

Depression Babies: Do Macroeconomic Experiences Affect Risk-Taking?

Ulrike Malmendier
UC Berkeley and NBER

Stefan Nagel
Stanford University and NBER

The notion of “Depression Babies” is well-known all over the world: People who lived through the Great Depression of the 1930s are purported to shy away from the stock market and other risky financial investments and, generally, to exhibit large risk aversion. The recent financial crisis has triggered renewed interest in the Depression-Babies phenomenon, with much news coverage given to the question whether the crisis is producing a new generation of Depression Babies. However, we still have little robust evidence whether the phenomenon is fact or fiction. In particular, by focusing on the single event of the Great Depression, it has been hard to distinguish the effect of the economic downturn from other cohort-specific effects. Another reason for the lack of academic research on “depression effects” may be that the concept itself is at odds with traditional economics. Standard models in economics assume that individuals are endowed with stable risk preferences, unaltered by economic experiences. Standard models also assume that individuals incorporate all available historical data, without overweighting personal experience, when forming beliefs about risky outcomes. In other words, traditional economics rules out that personal experiences of economic fluctuations shape individuals’ risk attitudes. In contrast, psychologists have long argued that personal experiences, especially recent ones, affect personal decisions and, in fact, exert a greater influence than statistical summary information in

books or via education (Nisbett and Ross 1980; Weber et al. 1993; Hertwig et al. 2004). Also the more recent literature in economics suggests that the cultural and political environment in which individuals grow up affects their preference and belief formation, such as their trust in financial institutions, stock market participation, and preferences over social policies (Guiso, Sapienza, and Zingales 2004 and 2008; Osili and Paulson 2008; Alesina and Fuchs-Schündeln 2007).

In this project, we examine empirically whether individuals' risk attitudes differ depending on their life-time experiences. We test whether individuals who experienced low stock-market returns express a lower willingness to take financial risk, are less likely to participate in the stock market and, conditional on participating, invest less in stocks, and whether individuals who lived through periods of low bond returns are more wary of participating in the long-term bond market. We also ask how long such experience effects last and whether they are asset-specific: do households who experienced bad stock-market outcomes shy away only from stock investment, and do those with bad bond-market experiences shy away only from bond investment? Are there cross effects? Our analysis does not attempt to disentangle whether macroeconomic experiences affect preferences or beliefs.

A key implication of the experience hypothesis is that differences in the risk attitudes of old and young people should be correlated with differences in their life-time experiences. After years of low stock-market returns, e.g., after the recessions of the 1970s and early 1980s, the stock-market participation of young people should be lower relative to that of old people (who have also experienced better times in their lifetime) than after years of high returns, e.g., in the 1960s when older individuals at the time still had the memory of the Great Depression and hence a worse average experience than young investors in their lives so far. A simple scatter-plot of differences in stock-market participation against differences in experienced stock market returns (Figure 1) confirms this pattern in the raw data.

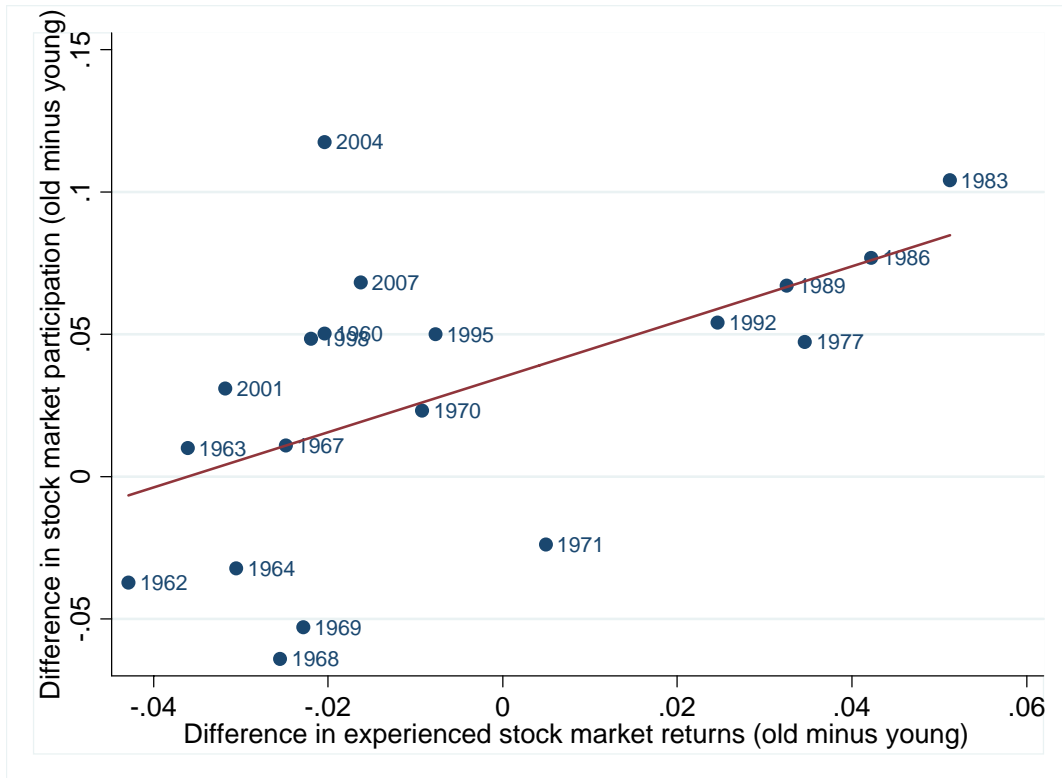


Figure 1: Differences in stock-market participation rates of old and young individuals plotted against differences in lifetime average stock-market returns. Stock market participation rates are the fraction of households who invest in stocks (including stock mutual funds). The y-axis shows the participation rate of old (household head age > 60 years) minus the rate of young (household head age ≤ 40 years) households. The x-axis shows the average real stock market return (S&P500 index) over the prior 50 years (as proxy for the return experienced by old households) minus the return over the prior 20 years (as proxy for the return experienced by young households). The years refer to the respective SCF survey waves.

In this paper, we show that these differences persist when we use a broad range of risk-attitude proxies, allow for different weighting of recent and distant experiences, and include a wide range of controls for demographics, wealth, income, and other variables. We use repeated cross-section data on household asset allocation from the Survey of Consumer Finances (SCF) from 1964-2007, and construct four measures of risk-taking: (i) the responses to a survey question about individuals' willingness to take financial risk; (ii) stock-market participation; (iii) bond-market participation, (iv) the proportion of their liquid assets invested in stocks. All four measures are likely to reflect a mixture between risk preferences and beliefs about future payoffs on risky investments.

We relate these measures of risk-taking to households' experienced histories of stock and bond returns. For each household at each SCF survey date, we calculate the annual real returns of the U.S. stock-market and of long-term government bonds since the birth year of the household head. While individuals' true "experiences" of past returns presumably differ depending on previous investments, interest in economic matters, and other unobservables, stock-market and bond-market returns likely have substantial positive correlation with experiences of financial risk. In our estimation, we allow recent observations and those early in life to carry different weights. In other words, we let the data simultaneously determine how households weight past observations and how strongly their risk-taking is correlated with the resulting weighted averages of stock and bond returns.

We find that households' risk taking is strongly related to their life-time return experiences. Households with higher experienced stock-market returns express a higher willingness to take financial risk, participate more in the stock market, and, conditional on participating, invest more of their liquid assets in stocks. The latter result also holds if we evaluate individuals' experiences with stocks relative to their experiences with bonds and, hence, measure experienced stock returns in excess of long-term bond returns. In addition, households with higher experienced bond returns are more likely to participate in the bond market. The estimated weights are similar for all four risk-taking measures. More recent experiences always receive higher weights, and thus have a stronger influence on risk-taking than those early in life, but even returns experienced decades earlier still have some impact for older households. We also find that only stock returns, but not bond returns have a positive influence on stock-based risk taking measures, while only bond returns, but not stock returns affect bond market participation.

All of our estimations control for year effects, age effects, wealth and income. Year effects remove time trends or any aggregate effects, in particular a mechanical positive relation between recent stock returns and households' stock allocation due to market clearing.¹ As illustrated in Figure 1, our identification of the experience effect comes from cross-sectional differences in risk-taking and in

¹ Holding the supply of stocks fixed, the average portfolio share invested in stocks increases when aggregate stock market prices increase and, hence, past returns are high.

macroeconomic histories, and from changes of those cross-sectional differences over time, not from *common* variation over time. Age effects allow us to distinguish our results from life-cycle effects, e.g., possible increases in risk aversion with age or the effects of the absence of labor income in retirement. The inclusion of wealth and income controls addresses the possibility that a positive correlation between past returns and current wealth explains the relation between experienced returns and current risk taking if risk aversion is wealth-dependent. Moreover, to the extent that unobserved differences in wealth remain, they are unlikely to explain all four of our risk-taking measures. Prior literature finds significant wealth effects only for stock-market participation, (see, e.g., Vissing-Jorgensen 2003), but not for the risky asset share of stock-market participants (Brunnermeier and Nagel 2008) and elicited risk aversion (Sahm 2007). Finally, the lack of cross-effects from stock market experiences on bond investment and bond experiences on stock investment is at odds with a wealth-effects explanation, as both stock and bond returns should be positively correlated with wealth, and hence risk-taking, under this alternative story.

A major advantage of our methodology is that we are able to simultaneously control for age and time effects. Previous work, which has looked at cross-cohort differences in risk-taking with cohort dummy variable regressions (see, e.g., Ameriks and Zeldes 2004) faced the problem that cohort effects cannot be separated from age and time effects due to the collinearity of age, time, and cohort (see, e.g., Heckman and Robb 1985, and the discussion in Campbell 2001). Since our identification strategy does not rely on estimating cohort effects, we can control for age and year effects simultaneously. Moreover, since experienced returns vary not only across, but also within cohorts over time, we can include an almost full set of cohort dummies and therefore control for any omitted variable that has cohort-level variation. Finally, our hypothesis is distinct from unrestricted cohort effects since it predicts a *specific*, signed relationship between macroeconomic experiences and risk-taking.

The fall in the stock market in 2008 can be used to illustrate the economic magnitudes of the experience effects we estimate. The real return of the S&P 500 index in 2008 was about -36%. These large negative returns strongly altered investors' (weighted) life-time average returns, and the effect was strongest for young investors. For example, compared with the counterfactual benchmark of a return

equal to 8.2% (the average annual real return since 1871), the 2008 downturn lowered the experienced return of a 30-year old by about 3 percentage points (pp), while the experienced return of a 60-year old was lowered by roughly 1.5 pp. According to our estimates, this should lower 30-year olds participation rate, everything else equal, by about 6 pp (compared with an overall participation rate for this age in 2007 of about 20%), whereas the effect on the participation rate of 60-year olds should be half as big, approximately 3 pp.² Our results also imply how long-lasting the effects of the crash will be. According to our estimates, the 2008 return receives a weight of about 6.7% in the experienced return of someone who is 30 years old in 2009. In 2019, when this individual is 40 years old, the weight on the 2008 return will be reduced to 3.8%, and a further 20 years later to 1.7%. Hence, after 30 years most of the effect has faded away.

In summary, our findings suggest that individual investors' willingness to bear financial risk depends on personal experiences of macroeconomic history. This behavior could be explained either with endogenous preferences, where risk aversion depends on the risky asset payoffs experienced in the past, or with learning, where current beliefs depend on the realizations experienced in the past. In the latter case, learning from personal experience would lead to beliefs that do not converge across overlapping generations, even in the long-run. Such belief heterogeneity is a departure from standard learning models in macroeconomics and finance, in which all agents at a given point in time have access to and make use of the same history of past data.

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² As a note of caution, hypothetical counterfactual of "no 2008 market crash" holds everything else equal and does not consider the effect on asset prices in general equilibrium that would arise if the level stock market participation changed. In particular, such changes could feed back into changes in participation rates.

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