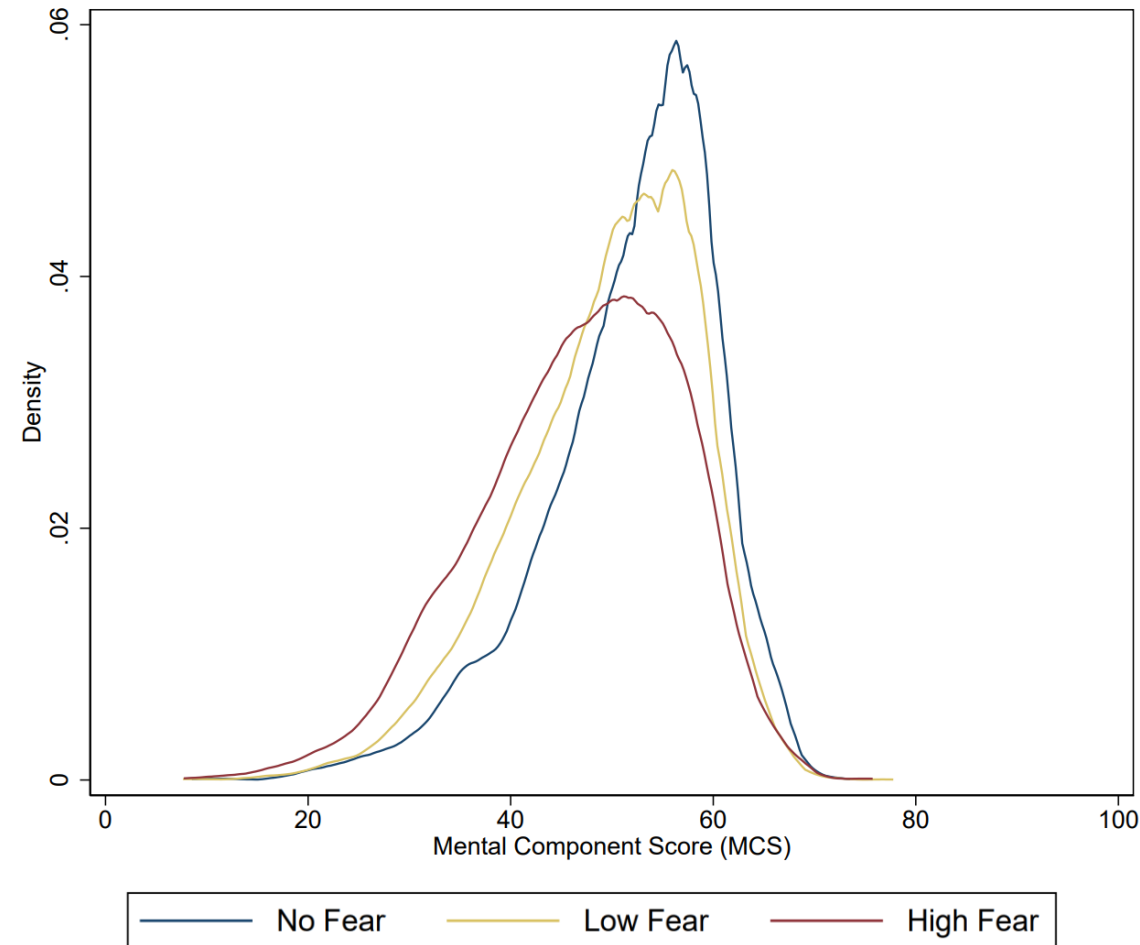
- German Socio-Economic Panel (SOEP)
- Longitudinal data (2002–2012, biennial waves, 2006 excluded)
- Private-sector employees, ages 18–65
- Unbalanced Panel of 23,736 person-year observations, from 7,778 individuals

Key Variables:

Dependent Variable → Mental Component Score (MCS): Mean = 50, SD = 10

Variable of Interest → Subjective Job Insecurity: (0 = No concern; 1 = Low/High concern)

Mental Health by Job Insecurity Level



Cohorts 2002/4/8/10/12. Private sector employees, ages 18–65.
Mean MCS: No Fear = 51.9, Low Fear = 49.6, Extreme Fear = 46.8

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Endogeneity:

- **Reverse Causality:** Negative shocks to mental health may increase subjective job insecurity
- **Selection Bias:** Individuals with poor mental health may systematically sort into unstable employment sectors
- **Omitted Variable Bias:** Unobserved personal or firm-level shocks may simultaneously influence both fear and mental health

Instrumental Variable:

Firm-level staff reduction within the past 12 months
(0 = No reduction; 1 = Reduction in past 12 months)

- Firm-level "shocks" are exogenous to the individual's idiosyncratic mental health trends
- Staff cuts serve as a strong objective signal that increases individual fear of job loss
- No evidence (in our data) they affect mental health through other channels (e.g., increased work load)
- Panel Data → Within-person changes to eliminate baseline differences (*no sorting issue*)

Baseline IVFE Specification

First Stage:

$$AnyFear_{it} = \pi StaffReduction_{it} + X'_{it}\gamma + \alpha_i + \delta_t + v_{it}$$

Second Stage:

$$MCS_{it} = \beta \widehat{AnyFear}_{it} + X'_{it}\theta + \eta_i + \lambda_t + v_{it}$$

- X'_{it} is a vector of time-varying controls including individual, household, & job characteristics
- α_i, η_i individual FE
- δ_t, λ_t year FE

Quantile Regression for Panel Data with Non-Additive FE (D. Powell, 2022)

Structural equation:

$$MCS_{it} = D'_{it}\beta(U_{it}^*)$$

- D'_{it} is the vector of regressors
- U_{it}^* is a scalar non-separable disturbance term, normalized to $U_{it}^* \sim U(0,1)$ defined as $U_{it}^* = f(\alpha_i, \varepsilon_{it})$
- α_i is the time-invariant unobserved heterogeneity, and ε_{it} represents idiosyncratic shocks

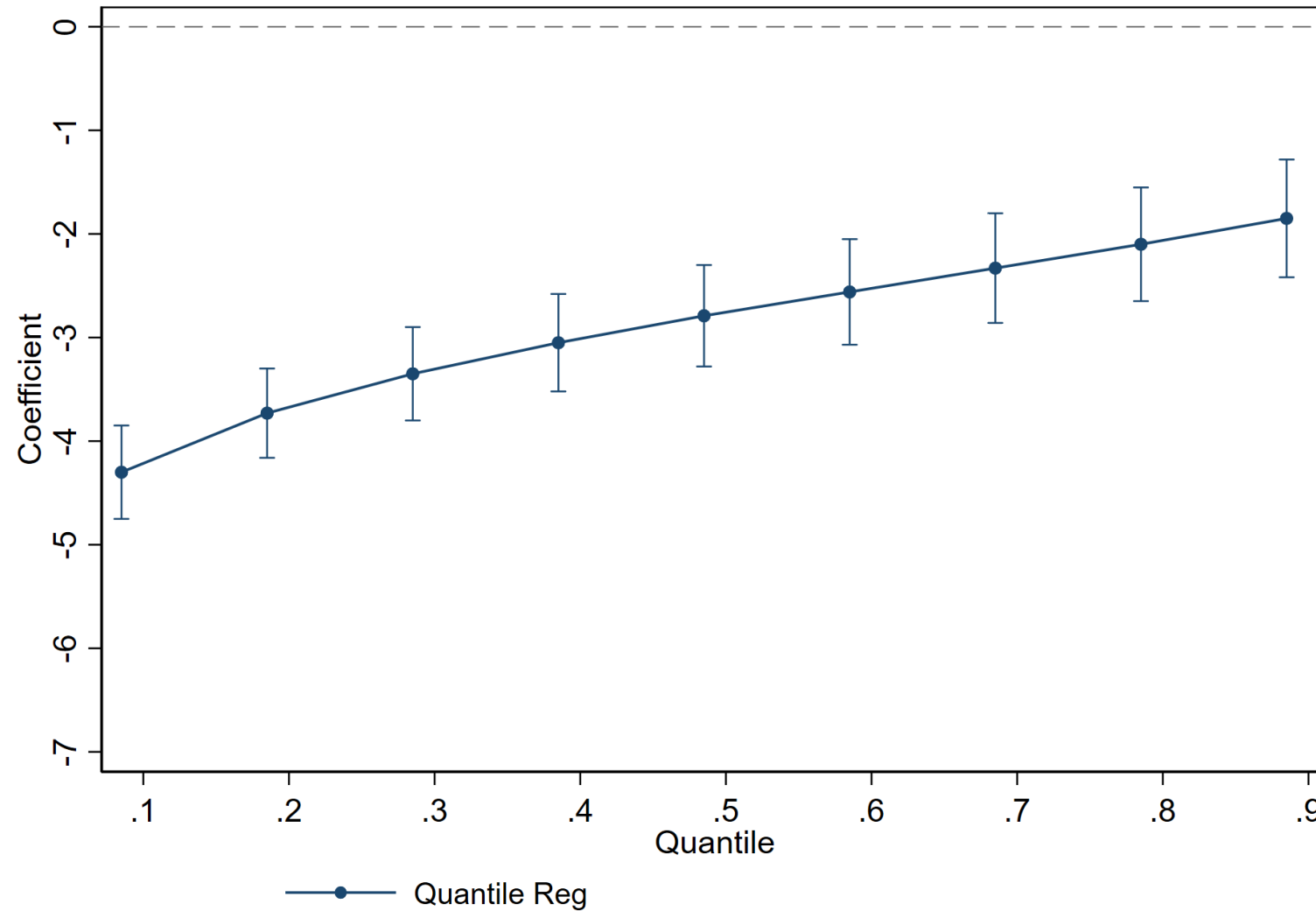
→ **The marginal effect $\beta(U_{it}^*)$ varies according to the individual's position in the distribution of their unobserved characteristics**

Mean Regressions and Instrument Relevance

	OLS	FE	IV	IVFE
Job Insecurity	-2.93*** (0.12)	-1.23*** (0.16)	-6.65*** (0.78)	-4.32*** (1.58)
R^2 (within for FE)	0.042	0.009	-	-
Joint significance (p-value)	0.000	0.000	0.000	0.000
F-statistic on instrument	-	-	664.5	139.8
Individual FE	No	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes
State FE	Yes	No	Yes	No
N	23,736	23,736	23,736	23,736

Robust Standard Errors clustered at individual level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

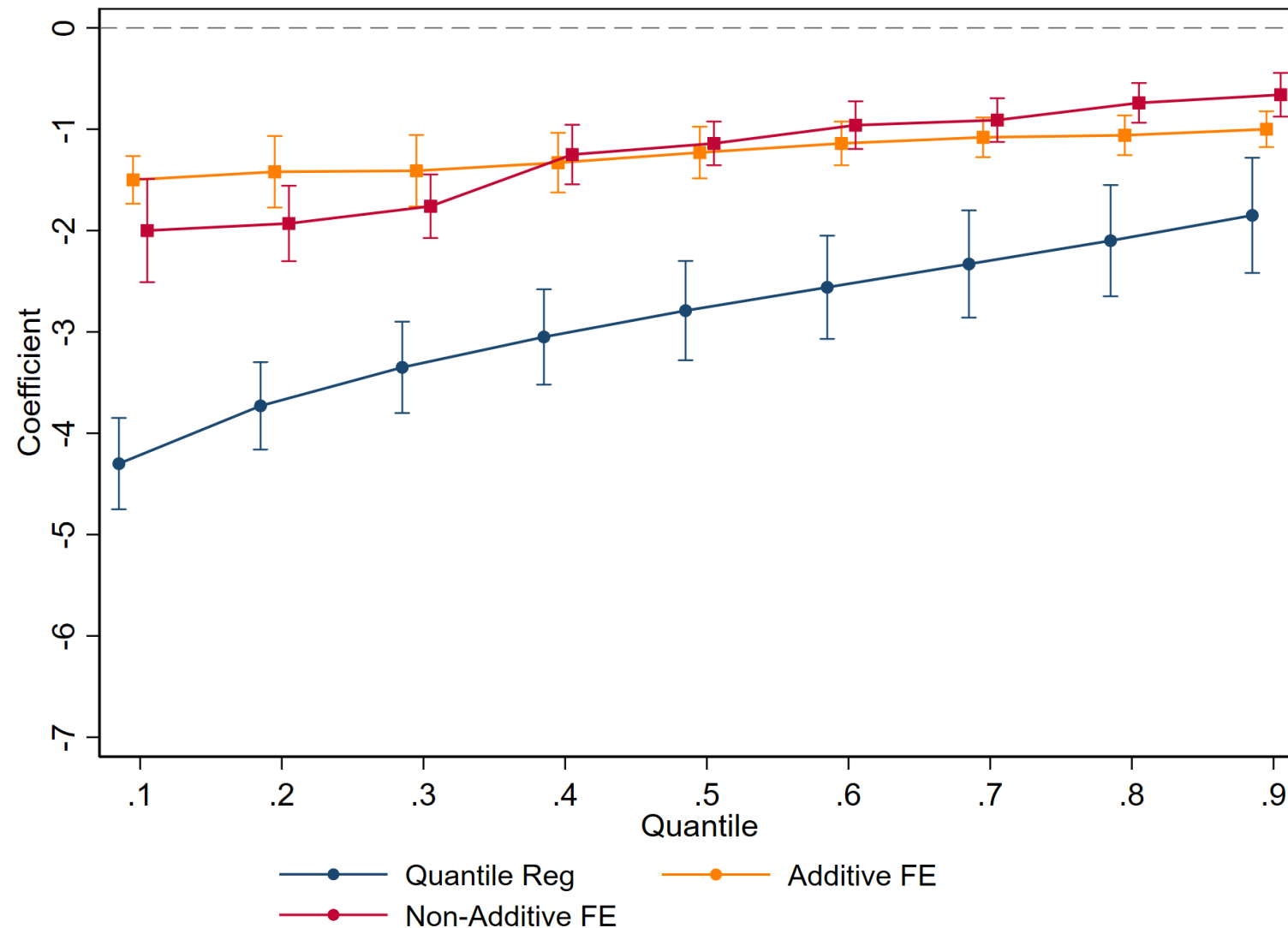
Baseline Quantile Regression



Estimated QTEs of job insecurity on mental health (MCS). Quantile Reg utilizes MMQR (Machado & Silva, 2019).

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Additive Fixed Effects vs. Non-Additive Fixed Effects

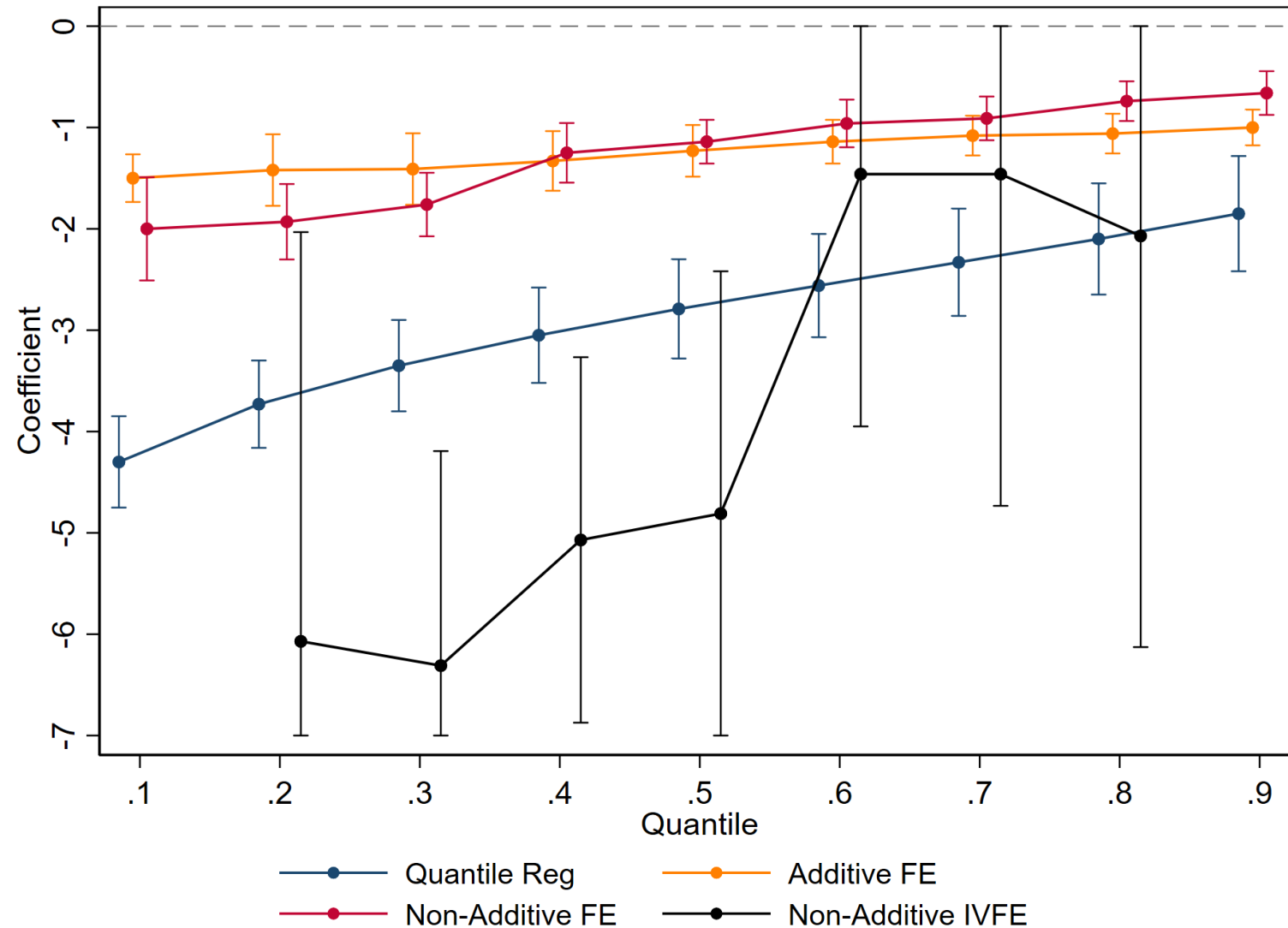


Estimated QTEs of job insecurity on mental health (MCS). Quantile Reg and Additive FE utilize MMQR (Machado & Silva, 2019).

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Non-Additive IVFE

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Estimated QTEs of job insecurity on mental health (MCS). Quantile Reg and Additive FE utilize MMQR (Machado & Silva, 2019). Non-Additive FE and IVFE utilize QRPD (Powell, 2022). 95% CIs, truncated at [-7, 0].

- Additive Fixed Effects in Quantile Regressions: Imposing an additive structure mechanically flattens the distribution and masks heterogeneous effects
- Average-based models fail to capture the concentrated burden of job insecurity on the most vulnerable
- The psychological burden of job insecurity is highly concentrated, imposing a severe penalty (~6 MCS points) on the most vulnerable while leaving resilient workers largely unaffected
- Broad financial safety nets are insufficient on their own; firms and policymakers must implement targeted mental health interventions for employees with low psychological reserves

Thank you for your attention!

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Appendix

QRPD Moment Condition

Quantile Regression for Panel Data with Non-Additive FE (D. Powell, 2022)

Structural equation:

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- D'_{it} is the vector of regressors
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→ **The marginal effect $\beta(U_{it}^*)$ varies according to the individual's position in the distribution of their unobserved characteristics**

Moment Condition:

$$E \left[\frac{1}{T} \sum_{t=1}^T (Z_{it} - \bar{Z}_i) \cdot \mathbb{1}(MCS_{it} \leq D'_{it}\beta(\tau)) \right] = 0$$

- $\bar{Z}_i = \frac{1}{T} \sum_{t=1}^T Z_{it}$ is the individual's average exposure to the instrument Z

- Threshold Sensitivity: Isolating high fear amplifies lower-quantile penalties (peaks at -8.47 at the 20th)
- Sector Placebo: Including public employees attenuates the average effect and flattens the lower-tail gradient
- Pre-trend Analysis: Lagged mental health (MCS_{t-2}) shows insignificant QTEs, ruling out anticipatory trends
- Physical Health: Negative impact restricted to the 30th to 50th quantiles
- Physical Health in $t+2$: Delayed impacts are entirely absent

Descriptive statistics for estimation sample

	Mean	S.D.	Min	Max
Mental Component Score (MCS)	50.15	9.12	7.65	77.77
Low Job Insecurity	0.43	0.50	0	1
High Job Insecurity	0.14	0.35	0	1
Staff Reduction	0.27	0.45	0	1
Age (years)	43.94	9.75	19	65
Male	0.55	0.50	0	1
Migrant	0.10	0.31	0	1
Years of education	12.47	2.49	7	18
Married	0.67	0.47	0	1
Living with partner	0.12	0.32	0	1
Household size	2.86	1.22	1	14
Number of kids under 18	0.64	0.92	0	9
Tenure (years)	12.12	9.56	0	48.92
Mini- or Midi-job	0.06	0.24	0	1
Temporary work contract	0.04	0.20	0	1
Side job	0.03	0.18	0	1
Firm size:				
5–199 employees	0.47	0.50	0	1
200 or more employees	0.45	0.50	0	1
Lagged Gross HH labor income (in €1000, per month)	4.78	3.15	0	54.72
Year 2002	0.18	0.38	0	1
Year 2004	0.20	0.40	0	1
Year 2008	0.24	0.42	0	1
Year 2010	0.21	0.41	0	1
Year 2012	0.17	0.38	0	1

The estimation sample consists of 23,736 observations from 7,778 unique individuals. The analysis is restricted to private-sector employees aged 18 to 65 who appear in at least two of the following survey waves: 2002, 2004, 2008, 2010, and 2012.

SOEP Survey Question on Subjective Job Insecurity

127. How concerned are you about the following issues?

Very
concerned

Somewhat
concerned

Not
concerned
at all

The economy in general	☐	☐	☐
Your own economic situation	☐	☐	☐
The stability of the financial markets	☐	☐	☐
Your health	☐	☐	☐
Environmental protection	☐	☐	☐
The impacts of climate change	☐	☐	☐
Maintaining peace	☐	☐	☐
Global terrorism	☐	☐	☐
Crime in Germany	☐	☐	☐
Immigration to Germany	☐	☐	☐
Hostility towards foreigners or minorities in Germany	☐	☐	☐
Stability of the euro	☐	☐	☐
<i>If you are employed:</i>			
Your job security	☐	☐	☐

Or what else are you concerned about?

Please
state:

SOEP Survey Question on Firm-Level Staff Reductions

**36. How was it in the previous twelve months in the company where you currently work:
Has the number of employees increased, decreased, or remained the same?**

Increased..... ☐

Decreased ☐

No change ☐

Don't know ☐