The Physiological Impacts of Wealth Shocks in Late Life:

Evidence from the Great Recession

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Short Abstract

Given documented links between individual socioeconomic status (SES) and health, it is likely that—in addition to its impacts on individuals' wallets and bank accounts—the Great Recession may have also taken a toll on individuals' disease and mortality risk. Utilizing nationally representative, longitudinal data and individual fixed effects models, this study examines how household-level wealth shocks experienced during the Great Recession relate to changes in biophysiological functioning in older adults. Results indicate that wealth shocks significantly predicted changes in immune and metabolic functioning, such that losses in net worth were associated with increased physiological dysregulation. Further, the associations between wealth shocks and the outcomes were not attenuated with the inclusion of other indicators of SES in analytic models. Linking macro-level conditions and micro-level biological processes, this study provides new insights into the mechanisms through which economic inequality contributes to disease and mortality risk in late life.

Extended Abstract

Introduction

The Great Recession of 2007-2009 was the worst economic downturn in the United States since the Great Depression. During the two years at the height Recession, the net worth of American households declined drastically, with the average household losing approximately $50,000 in wealth (Pfeffer, Danzinger & Schoeni 2013). Further, the economic recovery from the Recession has been among the slowest in history. As of 2011, the net worth of the typical American household was approximately 50 percent of its 2003 value (Pfeffer, Danzinger & Schoeni 2013). Given documented links between individual socioeconomic status (SES) and health, it is likely that—in addition to its impacts on individuals' wallets and bank accounts—the Great Recession may have also taken a toll on individuals' disease and mortality risk.

While the Great Recession had a profound effect on earnings and employment rates, its effect on household wealth levels is of particular concern to population heath researchers. Considered a holistic measure of financial well-being, wealth reflects ownership of assets such as equity in homes, retirement accounts, stocks, and bonds, and it also accounts for debts. Several studies have found that, net of other measures of SES, wealth has a significant relationship with health (Hajat et al. 2010, 2011). Further, research suggests that the relationship between wealth and health may be strongest at older ages, as individuals retire and turn increasingly to their accumulated assets to support themselves and their families (Robert & House 1996). Accordingly, the Great Recession's effect on the retirement accounts, investments, and housing values of older adults likely had a tremendous impact on their health and well-being.

To date, research on the health effects of the Great Recession has produced inconsistent results (Stuckler, Karanikolos, & McKee 2014). While studies on the relationship between

macro-level economic conditions and individual health has surged, critical gaps in the literature remain. First, most studies on the health effects of the Great Recession rely on aggregate population data by examining, for example, the relationship between population unemployment rates and death rates. While recessions are indeed macro-level events, many individuals do not directly suffer the economic shocks associated with recessions (Burgard, Ailshire, & Kalousova 2013). Examining the relationships between macro-level economic conditions and health using aggregate data may, then, underestimate the effects of economic shocks on individuals and lead to inconsistent findings. Second, of the studies that do examine individual-level associations, most rely on cross-sectional data. Few studies examine whether household-level economic shocks, such as those that occurred during the years of the Great Recession, induce changes in individual health status using longitudinal data. Whereas cross-sectional analyses are subject to concerns about reverse causality and omitted variable bias, intra-individual examinations of how changes in SES correspond to subsequent changes in disease risk provide more convincing evidence of the impact of economic shocks on health. Finally, the biophysiological pathways underlying the link economic shocks and health remain largely unspecified and untested. It remains unknown how changes in financial stability spur changes in physical functioning to ultimately impact health.

Utilizing nationally representative, longitudinal data and individual fixed effects models, this study examines how household-level wealth shocks experienced during the Great Recession relate to changes in biophysiological functioning in older adults. Linking macro-level conditions and micro-level biological processes, this study provides new insights into the mechanisms through which economic inequality contributes to disease and mortality risk in late life.

Data and Methods

Data for the present study are from the National Social Life, Health and Aging Project (NSHAP), a nationally-representative longitudinal study of community-dwelling older adults aged 57-85 years in 2005 – 2006 (Wave 1) and followed up in 2010 – 2011 (Wave 2). African-Americans, Latinos, men and the oldest-old (75-84 years at the time of screening) were over-sampled. The NSHAP collected extensive information on respondents' socioeconomic well-being, physical and mental health, health behaviors, and medication use, primarily thorough in-home interviews. The NSHAP also includes several biomarkers measured at Waves 1 and 2 for a subset of the sample. The NSHAP data provide a unique opportunity for examining the health effects of wealth shocks experienced during the time period of the Great Recession, as Wave I data was collected in the two years immediately preceding the downturn (2005-2006), and Wave II data collection was conducted in the years immediately following the height of the recession (2010-2011).

The dependent variables for this study include two biomarker outcomes that indicate physiological stress response: C-reactive protein (CRP) and systolic blood pressure (SBP). As markers of inflammation and metabolic function, respectively, both markers have been linked to disease and mortality risk and associated with the increased activity of the sympathetic nervous system (SNS) and hypothalamic-pituitary-adrenocortical (HPA) systems that results from exposure to social and environmental stressors. The NSHAP includes measures of CRP and SBP at both Waves 1 and 2. Both measures are included as continuous variables in analyses. To adjust for skewedness, the measure of CRP is log transformed. The key independent variable in the analyses is household net worth, which is also available at both Waves 1 and 2. Household net worth is included in models as a continuous variable measured in hundreds of thousands of dollars. Other covariates include age, household income (measured in tens of thousands of

dollars), and employment status (1=unemployed). In order to better understand the psychosocial and behavioral mechanisms underlying the link between wealth shocks and biomarker outcomes, future analyses will include measures of smoking, drinking, physical activity, medication use, subjective financial well-being, depressive symptoms, and perceived social stress.

To examine the associations between wealth shocks and changes in biomarker outcomes, I first examine the bivariate associations between changes in household net worth and changes in the CRP and SBP between Waves 1 and 2. Next, I run multivariate first difference models, which are fixed effects models for two-wave panel data. In the first difference models, change in the log CRP and SBP is modeled as a function of change in the independent variables. Time-invariant predictors, such as sex and race, are "differenced away" and omitted from model estimates. Supplementary analyses revealed that results were robust to alternative model specifications, including lagged dependent variable models. Models were estimated in a stepwise fashion: 1) modeling outcomes as a function of changes in net worth and age, and 2) modeling outcomes as a function of changes in net worth, age, and other SES covariates. All models are weighted to adjust for attrition and survey design effects. Analyses were conducted in Stata 13.

Preliminary Results

Bivariate analyses reveal a strong, negative association between change in household net worth and change in CRP and SBP. As seen in Figure 1, there is a linear relationship between change in net worth and change in the biomarker outcomes, where individuals experiencing the greatest wealth declines have the greatest increases in log CRP and SBP.

Table 1 presents the results of the first difference models and reveals that changes in net worth significantly predict changes in both log CRP and SBP. Experiencing a wealth shock between Waves 1 and 2 was associated with significant changes in the biomarker outcomes. As

indicated in Models 1 and 3 of Table 1, losses in net worth were associated with increases of log CRP and SBP, respectively, such that individuals experiencing the greatest net losses had the greatest increases in log CRP and SBP. Individuals whose net worth increased between Waves 1 and 2 had the smallest risk of increased log CRP and SBP over the period. Further, as indicated in Models 2 and 4, the associations between net worth and the outcomes were not attenuated with the inclusion of other indicators of SES in analytic models. This suggests that wealth shocks that occurred during the Great Recession are significantly related to changes in markers of physiological stress response, net of changes in other markers of socioeconomic well-being.

In sum, preliminary findings reveal that household-level wealth shocks, such as those that occurred during the Great Recession, induce changes in physiological stress response to ultimately impact individual disease and mortality risk in late life. Future analyses will further improve understanding of the links between economic shocks and health by examining behavioral and psychosocial mechanisms underlying the associations and exploring race and sex differences in the associations. Further, given previous findings by Elder (1974) that suggest that high SES individuals are better to able to cope with the shocks associated with recessions than low SES individuals, we will also test for SES differences in the effects of economic shocks on physical functioning. By linking macro-economic conditions, household wealth shocks, and micro-biological processes using longitudinal data, this study improves understanding of the relationship between economic inequality and population health disparities in late life.

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Table 1. First Difference Models of Change in Wealth and Log CRP and SBP, 2005 – 2011

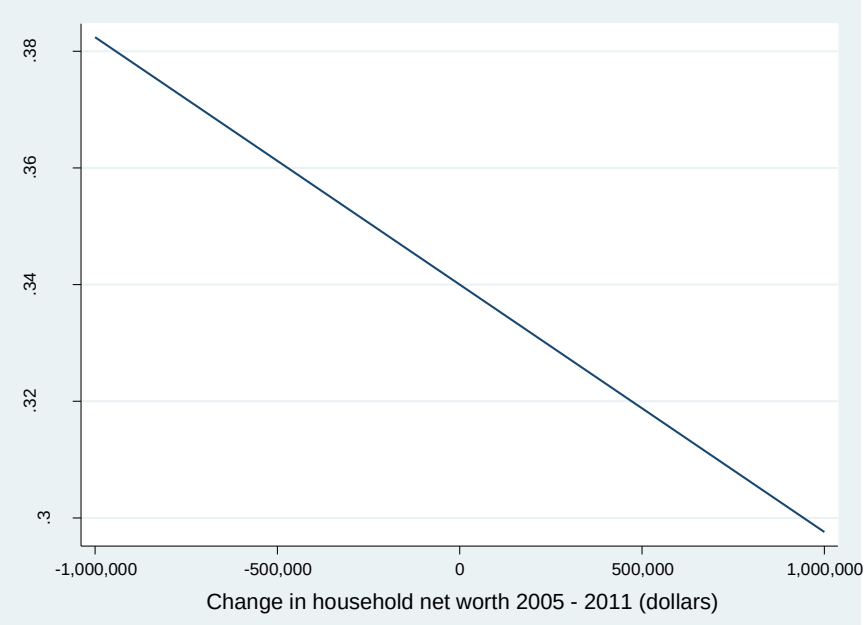
	Log CRP (N = 648)		SBP (N = 927)	
	Model 1	Model 2	Model 3	Model 4
Variable	Coeff (SE)	Coeff (SE)	Coeff (SE)	Coeff (SE)
Wealth				
Household net worth	-0.003*	-0.003*	-0.080**	-0.086**
	(0.001)	(0.001)	(0.027)	(0.029)
Covariates				
Age	-0.116	-0.116	3.340†	3.357
	(0.090)	(0.086)	(1.772)	(1.770)
Household income		-0.001		0.038
		(0.004)		(0.073)
Employment status (1=unemployed)		0.170		-2.679
		(0.344)		(3.6793)
Intercept	0.922†	0.921*	-15.943†	-16.022†
	(0.469)	(0.453)	(9.151)	(9.148)

***p<0.001, **p<0.01, *p<0.05, † p<0.1 (two-tailed test)

Note: results of first difference fixed effects models; time-constant covariates omitted from model estimates; models are survey design adjusted and weighted to account for probability of selection, with poststratification adjustments for nonresponse

Figure 1. Changes in Net Worth and Corresponding Changes in Log CRP and SBP, 2005- 2011

1A. Change in net worth and change in CRP



1B. Change in net worth and change in SBP