



Household risk taking after the financial crisis



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ABSTRACT

This study investigates whether and how the crisis in 2008/2009 affects households' risk attitudes, subjective risk and return expectations, and planned financial risk taking using the German SAVE study. Households' wealth change from end-2007 to end-2009 is not found to have an effect. However, households that attribute losses to the crisis decreased their risk tolerance and planned risk taking; the probability of expecting an increase in risks and returns is increased. According to economic theory, wealth changes attributed to a dramatic event should not have a different effect than other wealth changes. The results suggest an emotional reaction.

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1. Introduction

In its unexpectedness and severity, the crisis in 2008/2009 is unprecedented in the post-World-War II-era. Starting in December 2007, countries all over the world experienced a marked economic downturn. Between the beginning of 2008 and end-2009, the German DAX fell by 25%, German GDP per capita by 5%. The precipitous decline of stock markets exposed institutional as well as private investors to substantial financial losses. The developments erased 3.6–8.5% of German households' financial wealth (Börsch-Supan, Bucher-Koenen, Gasche, & Ziegelmeyer, 2009; Börsch-Supan, Gasche, & Ziegelmeyer, 2010). The event was a shock. The aim of this study is to examine the effects on the household willingness to take risks.

Microeconomic theory commonly assumes that the willingness to take risks decreases as wealth decreases (Gollier, 2001). An increasing number of studies find that emotions (Kuhnen & Knutson, 2011; Loewenstein, Weber, Hsee, & Welch, 2001) or

traumatic events (Cameron & Shah, 2012) influence risk taking. Malmendier and Nagel (2011) show that the experience of a dramatic stock market decline has a long run influence on financial risk taking independent from own exposure to losses.

Several studies investigate whether the willingness to take risks changes during the crisis (Guiso, Sapienza, & Zingales, 2013; Hoffmann, Post, & Pennings, 2013; Weber, Weber, & Nasic, 2013). They find that self-reported risk attitudes, subjective risk and return expectations – which are important determinants of risk taking according to modern finance theory – and self-reported risk taking behavior vary over the course of the crisis. Only Guiso et al. (2013) analyze potential causes for changes in self-reported risk attitude. They find that the observed increase in risk aversion is unrelated to changes in wealth. Other “conventional” approaches (background risk, consumption habit) also cannot explain the change. The authors conduct an experiment which shows that fear and anger evoked by watching a horror movie causes an increase of a similar magnitude to the one observed from 2007 and 2009. However, a more direct test of the effect of sudden financial losses is not performed. The question how the dramatic event affected subjective expectations and risk taking behavior remains open.

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Our aim is to study the question how the crisis affects the willingness to take risks in more detail. It is the first study of the crisis' consequences on risk taking of the general population. The analysis is based on the representative German SAVE household panel. The SAVE study provides information on household wealth and the perceived consequences of the crisis. Households were asked to assess whether and how much they lost or gained since the beginning of the crisis end-2007 and end-2009. We analyze how changes in the willingness to take risks (risk attitude, subjective expectations, planned risk taking behavior) are influenced by total wealth changes from end-2007 to end-2009 and wealth changes attributed to the crisis.

According to standard economic theory, wealth changes associated with a dramatic event should have the same effects as other wealth changes. Wealth changes attributed to the crisis should have no effect when it is controlled for the total change in wealth. We assume that an effect indicates an emotional reaction in the willingness to take risks. Examining subjective expectations allows us to consider that different individual experiences may have led to different updating of beliefs.

Of course, quantifying the impact of emotions on risk taking is a challenge. A possible objection to our approach is that it is difficult to assess whether and to what extent wealth changes are attributable to the crisis. An advantage of the German setting is that the country experienced no housing or mortgage crisis between 2007 and 2010. Household wealth changes are hence largely related to financial portfolios whose changes in value can be better assessed than those of real estate. Although responses may be biased, the existence of a bias does not contradict our interpretation of the variable. On the contrary, our notion that the variable measures the emotional experience is supported to the extent that responses are influenced by the perception of the crisis.

Economic theory predicts that household suffering is to some extent related to their earlier risk taking behavior. The suddenness and severity of market declines suggest that households were hit unexpectedly by wealth losses. We address possible endogeneity concerns by controlling for several variables potentially captured.

The idea that emotions play a role is by far not new in economics. For instance, [Keynes \(1936\)](#) emphasizes the importance of “animal spirits” which he defines as “a spontaneous urge to action rather than inaction, and not as the outcome of a weighted average of quantitative benefits multiplied by quantitative probabilities.” We add to the literature by analyzing whether emotions influence risk taking directly (by influencing behavior) and indirectly (by influencing attitudes and expectations).

The paper is organized as follows. Section 2 contains a review of related literature. In Section 3, the approach and results from our empirical analysis are described. Section 4 contains a discussion of the findings, and Section 5 concludes.

2. Previous literature

The empirical evidence on the link between wealth and risk aversion is ambiguous. [Guiso et al. \(2013\)](#) find that the observed increase in self-reported risk aversion from 2007 to 2009 cannot be explained by wealth changes. Using data from the U.S. Panel Study of Income Dynamics, [Brunnermeier and Nagel \(2008\)](#) find that changes in liquid wealth do not explain changes in household investments in risky assets. Their study shows that portfolio allocations seem to be determined by inertia, i.e., households adjusting their portfolio only slowly. Using responses to a hypothetical gamble in the U.S. Health and Retirement Study, [Sahm \(2012\)](#) finds no significant relationship between changes in wealth or income and changes in relative risk aversion. [Guiso and Paiella \(2008\)](#) use a

measure of absolute risk aversion derived from a hypothetical gamble in the Bank of Italy Survey of Household Income and Wealth. They find that absolute risk aversion is a concave function of wealth.

An increasing number of studies show that emotions or experiences play a role for risk taking. [Malmendier and Nagel \(2011\)](#) find that birth-cohorts that experienced periods of high stock market returns report higher willingness to bear risk in financial matters and invest a higher fraction of their liquid assets in stocks even after several decades. [Kuhnen and Knutson \(2011\)](#) and [Guiso et al. \(2013\)](#) show experimentally that evoking negative emotions induces people to take less risks. The experiment by [Cohn, Fehr, and Maréchal \(2012\)](#) shows that financial professionals become more risk averse when they are primed with a financial crash rather than a boom.

Normative expected utility theory and risk-return models explain differences in risk taking only by differences in risk attitudes ([Sarin & Weber, 1993](#)). The focus on risk attitudes has been criticized. Psychophysical risk-return models assume also different risk and return expectations ([Weber, 2010](#)). Empirical literature confirms that household stock market expectations are heterogeneous ([Dominitz & Manski, 2011](#); [Hudomiet, Kezdi, & Willis, 2011](#); [Hurd, van Rooij, & Winter, 2011](#); [Kezdi & Willis, 2008](#)).

Evidence from psychology suggests that cross-situational differences in risk expectations, but not in attitudes, can explain differences in risk taking ([Weber & Milliman, 1997](#)). [Kezdi and Willis \(2008\)](#) claim that subjective expectations can even solve the “stockholding puzzle”, i.e., the low stock market participation observed despite high stock performance. Previous studies of risk taking during the financial crisis also emphasize the need to take into account subjective expectations. [Hoffmann et al. \(2013\)](#) and [Weber et al. \(2013\)](#) find that the observed variation in subjective expectations explains the variation in risk taking. Only [Hoffmann et al. \(2013\)](#) find that risk attitudes are relevant for investors' portfolio choices.

Expectation updating is usually related to the overall stock market performance ([Dominitz & Manski, 2011](#); [Hurd et al., 2011](#); [Kezdi & Willis, 2008](#)). Three possible types of expectation formation are considered. A random-walk type believes that returns are iid and therefore uses long run historical returns to predict future returns. A persistence type uses recent realizations to update beliefs on the assumption that recent performance will persist. A mean reversion type expects stock market performance to be reversed. However, a relationship between an individual's own past portfolio returns and his expectations has also been established. [Vissing-Jorgensen \(2003\)](#) finds that positive own returns lead to higher expected market returns, while negative own returns also have a positive but small effect. [Veld and Veld-Merkoulova \(2008\)](#) show that investors use a variety of risk measures at the same time to form beliefs about risk and make a decision.

Subjective expectations may also be affected by the experience of a dramatic event. [Barberis, Shleifer, and Vishny \(1998\)](#) show that in making forecasts investors overreact to information of high strength and low statistical weight. [Weber \(2010\)](#) reports that subjective expectations are influenced by experiencing excitement. [Kuhnen and Knutson \(2011\)](#) find that when updating of beliefs about risky investments, individuals seem to incompletely incorporate news that contradicts prior choices to avoid a negative emotional state.

3. Empirical analysis

3.1. Empirical approach

We focus on two possible causes for changes in risk taking after the crisis: economic effects (wealth changes in terms of material endowment) and psychological effects (the shock of sudden wealth

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