



# Workforce reduction, subjective job insecurity, and mental health<sup>☆,☆☆</sup>



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## ABSTRACT

We examine the link between workforce reduction, subjective job insecurity, and mental health using individual level panel data for private-sector employees in Germany. We first estimate the effect of firm-level workforce reductions on mental health, finding a strong, negative, and statistically significant relationship. We then extensively examine the role of subjective job insecurity as mediating variable and its importance relative to other possible channels for the effect of workforce reduction on mental health. Eventually, as an extension to our analysis, we use life satisfaction as alternative outcome variable.

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## 1. Introduction

The interdependence of labor market dynamics and health has been well established in the economic literature. Empirical research dates back to the 19–70s, most notably to the research conducted by Brenner (see, e.g., 1971, 1979, 1987). Based on aggregated data, he reports a positive correlation of fluctuations in the unemployment rate with different health indicators, such as aggregate mortality, heart disease mortality, and the prevalence of schizophrenia. Since then, many studies have reported results that contradict his finding of a *general* adverse health effect of labor market recessions (e.g., Ruhm, 2000;

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<sup>☆☆</sup> The data used in this paper were extracted using the Add-On package PanelWhiz for Stata<sup>®</sup>. PanelWhiz (<http://www.PanelWhiz.eu>) was written by Prof. Dr. John P. Haisken-DeNew (john@PanelWhiz.eu). See Haisken-DeNew and Hahn (2006) for details. The PanelWhiz generated DO file to retrieve the data used here is available from the authors upon request.

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Laporte, 2004). Only the negative association between unemployment and psychological health has been warranted in the literature. For instance, by analyzing cause-specific mortality rates, Ruhm (2000) observes that suicide mortality is the only considered cause of death that significantly *increases* when unemployment rises. Breuer (2015) finds a similar result. In line with this, Tefft (2011) shows a positive association between weekly unemployment insurance claims and Google web searches for 'depression' and 'anxiety'.

Using individual level panel data,<sup>1</sup> the present analysis finds a strong negative effect of company-level workforce reductions on psychological health of employees who remained employed with these firms. One plausible interpretation of this finding is that staff reductions make employees worried about their jobs and these worries negatively affect mental health. In line with this argument, we show a positive and statistically significant relationship between workforce reductions and subjective job insecurity.<sup>2</sup> Although we cannot firmly rule out other channels than fear of job loss that matter for the effect of workforce reductions on mental health, we find persuasive evidence for subjective job insecurity playing a major role as mediating variable. Our findings suggest that not only actual job loss but the mere fear of it adversely affects mental health.

The inverse relationship between job insecurity and mental health at the individual level was first documented in the psychological literature (for a comprehensive review, see Ferrie, 2001). Yet, there are several recent contributions in the economic literature. Relying on fixed effects estimation, Green (2011), for instance, observes an inverse association between (fear of) unemployment and mental health as well as life satisfaction. Knabe and Rätzel (2010) find negative effects of past unemployment on life satisfaction of reemployed individuals and Knabe and Rätzel (2011) observe a negative impact of perceived job insecurity on life satisfaction of the employed.<sup>3</sup> Luechinger et al. (2010) provide indicative evidence of a negative effect of fear of job loss on life satisfaction by showing that regional unemployment deteriorates well-being of German private-sector employees significantly more than that of public servants (the group with the highest dismissal protection).<sup>4</sup> Exploiting announced plant closures as source of variation in job insecurity, Ferrie et al. (1995, psychological literature) do not find an effect on mental health but one on general health.

In general, interpreting these findings in terms of a causal relationship is not straight forward because both, job insecurity and mental health, are likely correlated with unobserved factors. In addition, labor productivity may deteriorate with worsening mental health through a rise in sickness absence and on the job illness, rendering reverse causality an issue to be concerned about. Moreover, even if objective security of employment remains unaffected by a decline in mental health, subjective job security may still suffer.

The present paper adds to the existing literature by addressing the link between mental health and fear of job loss using an indirect approach, which rests on relatively weak identifying assumptions and is arguably robust to reverse causality. The key identifying assumptions are (i) that firm-level changes in the workforce are exogenous events from the perspective of an individual employee, and (ii) that endogenous sorting into firms rests – besides observables – on time-invariant unobserved heterogeneity, which can be accounted for by the use of individual fixed effects. The first step of the empirical analysis consists of simple OLS and fixed effects regressions that explain employees' mental health status by firm-level workforce reductions in the previous year. The inverse effect found in these regressions can hardly be attributed to reverse causality. Even if poor mental health negatively affects individual productivity, this will unlikely make co-workers lose their jobs at a scale that the workforce is declining at the company level. Moreover, relying only on individual-level within variation, fixed effects estimation prevents the estimated coefficient from capturing the effect of firms employing many workers with mental health problems performing poor and have to cut their personnel for this reason.

In the second part of the analysis, we show that also subjective job security is strongly and negatively affected by recent workforce reductions. This result argues in favor of fear of job loss acting as an intermediate variable in the established link between mental health and staff reductions. In the third part, we then present results which reveal that the detrimental effects of workforce reductions on mental health are smaller (and even absent) for employees who, for institutional reasons, do not need to be concerned about their jobs. A similar pattern is found with respect to subjective reemployment prospects, where the effect vanishes for individuals who are very optimistic about finding a new adequate position if necessary. This suggests that fear of job loss acts indeed as an important mediating variable.<sup>5</sup> However, this approach has the drawback that the question to what extent job insecurity causally affects health remains open to interpretation, as it, unlike instrumental variable estimation, allows for the existence of alternative mediating variables.

<sup>1</sup> Note that regression coefficients and their statistical significance may differ across degrees of data aggregation (e.g., Garrett, 2003).

<sup>2</sup> Throughout this article, the terms 'subjective job insecurity', 'self-perceived job insecurity', 'job worries', and 'fear of job loss' are used as synonyms. In the empirical analysis, all terms refer to a survey question asking about 'concerns about the own job being save'. Subjective job insecurity does not necessarily refer to a certain subjective probability and least of all to an objective probability of losing the job. In a robustness check we use a self-rated probability as an alternative, ratio scaled measure for 'subjective job insecurity'. Yet, for data reasons discussed in Section 2, we do not use this measure in the preferred specification.

<sup>3</sup> We discuss the difference between mental health and life satisfaction below.

<sup>4</sup> Using, *inter alia*, a similar approach with sector-level layoff rates serving as instrumental variable, Caroli and Godard (2016) find detrimental effects on mental health.

<sup>5</sup> This approach follows a line of argument similar to estimating the effect of job worries on mental health using an instrumental variables (IV) framework, with workforce reductions serving as instrument for subjective job insecurity. Yet the crucial difference to IV is that we do not assume that fear of job loss is the sole channel through which mental health and workforce reductions are linked.

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