



Recession depression: Mental health effects of the 2008 stock market crash[☆]



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ABSTRACT

Do sudden, large wealth losses affect mental health? We use exogenous variation in the interview dates of the 2008 Health and Retirement Study to assess the impact of large wealth losses on mental health among older U.S. adults. We compare cross-wave changes in wealth and mental health for respondents interviewed before and after the October 2008 stock market crash. We find that the crash reduced wealth and increased feelings of depression and use of antidepressant drugs, and that these effects were largest among respondents with high levels of stock holdings prior to the crash. These results suggest that sudden wealth losses cause immediate declines in *subjective* measures of mental health. However, we find no evidence that wealth losses lead to increases in *clinically-validated* measures of depressive symptoms or indicators of depression.

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1. Introduction

Do sudden, large wealth losses affect mental health? Despite a large literature on the relationship between socioeconomic status and health, the answer to this question is not known. Most prior studies that use exogenous shocks to identify the causal effects of income on health exploit natural experiments that increase income or lead to wealth accumulations; of these, only a few examine mental health outcomes. These studies show that income increases

associated with lottery winnings lead to mental health improvements (e.g., Apouey and Clark, 2010), while receiving a bequest has no significant effect on mental health (e.g., Kim and Ruhm, 2012). However, the mental health effects of losing money have not been examined, despite the fact that a number of life events such as divorce, widowhood, and expensive medical episodes can trigger significant declines in material well-being. This may be because these events typically confound the wealth effects they engender.

Research on the consequences of wealth loss is especially important if the effect of wealth is asymmetric. Results from economics and psychology experiments provide ample evidence that individuals respond differently to losses than gains. Subjects in experiments often place a higher value on a good that they own compared to an identical good that they do not own (the endowment effect). One explanation for this effect is loss aversion, which explains that the disutility of losing a good is greater than the utility of obtaining it (e.g., Kahneman and Tversky, 1984). Further, the effects of large wealth losses may be more disruptive than generalizations of the effects of small gains or losses may suggest. It could take years of favorable stock market returns to recapture wealth losses, whereas small losses can be offset by an increase in work hours or a short-term change in consumption patterns. If the psychological or economic consequences of losses differ in these ways, then prior studies that focus on the effects of sudden gains in

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socioeconomic status may offer little guidance on the effects of losses on mental health.

In this study, we identify the effect of large wealth losses on mental health by focusing on the immediate and largely unexpected declines in the net worth of U.S. households brought on by the stock market crash that occurred in the fall of 2008. In the 8-day trading period that began on October 1, 2008, the closing value of the Dow Jones Industrial Average (DJIA) fell by nearly 2400 points or roughly 22%. After a small uptick, the DJIA fell throughout the month; by the end of October, the index had reached its lowest level since 2003. By December 2008, retirement accounts had lost almost one-third of their value on average, and total losses were estimated at \$2.8 trillion (Soto, 2008). Our identification strategy uses variation in the timing of interview dates for the 2008 wave of the Health and Retirement Study (HRS). Specifically, we examine respondent-specific changes in wealth and mental health between the 2006 and 2008 waves of the HRS, comparing changes for respondents whose 2008 interview took place before October of that year with the changes experienced by those interviewed after the October 2008 stock market crash. We allow the effects of the crash to vary by respondent's exposure, which we measure in pre-crash wealth in stocks and individual retirement accounts.

Respondents interviewed post-crash lost significantly more non-housing wealth between the two survey waves than respondents interviewed before the crash. Results from several falsification and placebo tests suggest that our post-crash indicator identifies the effects of the stock market crash separately from the effects of changes in the housing market or the unobservable traits of respondents interviewed later in the year.

We find mixed evidence of an effect of the crash on mental health. Subjective measures of mental health, such as "feeling depressed" and self-rated health, worsened among respondents interviewed post-crash compared to those interviewed prior to October 2008. These effects were concentrated among those respondents who lost more wealth in the crash (i.e., the wealthier half of stockholders). Although the crash had no effect on clinically-validated measures of depression, respondents who lost more wealth in the crash also showed large increases in antidepressant use.

2. Previous literature

A key distinction between our work and prior studies in this literature is that we examine an exogenous event that reduced wealth.¹ Most prior studies identify effects of wealth or income through exogenous increases. These increases may result from either new public programs (Case, 2004; Frijters et al., 2005; Chung and Kim, 2011; Robert, 2011), lottery winnings (Lindahl, 2005; Gardner and Oswald, 2007; Apouey and Clark, 2010), or inheritances (Meer et al., 2003; Kim and Ruhm, 2012). Findings from these studies suggest that income from new public programs improves health status or health or life satisfaction and that winning the lottery improves mental health. In contrast, receiving a bequest appears to have no effect on various measures of health status, including ADL and IADL limitations, self-reported health, and depression (Meer et al., 2003; Kim and Ruhm, 2012), and wealth increases driven by stock market gains are not associated with improvements in physical health (Smith, 2004).²

Two prior studies examine the health effects of decreases in income. Snyder and Evans (2006) look at the effects of a legislative change affecting U.S. Social Security payments, and find that persons receiving lower incomes as a result had significantly lower mortality rates. Since reductions in Social Security benefits may have increased employment incentives, these results may reflect the social benefits of remaining in the labor force. Sullivan and von Wachter (2009) find that job displacement led to large increases in short-term mortality risk as well as smaller increases in long-term mortality risk. Their results imply that income losses reduce longevity since short-term earnings losses were greater than long-term earnings losses and since workers with larger earnings reductions experienced larger increases in mortality. However, neither of these studies examines mental health effects, nor can they isolate the effects of income changes versus changes in labor force attachment.

Our work differs from prior studies of income decreases in several ways. Most notably, we examine whether wealth losses have immediate effects on mental health, as opposed to long-term or even one-year effects on mortality. A focus on mental health is supported by psychology research linking wealth reductions to increased stress levels and linking increased stress with depression and other mental illnesses (see, e.g., Rabkin and Struening, 1976; Schneiderman et al., 2005). These types of effects can be observed in relatively short periods of time; for example, depressive symptoms can emerge in as little as two weeks and major life events such as assault, job loss, and financial or housing problems can have mental health effects within one month (Dohrenwend, 1973; Kendler et al., 1999).³ Although other health consequences of the crash might emerge over a longer horizon, for example, by the 2010 interview, we lack the ability to identify crash effects that far out since the crash impacts every individual in the HRS by 2010. There is also less ambiguity about the channels or mechanisms linking wealth to health compared to studies that focus on long-run risk of mortality.

A downside to our approach is the short-term relationship between wealth and health may be different from the long-term relationship. For example, looking at income increases, Evans and Moore (2011, 2012) find that having more income causes consumption and activity levels to increase, and thereby leads to increased mortality in the short-term. Our study is unable to examine whether the effects we observe are transient or permanent, although our findings could help to elucidate some of the pathways leading to the long-term outcomes observed in other studies of income loss.

We also examine wealth fluctuations with the potential to affect a larger population of individuals compared to events like winning the lottery or receiving an inheritance. The 2008 stock market crash was unanticipated and affected asset levels for all stockholders. Because the effects of the crash were both large and sudden, our strategy differs from Smith (2004) who used stock market changes in the 1990s to identify effects on physical health. Smith found little evidence that exogenous wealth increases were timed with health improvements. As noted above, it is possible that the effects of wealth losses differ from those of wealth gains; if this is the case, our study of the events of the 2008 stock market crash may be especially informative.⁴

¹ In this section we focus on studies linking individual or household income or wealth to health status. A separate literature has examined the health consequences of macroeconomic conditions (e.g., Ruhm, 2000).

² There is some evidence that increases in income can worsen health behaviors. Kim and Ruhm (2012) report that receiving a bequest increased recreational

drinking; similarly, Apouey and Clark (2010) report increased drinking and smoking by lottery winners.

³ Stress may subsequently worsen physical health as elevated stress hormones take their toll on the cardiovascular and immune systems, but these effects may not be immediate (see, e.g., McEwen, 1998; Schneiderman et al., 2005).

⁴ Deaton (2012) examines changes in self-reported well-being in the U.S. population from 2008 to 2011, a period that includes the 2008 stock market crash. Using

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