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Aging and preferences ☆

Uwe Sunde [a,*], Thomas Dohmen [b]

[a] University of Munich, Germany
[b] University of Bonn, Germany

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ABSTRACT

The effect of aging on economic preferences has not received much attention in the literature. This article surveys some recent results on how aging affects preferences and attitudes, exemplified by the attitudes towards risk, as well as on the mechanisms through which this happens.

And yet the demographic revolution is not over. [...] we cannot follow it too closely: there is nothing more deserving of observation and study. ([1933], Landry, 1987, p. 740).

Introduction

Preferences reflect an individual's evaluation of trade-offs, making them the central fundamentals of all economic models of decision making. While individuals have preferences in virtually every domain, economic models often focus attention on particularly important domains, like willingness to take risk, or willingness to wait for a delayed gratification. For convenience and analytical tractability, it has become a convention in many fields of economics to make use of Samuelson's notion of a utility function that allows quantifying preferences in various dimensions (Samuelson, 1937). Risk preferences can thus be parameterized by a measure of the curvature of the utility function in terms of payoffs or consumption, or discount factors can be used to measure the impatience of individuals in terms of the weight given to future realizations of utility. Similarly, other-regarding preferences such as altruism or inequity aversion have been incorporated in this framework. The usual convention has been to take preferences, reflected by the respective parameters, as given and stable to allow for a meaningful analysis of (economic) behavior.

Apart from its simplicity and applicability to many problems of economic decision making, this framework also has the advantage of providing a basis for measuring preferences, either by applying a revealed preference approach in field data, or by using laboratory experiments to measure preferences in a controlled environment with precisely determined monetary incentives, thus allowing for a standardized way of measuring revealed preferences. A large and growing empirical literature provides information about realistic values for these preference parameters and their distribution in the population. Much less is known about the stability of preferences over the life cycle. The main difficulties in this respect are twofold. First, giving up the notion of stable preferences touches the basis of any model of decision making and opens the door to circular arguments. Once preferences are endogenous and malleable through individual decisions, in principle any choice can be rationalized as optimal, thus effectively eliminating the predictive power of a model of decision making.[1] An exception is a dynamic context with a systematic (functional) relationship between actions and preferences. Moreover, as long as preferences change according to an exogenous process that is not under the control of the individual, preferences can still be taken as exogenously given from the individual perspective. Still, this raises questions about rationality if individuals could anticipate the influence of their actions on this process. Second, the question of stability over the life course raises identification problems, such as the well-known problem of disentangling age effects from influences of particular time-specific and cohort-specific factors. This is closely related to

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* Corresponding author.

[1] The argument that an analysis based on preferences that are endogenous to decisions is highly problematic has been made forcefully by Stigler and Becker (1977), who also maintained that preferences should be treated as homogeneous in the population.

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potential mechanisms that are responsible for changes in preferences over the life cycle.

This lecture gives a non-representative survey of some recent work in this literature with a focus on the attitudes towards risk. Section 'Risk attitudes and aging' reports on results of an empirical study of how risk attitudes change with age based on two different data sets from the Netherlands and Germany. The findings indicate a substantial age gradient in risk taking, with older individuals being less willing to take risks than younger individuals, regardless of gender. Preliminary results for time preferences also indicate an age-related pattern, which has a somewhat different shape. Section 'Potential mechanisms behind the age gradient' surveys evidence for potential mechanisms driving these results. They include cognitive aging, as well as health-related factors. Section ' Implications and outlook' provides an outlook of the implications of these findings for the world-wide phenomenon of aging populations.

Risk attitudes and aging

The question whether risk attitudes change over the course of life is of great relevance in many dimensions. In particular, the attitudes toward risk affect many economic decisions, including savings and investment choices, labor market and education decisions, fertility, as well as other domains such as voting. In an environment of an aging population, systematic age patterns imply substantial changes in the average risk attitudes, with potentially far-reaching implications for aggregate economic and political outcomes.

Existing empirical evidence has documented a pronounced heterogeneity in the attitudes towards risk across individuals. One of the dimensions along which risk attitudes differ systematically is age. Fig. 1 illustrates this by plotting the self-assessed willingness to take risks as measured by the responses to the corresponding question in the German Socio-Economic Panel about the self-assessed willingness to take risks in general on a scale from 0 (not at all willing to take risks) to 10 (fully prepared to take risks). As has been documented by Dohmen et al. (2011), this measure is a behaviorally valid predictor of incentivized choices between safe payments and a lottery. The figure shows a pronounced age pattern, both for women and men, with older age groups displaying systematically more answers about a low willingness to take risks. This age shift can be seen across all age groups and for all response categories.

Multivariate regressions of preference parameters on age and other covariates typically confirm a negative cross-sectional relationship between the willingness to take risks and age, even after controlling for other covariates (e.g., Barsky et al., 1997; Donkers et al., 2001; Dohmen et al., 2011). However, estimates are mixed regarding the strength of this effect. For instance, Sahm (2007) finds modest declines of risk with age for a sample of elderly people (1931–1947 birth cohorts) from the Health Retirement Survey. Others report mixed findings regarding the age pattern, but typically based on rather small samples.[2]

The naive interpretation of results from multivariate regressions as age patterns might be misleading in this context, however. The reason is the well-known problem of disentangling age, period and cohort effects. Age patterns might be the result of somatic aging, thus comprising the results of deteriorating health, cognitive aging, but also changes in disposable income. An age pattern might not reflect a true age effect, however, but conceal the fact that individuals at different ages were born and raised at different times and in experienced different environments that shaped their preferences, e.g., during their youth. This is suggested, for instance, by the evidence presented by Malmendier and Nagel (2011). Alternatively, period-specific factors, such as a financial crisis, might affect response behavior. Guiso et al. (2013) and Dohmen et al. (2016) find evidence for changes in risk aversion due to major shocks like the financial crisis of 2008. In linear regressions, however, age, period and cohort are perfectly collinear, giving rise to the well-known identification problem.

This identification problem has received considerable attention in the empirical literature on labor markets, including some recent developments (e.g., Mason and Fienberg, 1985; Heckman and Robb, 1985; Hall et al., 2007; Wunder et al., 2011; Landeghem, 2011; Browning et al., 2012).

Dohmen et al. (forthcoming) employ a rather simple way to address the identification problem in the context of risk attitudes following an approach suggested by Heckman and Robb (1985). The idea is to substitute one of the three effects, for instance the period effect, using a proxy variable that captures the underlying process that is the reason for a systematic pattern in risk attitudes in relation to this domain, e.g., the period. This identification crucially rests on the assumption that the proxy variable does not vary linearly with the excluded variable. In particular, their analysis uses data from two large representative panel data sets from the Netherlands (the Dutch National Bank Household Survey) and Germany (the Socio-Economic Panel), which provide repeated measurement of risk attitudes for the same person. Using these panel data and GDP growth as a proxy for period effects, they are able to address the age-period-cohort problem and estimate the age pattern in risk attitudes in flexible specifications. The assumption that GDP growth is not linearly related to time period appears justified in their sample.

The main finding of this study is that risk attitudes decrease approximately linearly with age in both samples, up to an age of about 65. For older ages, the slope of the age profile becomes flatter. In terms of quantitative size of the effect, an increase in age by 10 years is associated with a decline in the willingness to take risks of 0.21, which corresponds roughly to half the difference between men and women in the willingness to take risks. Controlling for education or income does not change these findings in any relevant way. Also alternative identification approaches that make use of specific assumptions about the parameters in the estimation model (Deaton and Paxson, 1994), or provide partial identification based on the maximum entropy method (Browning et al., 2012) deliver similar results of a declining willingness to take risks at higher ages. In fact, the age pattern appears fairly robust to the choice of proxy or identification strategy. Similar findings are reported by Schurer (2015), who also finds that beyond the age of 40, the age-related change in risk attitudes differs across socio-economic groups. In complementary work, Josef et al. (forthcoming) investigate the relation between age and the stability in measures of willingness to take risks in terms of test-retest correlations. Their findings confirm the age gradient and also suggest that rank-order stability is highest at intermediate ages.

Potential mechanisms behind the age gradient

This finding raises questions about the factors that drive changes in risk attitudes and about the implications of these findings. Generally, and beyond the age effect documented before, risk attitudes appear to be fairly stable over time. For instance, the test–retest correlation over a horizon of 2–6 weeks is about 0.6. However, rank correlations of responses of the same individuals are comparably large, about 0.5, after a period of one year, and persist over even longer time horizons (see, e.g., Dohmen et al., 2007;

[2] For instance, Tymula et al. (2012) find that adolescents are more risk averse than adults, based on a sample of 33 adolescents and 32 adults, whereas Tymula et al. (2013) document that adolescents and elderly are more risk averse than middle aged individuals, based on a sample of 135 individuals.