Scottish Journal of Political Economy

SCOTTISH ECONOMIC SOCIETY

ORIGINAL ARTICLE OPEN ACCESS

From Past to Present: How Recessions Shape Job Loss Perceptions in Europe

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Received: 4 March 2025 | **Revised:** 12 September 2025 | **Accepted:** 12 December 2025

Keywords: formative years | job loss | recessions

ABSTRACT

Past recessions can leave enduring marks on how individuals perceive labor market risks. Drawing on survey data from 29 European countries, this article shows that recessions experienced between ages 18 and 33 heighten perceptions of job loss risk well into adulthood. The persistence of these scars depends on context: education mitigates them, technological change amplifies them, and stronger labor market protections weaken them. The findings suggest that early macroeconomic experiences shape not only economic outcomes but also persistent attitudes toward job security, with implications for resilience and policy design.

JEL Classification: D84, E32, J63

1 | Introduction

Job security remains one of the most salient concerns in modern labor markets. Across Europe, survey evidence consistently reveals that a non-negligible share of employees fear losing their jobs, even during periods of relative economic stability. Such perceptions are not trivial: they influence individual well-being, productivity, and household decision-making, while at the macroeconomic level, they shape consumption, savings, and political preferences. The notion that *fear of job loss can be as consequential as job loss itself* has long been established in the literature, with early contributions showing its effects on stress, health, and job satisfaction (Greenhalgh and Rosenblatt 1984; Sverke et al. 2002). In economies characterized by recurrent crises, technological disruptions, and globalization-induced shocks, understanding the determinants of job insecurity perceptions has thus become increasingly important for both economists and policymakers.

The global financial crisis of 2008 and the subsequent European debt crisis made evident how vulnerable perceptions of job security are to adverse macroeconomic events. Beyond the measurable increases in unemployment, these episodes heightened workers' sense of precarity, with persistent effects on labor market participation and trust in institutions (Blanchard and Wolfers 2000; Burchell 2011). Yet, while much attention has been paid to the contemporaneous effects of crises, an equally pressing but less explored question concerns the role of *past experiences*. Specifically, do recessions encountered in early adulthood leave enduring scars that continue to shape workers' fears decades later?

A growing body of research suggests that the answer is yes. The economics of formative experiences has demonstrated that exposure to macroeconomic downturns during young adulthood can alter preferences, beliefs, and risk attitudes in lasting ways. Malmendier and Nagel (2011) show that individuals who lived through the Great Depression became more financially risk-averse, while Giuliano and Spilimbergo (2023) illustrate how recessions in formative years shift political attitudes toward redistribution. These findings lend empirical support to the "impressionable years hypothesis" (Krosnick and Alwin 1989), according to which attitudes crystallize between late adolescence and early adulthood and remain stable thereafter. In this

perspective, recessions are not merely transitory shocks to employment but formative experiences that embed lasting perceptions of economic vulnerability.

Despite these insights, the specific link between formative exposure to recessions and perceptions of job loss later in life remains underexplored. Most of the literature on job insecurity emphasizes contemporaneous labor market conditions (Schmieder and von Wachter 2016) or structural shocks such as automation and globalization (Autor et al. 2016). Yet, anecdotal evidence suggests that the "memory" of past recessions often lingers, influencing how workers interpret present risks. For instance, older cohorts in Southern Europe who experienced severe downturns in the 1980s and 1990s often display heightened sensitivity to labor market turbulence today. If true more broadly, such recession-induced scars may help explain why individuals facing the same objective conditions express differing levels of job insecurity.

This article investigates whether recessions encountered during the formative years of ages 18 to 33 have a persistent influence on perceptions of job loss in adulthood. Using individual-level data from the Second European Skills and Jobs Survey (ESJS2) across 29 European countries, combined with long-run macroeconomic series on GDP per capita growth, we construct a measure of cumulative exposure to recessions during early adulthood. We then examine how this measure relates to employees' current perceptions of the probability of losing their main job. Our empirical framework allows us to isolate the enduring effect of past macroeconomic shocks from contemporaneous labor market conditions.

Our results provide novel evidence that recession exposure in formative years leaves a lasting imprint on workers' perceptions of job security. Each additional year of exposure to a recession during the ages 18–33 increases the probability of perceiving job loss risk later in life. Importantly, we also uncover meaningful heterogeneity: higher levels of education mitigate the persistence of these scars, technological change amplifies them, and stronger employment protection legislation attenuates them. These findings not only document the existence of "recession scars" but also identify the conditions under which they are more or less likely to endure.

By bridging the literature on job insecurity with that on formative economic experiences, our contribution is twofold. First, we demonstrate that perceptions of job insecurity are not solely determined by current labor market conditions but are also shaped by the historical macroeconomic environment encountered in early adulthood. Second, we highlight mechanisms through which the persistence of such perceptions is conditioned, pointing to education, institutions, and technology as critical mediators. In doing so, we provide new insights into how collective memories of crises shape labor market attitudes, with implications for understanding both individual behavior and aggregate economic resilience.

The remainder of this article proceeds as follows: Section 2 reviews the related literature on job insecurity, macroeconomic shocks, and formative experiences. Section 3 presents the data and econometric framework. Section 4 presents the main results, explores heterogeneity and mechanisms, and examines robustness. Section 5 concludes with implications for policy and research.

2 | Related Literature

A substantial body of research underscores the importance of job loss and its perception in shaping labor market outcomes. Early studies such as Greenhalgh and Rosenblatt (1984) established job insecurity as a distinct and consequential construct, influencing worker behavior and well-being beyond the incidence of actual displacement. Subsequent work has documented the persistent economic costs of involuntary job loss, including earnings penalties and career scarring (Jacobson et al. 1993; Davis and von Wachter 2011), as well as broader psychological and social consequences (Brand 2015). Even perceptions of insecurity, in the absence of actual separation, have been shown to reduce job satisfaction, increase turnover intentions, and adversely affect health outcomes (Cheng and Chan 2008; Sverke et al. 2002). These findings highlight that job insecurity is not only an economic phenomenon but also a powerful subjective experience with wide-ranging implications.

Parallel to this literature, macroeconomic research has examined how recessions and adverse economic conditions influence employment outcomes. Blanchard and Wolfers (2000) demonstrate the role of shocks and institutional settings in shaping unemployment dynamics across Europe, while Leduc and Liu (2016) show that uncertainty shocks transmit to labor demand via reduced investment and hiring. Autor et al. (2016) further illustrate how large structural shocks, such as trade exposure, generate profound labor-market disruptions. Yet, most of this work has concentrated on contemporaneous or recent shocks, with comparatively little attention devoted to how past macroeconomic experiences persistently shape labor market perceptions.

The notion that early life experiences leave enduring imprints is well established in economics. Giuliano and Spilimbergo (2023) argue that exposure to recessions during formative years shapes political preferences toward redistribution, while Malmendier and Nagel (2011) show that cohorts who experienced recessions become more risk-averse in financial decision-making. More broadly, the "impressionable years hypothesis" posits that attitudes formed in early adulthood are especially durable (Krosnick and Alwin 1989; Denton and Voth 2017). Recent contributions have extended this line of reasoning to macroeconomic and political domains, illustrating how collective memories of shocks persist and influence behavior decades later (Alesina and Fuchs-Schündeln 2007; Carreri and Teso 2023; Gavresi and Litina 2023, 2025). This literature suggests that macroeconomic turbulence during formative years can have far-reaching consequences beyond immediate labor-market effects.

Despite these advances, the intersection between job insecurity and formative exposure to recessions remains underexplored. While there is evidence that current downturns elevate perceptions of insecurity (Schmieder and von Wachter 2016; Burchell 2011), the possibility that such perceptions are also shaped by distant economic experiences has received little

systematic empirical scrutiny. Understanding this relationship is crucial, given that perceptions of insecurity can themselves act as a channel through which historical shocks continue to affect labor markets by altering worker behavior, bargaining outcomes, and political preferences. Moreover, heterogeneity in the persistence of such "recession scars"—for instance, by educational attainment, technological change, or institutional protection—remains a largely open question.

Our study contributes to this literature by explicitly linking past exposure to recessions during formative years with current perceptions of job loss across Europe. In doing so, we integrate insights from the job insecurity literature with those from the economics of collective memory and formative experiences. This approach allows us to highlight not only the direct effect of past shocks on perceptions but also how these effects interact with education, technological change, and labor market institutions. In this way, our work sheds light on the long-term imprint of macroeconomic turbulence on workers' sense of security, thereby connecting individual perceptions with broader debates on labor market resilience and the enduring consequences of economic crises.

3 | Data and Econometric Model

We investigate whether economic shocks experienced during early adulthood influence individuals' perceptions of job loss later in life. The formative period spanning ages 18–33 is critical, as it is during this phase that foundational attitudes, beliefs, and values become firmly established (Denton and Voth 2017). Moreover, this age range typically coincides with the completion of education, entry into the labor market, and the acquisition of skills that shape career trajectories. Consequently, adverse macroeconomic shocks encountered during these years may leave lasting impressions, influencing how individuals evaluate risks even decades later.

This study employs data from the Second European Skills and Jobs Survey (ESJS2), a cross-sectional survey conducted in 2021 that provides comprehensive information on job and skill characteristics among employees aged 25–64 years across 29 European countries. The ESJS2 encompasses an extensive array of variables, including demographic factors (age, sex, urbanization of residence), numerous job-related attributes, and subjective measures of attitudes and perceptions toward various aspects of work. Given the inherent vulnerability to job insecurity among employees with temporary contracts, our analysis is confined to individuals employed under open-ended or indefinite contracts. To ensure that respondents' formative economic experiences are tied to the country in which they were surveyed, we further restrict the sample to non-migrant individuals, retaining only those whose nationality and spoken language align with the survey country.

Our outcome variable is a binary indicator derived from the question, "Do you think there is any chance at all of you losing your main job in the next twelve months?" It takes a value of 1 if the respondent answers "Yes" and 0 if the respondent answers "No," thereby capturing the perceived probability of job loss among employees.

TABLE 1 | Exposure to recessions during formative years (ages 18–33), by country.

Country	Mean	Std dev.	Min	Max
Austria	0.650	0.677	0	2
Belgium	0.625	0.688	0	2
Bulgaria	2.892	1.747	1	6
Croatia	2.330	0.743	0	3
Cyprus	2.698	1.975	0	5
Czech Republic	1.064	0.442	0	2
Denmark	0.617	0.687	0	2
Estonia	2.055	0.930	0	3
Finland	1.891	0.662	0	3
France	0.700	0.691	0	2
Germany	0.596	0.690	0	2
Greece	2.804	1.443	1	5
Hungary	1.708	0.909	0	3
Iceland	1.695	0.717	0	3
Ireland	0.951	0.964	0	2
Italy	1.377	1.538	0	4
Latvia	2.784	0.808	0	4
Lithuania	2.030	1.535	0	4
Luxembourg	1.133	1.080	0	3
Malta	1.345	0.564	0	2
Netherlands	0.550	0.679	0	2
Norway	0.583	0.669	0	2
Poland	0.566	0.496	0	1
Portugal	1.687	0.678	1	3
Romania	2.359	0.719	0	3
Slovakia	1.404	0.563	0	2
Slovenia	1.908	0.641	0	3
Spain	1.184	1.093	0	3
Sweden	1.152	0.359	1	2

Note: The table reports the average number of recession years experienced by individuals in each country during their formative years, defined as ages 18–33. A recession year is identified when the annual growth rate of real GDP per capita falls below −1.84%, corresponding to the 10th percentile of the country-year growth distribution across all 29 European countries in the sample between 1975 and 2021. For each respondent, we calculate the cumulative number of such recession years that overlap with their formative period; the table then presents the mean, standard deviation, minimum, and maximum values of this measure at the country level. The figures reveal substantial cross-country heterogeneity: while core economies such as Austria, Germany, and the Netherlands show relatively limited exposure (mean values below one year), peripheral and transition economies such as Bulgaria, Greece, and Latvia exhibit significantly higher exposure, with averages approaching three years and maxima as high as six. This variation underscores the uneven historical distribution of macroeconomic shocks across Europe and provides a crucial source of identification for our empirical strategy, as it captures systematic differences in the "recession memories" embedded in successive cohorts.

The primary explanatory variable we construct pertains to the past exposure of employees to recessions during their formative years, specifically between the ages of 18 and 33. Using the framework proposed by Barro and Ursúa (2008) for studying economic shocks, we leverage data from the World Development Indicators to track annual GDP per capita growth rates starting from 1975.[1] We define a recession year as one where GDP per capita growth falls below −1.84%, assigning a value of 1 for such years and 0 otherwise. This threshold corresponds to the bottom 10th percentile of GDP per capita growth across the countries studied from 1975 to 2021, consistent with methods used by Giuliano and Spilimbergo (2023), Carreri and Teso (2023), and Gavresi and Litina (2023). To finalize our explanatory variable, we aggregate the number of years during which each employee was aged between 18 and 33, and the GDP per capita growth rate was below the 10th percentile threshold of −1.84% for each employee and country. Some respondents have fewer than 16 years of exposure by definition, as they participated in the survey before reaching age 33.

Summary statistics of our explanatory variable (*Rec*), disaggregated by country, are presented in Table 1. The cross-country variation documented in the table highlights that individuals' formative exposure to recessions differs substantially across Europe. In more resilient economies such as Austria, Belgium, or Germany, the average respondent experienced fewer than one recession year between ages 18 and 33, with the maximum never exceeding two. By contrast, respondents in countries such as Bulgaria, Greece, Latvia, or Cyprus faced considerably harsher economic conditions during their formative years, with average exposure exceeding two years and some cohorts experiencing as many as five or six episodes. These patterns are consistent with the broader macroeconomic histories of these countries: Southern and Eastern European economies were more frequently hit by severe downturns over the past four decades, while Northern and Western European countries generally experienced shorter or milder contractions.

The variation across countries provides an important source of identification for our empirical analysis. It highlights not only the uneven distribution of macroeconomic turbulence across Europe but also the differential "recession memories" that may have become embedded in the perceptions of successive cohorts. The fact that some countries exhibit consistently low exposure while others endured repeated downturns enables us to disentangle whether heightened perceptions of job loss later in life are systematically related to these formative economic experiences rather than being driven exclusively by current labor market conditions.

The control variables incorporated in our analysis encompass sex, urbanization, tenure, sector, firm size, working hours, education, training, job satisfaction, pay, and union membership. Additionally, age, cohort (grouped into four 10-year cohorts), industry, occupation, and country fixed effects are included to control for unobserved heterogeneity across these factors. We also incorporate country-specific age (*country*age*) fixed effects, which remove any variation that arises from comparing different age groups within the same country or the same age group across countries, allowing us to isolate changes in job loss perceptions within each age group. Comprehensive descriptions and summary statistics of all variables utilized in the study can be found in the Appendix.

Our benchmark econometric model is the following:

$$JL_{ic} = \alpha + \beta X_{ic} + \gamma Rec_{ic} + e_{ic} \quad (1)$$

where JL represents the perceived probability of job loss for employee i in country c. The vector X encompasses the control variables previously delineated. Rec denotes the past exposure to recessions. Considering the binary nature of the dependent variable, a probit regression framework is utilized, with standard errors clustered at the country level.

4 | Empirical Results

4.1 | Main Results

Table 2 presents the main findings from three model specifications exploring the relationship between individuals' formative-life recession exposure (defined as years in which their country's GDP per capita fell below −1.84%) during ages 18–33 and their current perceived risk of job loss. Across all model variants, the coefficient on recession exposure remains positive and statistically robust, signaling a persistent and economically meaningful effect.

In our preferred specification (column 3), which controls for a comprehensive set of individual and job-related covariates as well as country, age, cohort, occupation, and industry fixed

TABLE 2 | Recessions and perception of job loss.

	(1)	(2)	(3)
Recessions	0.042***	0.028***	0.026***
	(0.008)	(0.005)	(0.005)
Controls	No	No	Yes
Age FE	No	Yes	Yes
Country FE	No	Yes	Yes
Country*Age	No	Yes	Yes
Cohort FE	No	Yes	Yes
Occupation FE	No	Yes	Yes
Industry FE	No	Yes	Yes
Pseudo R-squared	0.008	0.076	0.119
Observations	21,031	21,031	21,031

Note: The table reports marginal effects from probit regressions where the dependent variable equals 1 if the respondent perceives any chance of losing their main job in the next 12 months, and 0 otherwise. The key independent variable is cumulative exposure to recession years during ages 18–33, defined as years in which real GDP per capita growth falls below −1.84% (the 10th percentile of the cross-country distribution between 1975 and 2021). Column (1) presents the baseline bivariate specification. Column (2) adds age, cohort, industry, occupation, country, and country*age fixed effects. Column (3) adds the full set of individual-level controls (sex, education, tenure, sector, firm size, working hours, job satisfaction, pay, training, union membership). Standard errors are clustered at the country level and reported in parentheses. Significance level is denoted by *** (1%), ** (5%), and * (10%).

effects, we find that each additional year of exposure to recessions during formative years is associated with a 2.6 percentage-point increase in the subjective probability of job loss, holding other factors constant (ceteris paribus). This result underscores a lasting psychological imprint: even controlling for contemporaneous economic conditions and personal characteristics, early-life recessionary shocks continue to shape individuals' views on job insecurity.

Why might exposure to macroeconomic crises in young adulthood have such enduring effects on job-loss perceptions? The phenomenon parallels the well-documented "scarring" effects observed for economic outcomes. For instance, recent studies show that college graduates entering the labor market during recessions suffer significant and persistent earnings setbacks—often lasting 10–15 years or more (Schwandt 2019; Weinman 2020). While our focus is perceptual rather than material, such long-term economic scars suggest a plausible psychological pathway: early exposure to job market instability may embed heightened risk awareness, fostering persistent skepticism about job security.

Moreover, empirical evidence has repeatedly demonstrated that workers' perceptions of layoff risks and wage cuts closely track downturns in economic conditions (Davis and von Wachter 2011; Macassa et al. 2021). However, our contribution goes further: it shows that *past exposure*—not just current conditions—exerts a quantifiable influence. In effect, formative recession experiences may calibrate individuals' internal "job-security radar," sensitizing them to future threat signals even when objective risk remains low.

Analogous anecdotal narratives reinforce this interpretation. Media and policy commentary have long labeled certain downturn cohorts (e.g., post-2008 graduates) a "lost generation," reflecting a widespread sense of precarious economic footing rooted in early recession exposure (Thompson 2011; Toynbee 2012). Although these are qualitative observations, they align with our quantitative finding that early-life recessions cast long shadows on perceptions later in life.

4.2 | Heterogeneity

While our baseline results establish a persistent link between recession exposure in formative years and perceptions of job insecurity, this effect is unlikely to be homogeneous across individuals and institutional settings. In this subsection, we examine three key sources of heterogeneity—educational attainment, exposure to technological change, and the degree of labor market protection—to shed light on the mechanisms that condition the persistence of "recession scars". Each of these dimensions has been emphasized in prior research as a critical determinant of how individuals experience, interpret, and respond to economic risks.

The extent to which recession scars persist depends in part on individual resources. Education is one of the most powerful shields against both objective and perceived labor market risks. More educated workers typically experience lower unemployment risk, higher mobility, and greater adaptability to structural change (Autor 2014). Entering the labor market with more human capital reduces the probability of long-term earnings scarring, as shown in studies of recession graduates (Oreopoulos et al. 2012). Education may also buffer subjective insecurity: higher-skilled individuals often perceive themselves as more employable and thus less vulnerable to displacement shocks (Green 2009). Building on this literature, we interact recession exposure with educational attainment to assess whether schooling buffers individuals against the lasting fear of job loss. Figure 1 shows that the magnitude of recession scars declines steadily with higher education levels. Intuitively, education may provide not only cognitive and adaptive skills that mitigate objective job insecurity but also psychological resilience

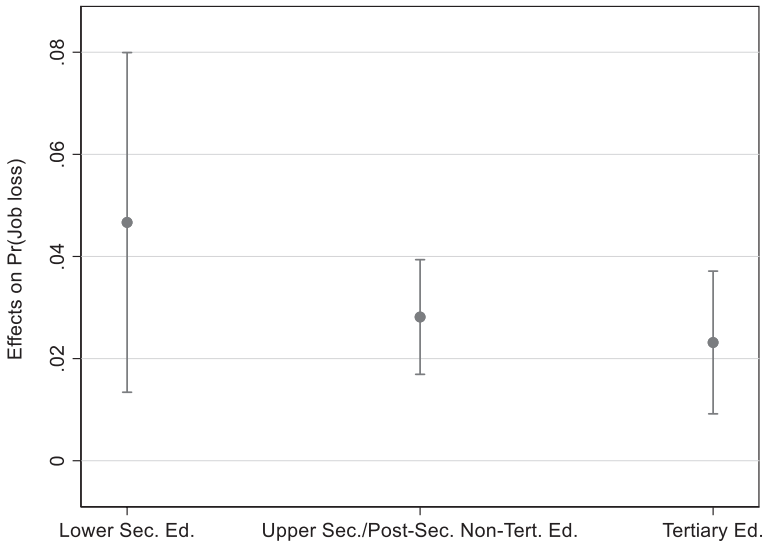

FIGURE 1 | Marginal effect of recessions on perceived job loss conditional on educational level. The figure reports the marginal effect of formative recession exposure, interacted with educational attainment. The negative slope shows that higher education levels significantly attenuate the effect of past recessions on perceived job insecurity. This supports the interpretation that education functions as a protective factor against both objective and subjective labor market risks.

against interpreting recessions as permanently threatening. Anecdotally, policy debates during the global financial crisis frequently emphasized the "education premium" in cushioning career prospects, reinforcing the perception that education offers protection against both actual and perceived labor market risks (The Economist 2009). Our results provide quantitative support for this widely held view: education operates as a shield not only in terms of labor market outcomes but also in shaping how individuals internalize the memory of past recessions.

A growing body of research suggests that recessions not only cause immediate disruptions but can also accelerate technological adoption and alter the skill content of jobs. Evidence from U.S. vacancy postings shows that regions hardest hit by the Great Recession permanently raised skill requirements, consistent with "routine-biased technological change" intensifying during downturns (Hershbein and Kahn 2018). Similarly, the job polarization literature demonstrates that routine employment losses are concentrated in recessions, contributing to the phenomenon of "jobless recoveries" (Jaimovich and Siu 2020). These insights help explain why individuals with formative recession exposure may interpret current firm-level technological change as a renewed threat. Our empirical results corroborate this intuition. Figure 2 demonstrates that the marginal effect of recession exposure on perceived job loss risk is significantly stronger in firms undergoing technological change. This pattern is consistent with the idea that past macroeconomic turbulence calibrates individuals' "job-security radar," leading them to treat new technologies as potential precursors of displacement. This interpretation aligns with recent evidence that robot adoption can depress employment or wages in exposed regions (Acemoglu and Restrepo 2020), even though aggregate productivity effects may be positive (Graetz and Michaels 2018).

In other words, the memory of past downturns appears to heighten sensitivity to new threats, consistent with the impression that "bad times return when the rules of the game change". Supporting evidence comes from our Appendix, where we show that recession-exposed individuals are more likely to agree with the statement that robots or new technologies could replace part or all of their jobs. This resonates with survey data documenting widespread "automation anxiety." The 2017 Eurobarometer on digitization and automation reported that nearly three-quarters of Europeans expected automation to profoundly alter employment prospects, with higher concern in countries with weaker labor protections. Comparable findings in the United States show that majorities worry about automation's impact on inequality and job security, even if they do not expect to be personally displaced (Pew Research Center 2017, 2019). Recent micro-evidence from Germany further reveals that robot exposure is associated with worse mental health outcomes, precisely because it raises fears of job insecurity (Abeliansky et al. 2024). These quantitative and qualitative accounts reinforce our finding: individuals scarred by recessions are particularly prone to interpret technological change as a threat. Put differently, memories of early-life economic instability appear to heighten susceptibility to automation concerns, making technological disruption another channel through which recession scars persist.

Finally, we examine whether the institutional environment mediates the persistence of recession scars. A large body of work has shown that employment protection legislation (EPL) and generous welfare states cushion the consequences of displacement (Blanchard and Wolfers 2000; Baccaro and Rei 2007). To test this, we interact our recession exposure variable with a country-level measure of labor market protection, drawn from Gwartney et al. (2021). As shown in Figure 3, stronger protective institutions attenuate the relationship between recession exposure and job loss perceptions. This suggests that collective memories of past shocks translate into enduring fear primarily in environments where institutions fail to insure against labor market risks. The result is consistent with comparative accounts of Southern versus Northern Europe: in the former, weaker labor market protections have often amplified the psychological and

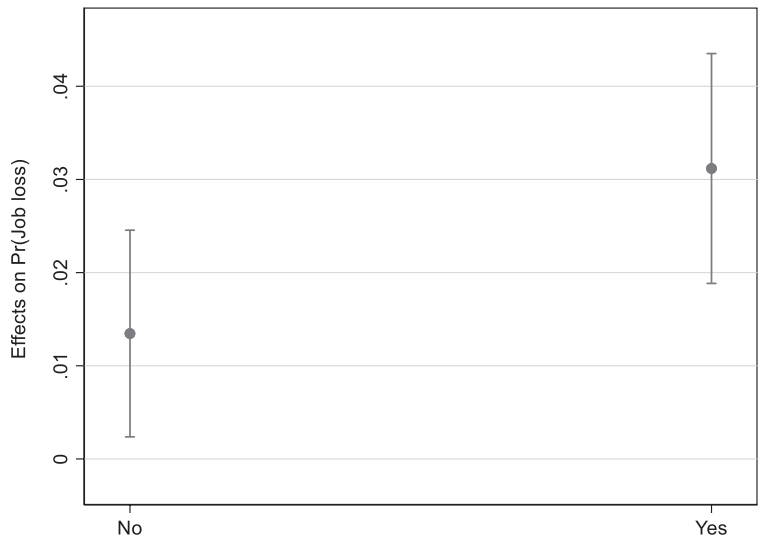

FIGURE 2 | Marginal effect of recessions on perceived job loss conditional on technological change. The figure reports the marginal effect of formative recession exposure, interacted with an indicator for whether the respondent's firm has recently adopted new technologies. The results show that workers in technologically changing firms experience a substantially larger increase in perceived job-loss risk when recession-exposed, consistent with the interpretation that early-life shocks heighten sensitivity to contemporary disruptions.

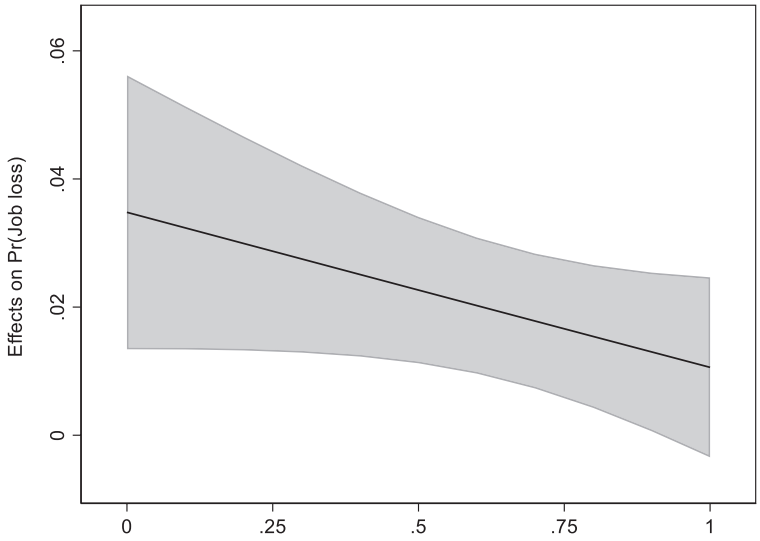

FIGURE 3 | Marginal effect of recessions on perceived job loss conditional on labor market protection. The figure plots the marginal effect of formative recession exposure across varying levels of country-level labor market protection. The downward slope indicates that stronger protective institutions substantially attenuate the influence of past recessions on perceived job insecurity. This result is consistent with theories of welfare states as insurance mechanisms against both objective and perceived risks.

political fallout of recessions, while in the latter, strong safety nets have limited their persistence (Hall and Soskice 2001; OECD 2013).

Overall, these results provide suggestive evidence that education, technological change, and labor market institutions act as critical mediators of recession scars. While we do not claim to have fully identified the mechanisms, our findings align with the economics of formative experiences in showing that the endurance of recession memories is contingent on both individual resources and institutional environments. More research is needed to pin down the full range of mechanisms, but our evidence indicates that historical shocks are more likely to leave lasting marks when they intersect with low education, disruptive technologies, and weak institutional protections.

4.3 | Robustness Checks

To ensure that our main findings are not artifacts of specific modeling choices or definitions of recession exposure, we conduct a series of robustness checks reported in the Appendix. Collectively, these tests reinforce the central conclusion that recessions experienced during formative years (ages 18–33) exert a unique and enduring effect on job loss perceptions later in life.

We first re-estimate our models excluding individuals who had not yet completed their formative years at the time of the survey, that is, respondents younger than 33. This restriction guarantees that the exposure measure is fully observed for every individual. The results remain qualitatively and quantitatively similar, indicating that partial exposure for younger cohorts does not drive the main findings.

Second, we adopt a more stringent threshold for defining recession years, corresponding to the 5th percentile of the cross-country GDP per capita growth distribution (−4.90%). This "tail event" captures particularly severe downturns, akin to those experienced during the global financial crisis. The persistence of our results under this alternative definition suggests that our conclusions are not sensitive to how recessions are operationalized.

Third, we examine whether the *depth* of exposure within the formative period matters by constructing an intensive margin measure. This variable captures the proportion of years within ages 18–33 that coincide with recession episodes. For instance, an individual facing five recession years between ages 18 and 33 receives a score of 0.3125 (= 5/16). The estimated effects based on this variable closely mirror our baseline results, providing reassurance that both the extensive (any exposure) and intensive (frequency of exposure) margins lead to consistent conclusions.

Fourth, we assess whether the scars we identify are specific to recessions or extend to other adverse macroeconomic conditions. Specifically, we replicate our analysis using (i) exposure to consumption shocks, (ii) exposure to high macroeconomic uncertainty, and (iii) exposure to IMF loan program participation during the formative period. Across all cases, we find that these alternative forms of macroeconomic turbulence similarly elevate later-life perceptions of job loss. This exercise strengthens our interpretation that it is the experience of economic fragility during early adulthood—rather than recessions per se—that embeds lasting perceptions of insecurity.

Finally, we explicitly probe the hypothesis that attitudes formed between ages 18 and 33 are uniquely durable. To this end, we replicate our analysis for shocks occurring in childhood (ages 10–17), mid-adulthood (34–49), and later adulthood (50–64). None of these age windows display significant effects. To provide a stringent test, we conduct a "horserace" regression including all age-range exposures simultaneously (10–17, 18–33, 34–49, 50–64). Once again, only the formative years retain significance, consistent with the idea that attitudes toward labor

market risks crystallize during early adulthood and persist thereafter.

Taken together, these robustness checks show that our results are not sensitive to sample restrictions, alternative definitions of crises, or competing sources of macroeconomic turbulence. More importantly, they demonstrate that the lasting influence of recessions on job loss perceptions is uniquely tied to early adulthood, when individuals first navigate education, career entry, and family formation. This resonates with anecdotal accounts of "recession cohorts" who continue to view labor markets through the lens of early adversity, even decades later.

5 | Conclusion

Economic recessions do more than disrupt output and employment at the time of their occurrence: they leave long-lasting imprints on the way individuals perceive their economic futures. This study highlights that formative exposure to downturns between the ages of 18 and 33—a period when attitudes and values consolidate, and when individuals typically complete education, enter the labor market, and form expectations about career prospects—casts a shadow that extends well into later adulthood.

A central insight is that the durability of these "recession scars" depends on the interplay between individual resources and institutional environments. Education operates as a buffer, strengthening resilience by enhancing adaptability and perceived employability. By contrast, technological disruptions can magnify earlier vulnerabilities, as memories of instability heighten sensitivity to contemporary workplace transformations. Institutional protections such as employment regulation and welfare safety nets act as collective insurance, softening the enduring psychological impact of early downturns. Together, these mechanisms underline that the legacy of recessions is neither uniform nor inevitable, but mediated by social structures and policy choices.

These findings resonate with the idea of "collective memory" in economics and political science: past crises persist in shaping behavior and beliefs long after the objective risks have faded. Anecdotal accounts of so-called "lost generations" following severe recessions capture this phenomenon in public discourse, but our evidence indicates that the effect is systematic rather than rhetorical. The memory of past instability alters the lens through which workers evaluate current risks, with implications for labor supply decisions, household savings, and political preferences.

The broader lesson is that recessions should be understood not only as cyclical shocks but also as formative events with enduring consequences for economic confidence. For policymakers, this implies that managing the fallout of crises involves more than stabilizing employment and output in the short term. Investing in education, managing technological transitions, and maintaining robust social protections are also essential to prevent past downturns from eroding trust in labor markets and institutions. Future research can build on these insights by exploring how such formative memories interact with other shocks—such as pandemics, natural disasters, or geopolitical crises—in shaping the long-term resilience of societies.

Author Contributions

Andreas Sintos: conceptualization, methodology, software, validation, formal analysis, investigation, resources, data curation, writing – original draft, writing – review and editing, visualization, supervision. **Michael Chletsos:** conceptualization, methodology, investigation, resources, data curation, writing – original draft, writing – review and editing, supervision.

Acknowledgements

The publication of this article in OA mode was financially supported by HEAL-Link.

Endnotes

[1] Since the maximum age in our sample for the year 2021 is 64 years old, the initial year of data collection is 1975, which is when an employee who was 64 years old in 2021 would have been 18 years old.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section. **Table S1:** Description of variables and summary statistics (individual-level variables). **Table S2:** Description of variables and summary statistics (macro-level variables). **Table S3:** Recessions and perception of job loss (full results). **Table S4:** Recessions and perception of technological substitution. **Table S5:** Recessions and perception of job loss (excluding respondents younger than 33). **Table S6:** Alternative threshold for defining recession years (Growth (5th p.) shocks) and perception of job loss. **Table S7:** Recessions (intensive margin) and perception of job loss. **Table S8:** Other shocks and perception of job loss. **Table S9:** Exposure to recessions outside the formative years and perception of job loss. **Table S10:** Horserace regression of recession exposure across age windows on job loss perceptions.