Social Science & Medicine 113 (2014) 15–22

Contents lists available at ScienceDirect

Social Science & Medicine

journal homepage: www.elsevier.com/locate/socscimed

Unemployment and mortality: Evidence from the PSID

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ARTICLE INFO

Article history:
Received 28 October 2013
Received in revised form
5 March 2014
Accepted 26 April 2014
Available online 4 May 2014

JEL classification:
i0
I12
J1

Keywords:
Recessions
Mortality
Health
Aggregation
Unemployment

ABSTRACT

We use micro-data to investigate the relationship between unemployment and mortality in the United States using Logistic regression on a sample of over 16,000 individuals. We consider baselines from 1984 to 1993 and investigate mortality up to ten years from the baseline. We show that poor local labor market conditions are associated with higher mortality risk for working-aged men and, specifically, that a one percentage point increase in the unemployment rate increases their probability of dying within one year of baseline by 6%. There is little to no such relationship for people with weaker labor force attachments such as women or the elderly. Our results contribute to a growing body of work that suggests that poor economic conditions pose health risks and illustrate an important contrast with studies based on aggregate data.

1. Introduction

Recent work has used micro-data to establish a robust relationship between job displacement and adverse health outcomes. For example, Sullivan and von Wachter (2009) use administrative data from Pennsylvania and show that job displacement is associated with an increased mortality risk of 10–15% within about 20 years of baseline. In a similar paper, Strully (2009) uses the Panel Study of Income Dynamics (PSID), a household-level panel that has been run by the University of Michigan since 1968, and shows that job displacement is strongly associated with increased morbidity. On the whole, these papers suggest that there are negative health consequences to losing one's job.

This would suggest that poor macroeconomic conditions should be associated with higher mortality as well since the odds of job displacement will increase as the economy worsens. However, as it turns out, studies based on aggregate data actually suggest the opposite, namely, that worsened macroeconomic conditions are associated with *lower* mortality *e.g.* Ruhm (2000), Gerdtham and Ruhm (2006), Miller et al. (2009), and Stevens et al. (2011). However, according to Ruhm (2013), this pro-cyclical relationship does not appear to hold in more recent years except for mortality from vehicular accidents and cardiovascular disease. Nevertheless, at first glance, there seems to be a tension between these two literatures since the micro-evidence appears to indicate a counter-cyclical relationship. The only paper of which we are aware that finds better health during poor economic times using micro-data is Ruhm (2003), although he does not look at mortality.

The conflicting findings in the micro and the macro literatures have distinct implications for the mechanisms linking macroeconomic conditions to mortality. As pointed out by Ruhm (2000) and Catalano et al. (2011), different mechanisms suggest that the relationship can be either pro-cyclical or counter-cyclical. The former accord with the aggregate studies, whereas the latter accord with the micro-studies.

One set of mechanisms involves how recessions affect the cost of time and the affordability of vices. For example, during recessions the cost of time is lower which may facilitate investments in health such as exercise or routine check-ups. The effects on

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[1] I would like to thank Takao Kato, Peter Kuhn, Edward Lazear, Doug Miller, Till von Wachter and participants at the Trans-Pacific Labor Seminar in Honolulu for useful comments. I would also like to thank Chris Paxson for some useful conversations prior to the writing of the paper. All errors are my own.

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http://dx.doi.org/10.1016/j.socscimed.2014.04.038
0277-9536/

consumption of vices can theoretically be pro- or a counter-cyclical since, on one hand, recessions should reduce the consumption of normal goods such as cigarettes while on the other hand, recessions may create stresses that are dealt with by increased prevalence of smoking or drinking. Some evidence such as Evans and Graham (1988), Ruhm (1995) and Adda et al. (2009) indicates that smoking and drinking increase during good economic times suggesting that this mechanism should generate a pro-cyclical relationship. Although, evidence from Dee (2001) and Davalos et al. (2012), which in contrast to the previous studies uses micro-data, suggests that binge drinking is more common during downturns.

Other commonly discussed mechanisms involve vehicular accidents and stress. First, when the economy is doing well, car accidents may increase due to increased driving; evidence from Ruhm (2000), Miller et al. (2009), and Stevens et al. (2011) supports this. Finally, as pointed out by Catalano et al. (2011), stress can vary over the business cycle. This may generate a pro- or a counter-cyclical relationship depending on whether or not working is more stressful than the exigencies of unemployment or the threat of losing one's job.

In this paper, we see if we can resolve this tension by offering an alternative look at the relationship between macroeconomic conditions and mortality that is based on micro-data. In doing so, we hope to provide some insights into the mechanisms linking the two. Specifically, we add to the literature by investigating the relationship between mortality and county-level unemployment rates using use the PSID's death file. An important feature of our study is that it delivers a similar parameter as the aggregate studies.

Specifically, we investigate the effects of unemployment fluctuations over the period 1984–1993 on mortality in the United States. To provide some details about how the unemployment rate varied over this period and how it compares to other time periods, we present Fig. 1 in which we plot the unemployment rate in the US over the period 1970–2010. The period that we consider in the study is inside the vertical lines and includes the recovery from the deep recession of the early 1980's as well the peak of the recession of the early 1990's. Note that the relationship between the macroeconomy and mortality may change depending on the severity of the recession. Because we do not consider fluctuations that are as severe as the "great recession," we caution the reader not to extrapolate too much from our results to other periods.

It is important to emphasize, however, that this is not the first study that uses individual-level data to investigate the effects of business cycles on mortality. In particular, Gerdtham and Johannesson (2005) uses Swedish micro-data to look at the same question using very similar methods albeit with Probit models in lieu of Logit models and some alternative measures of business cycles. Overall, our results are very much in accordance with theirs.

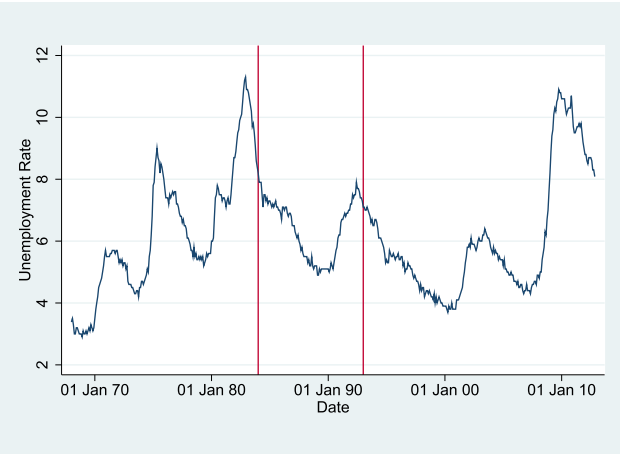

Fig. 1. US unemployment rates: 1970–2010.
Source: Bureau of Labor Statistics.

Table 1
Descriptive statistics.

	Men	Women
County-level unemployment rate	6.31 (2.53)	6.38 (2.51)
SRHS = 1	0.25 (0.44)	0.19 (0.39)
SRHS = 2	0.31 (0.46)	0.29 (0.45)
SRHS = 3	0.27 (0.44)	0.31 (0.46)
SRHS = 4	0.12 (0.32)	0.15 (0.35)
SRHS = 5	0.06 (0.22)	0.06 (0.25)
Age	43.49 (13.88)	44.57 (14.58)
College degree	0.26 (0.44)	0.19 (0.39)
More than 12 years of schooling	0.45 (0.50)	0.40 (0.49)
Caucasian	0.70 (0.46)	0.64 (0.48)

Mean and standard deviation in parentheses.

There are two contributions of our study to the Swedish study. First, we are able to replicate their qualitative findings using American data. Second, we estimate a parameter that is more directly comparable to parameters that have been estimated by Sullivan and von Wachter (2009) as well as Ruhm (2000), Miller et al. (2009), and Stevens et al. (2011).

The balance of this paper is organized as follows. In the next section, we discuss our data. After that, we discuss our results and some of their implications. Finally, we conclude and offer some insights into how measurement issues can possibly explain the divergence between the results at the micro and macro levels.

2. Data

Our sample selection works as follows. First, we begin with 20,338 individuals from the PSID waves 1984 to 1993; each of these survey years constitutes a separate baseline. Our sample starts at 1984 because the Self-Reported Health Status (SRHS) question is not available prior to that year. The sample ends in 1993 because county level unemployment rates are not available beyond then. In addition, in any study of mortality, it is useful for the baseline to be far enough in the past so that researchers can investigate how the magnitude of any effects change as we move away from baseline *e.g.* the effects of poor economic conditions on mortality one, five or ten years from baseline; since we do not have mortality information beyond 2005, this suggests that the most recent baseline should not be beyond 1995. Next, we dropped people with incomplete information on SRHS. This lowers the sample size to 20,222. Next, we further restricted the sample to people who were between ages 25 and 80 (inclusive). This brought the sample size to 18,440. Next, we dropped individuals whose ages declined by more than one year or increased by more than two years. The reason why age fluctuates like this in the PSID is that it is measured in each wave of the survey making it prone to errors. We also estimated our model without dropping people whose ages fluctuated so much and the results were not affected. After dropping these individuals, the sample size becomes 16,769. Of these individuals, 8045 are male and 8724 are female.

The covariates that we use are county level unemployment rates, SRHS which is a categorical variable between 1 (excellent) and 5 (poor) that respondents use to rate their own health, age, educational attainment, gender and race. Summary statistics are reported in Table 1. We also employ information on state-of-residence and industry for some robustness checks.

Information on mortality comes from the PSID's mortality file which contains the death years of all PSID members who died on or