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On the *State* and *Wealth* dependence of risk aversion: An analysis using severance pay allocation ☆

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A R T I C L E I N F O

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State and *Wealth* dependence of individual financial risk preferences are investigated using Italian longitudinal data. Severance pay investments of private sector employees are used to elicit risk aversion. The identification strategy relies on (i) the behavior of workers changing job contract because of legal limits imposed to fixed-term contract renewal; (ii) the presence of different income prospects and employment protection from the risk of layoff associated to different labor arrangements. Fixed-Effects estimates show that financial investments – and consequently risk preferences – are not affected by expected wealth modifications. Conversely, employment protection determines risk attitude pointing for the existence of state-dependent relative risk aversion as regards financial investment decisions.

According to Potapitch's calculations, the Grandmother lost, that day, a total of ninety thousand roubles [...]. Again, Potapitch told me that there were three occasions on which she really began to win; but that, led on by false hopes, she was unable to tear herself away at the right moment.

[*(The Gambler, F. Dostoevskij)*]

1. Introduction

What causes the Grandmother to play and eventually lose everything that day? Is the large amount of money she had won three times or the hopes of victory she had along with it? From the whole story we know hopes are the only determinant while wealth is not important at all. However, any econometrician involved *ex-post* in this evaluation task would only observe variations in wealth and the associated risky choices, while the gambler's mood cannot be measured. Since *wealth* varies along with some other relevant *state* affecting risk aversion *per se*, the estimation of *wealth* dependence obtained neglecting the *state* dependence could be inconsistent.

This consideration is important for economists involved in understanding the determinants of risk attitude and it is crucial for the comprehension of economic facts. In particular the literature has evaluated to what extent it is possible to empirically support the idea of constant relative risk aversion (CRRA). This hypothesis implies that in the presence of an

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increase in wealth, individuals maintain unchanged the fraction of the portfolio held in risky assets. This assumption is relevant in many fields of analysis ranging from the impact of macroeconomic monetary shocks to the microeconomic modeling of dynamic intertemporal choices. Indeed, when preferences are taken as primitive and stable across states and time, intertemporal choices may be treated straightforwardly. Furthermore, CRRA allows to collapse heterogeneous individuals into a single representative agent, easing macroeconomic model building.

However, a number of empirical facts seem to be in contrast with the presence of constant risk attitude so that there have been several attempts to investigate preferences and to relate them to aspects characterizing individual status in terms of professional position, health, and social condition in order to disentangle the relevance of wealth and states of nature in determining individual behavior. Unfortunately, identification is not an easy task and strong assumptions may undermine the reliability of existing results. Important contributions to overcome some crucial problems have been presented by Bhamra and Uppal (2006) and Chiappori and Paiella (2011) who separate the wealth effect on risk attitude from that of other personal characteristics identified as fixed components in panel data analyses.

This paper adds to the existing literature by focusing on a specific feature of the issue highlighting that unobserved changes of states of nature correlated with changes in wealth may represent a severe *caveat* to assess the actual shape of risk aversion. Our goal is then to provide an evaluation of the dependence of individual financial risk preferences upon both *state* and *wealth*. The particular state of nature considered in this work is the socioeconomic status related to job protection from the risk of layoff. The intuition is that while employees with open-ended contracts may feel safe because of the stability of their job, fixed-term workers consider themselves unsteady and this could influence their risk preferences.

The empirical analysis is carried out on Italian individual panel data containing information on workers' severance pay investments. Since the Italian normative setting imposes to all private sector employees to allocate their accruing severance indemnities in pension funds which are very different in terms of riskiness, risk attitude is measured by evaluating funds' choice. Our identification strategy is based on the analysis of preferences of workers who change job contract going from fixed-term to open-ended arrangements because of legal limits imposed to fixed-term contract renewal. Therefore, the implemented procedure is grounded on an exogenous source of variation in job contract that is not caused by individual mindset modifications. This gives us the opportunity to evaluate financial choices undertaken under contracts which provide different wealth and job security prospects. By using appropriate control groups it is then possible to disentangle wealth and state dependence of risk preferences. Our results show that workers who gain employment protection are willing to invest in riskier financial activities.

The rest of the paper is organized as follows. Next section briefly discusses the literature, our insights, and the institutional setting. Section 3 illustrates how funds' choices can be related to a measure of relative risk aversion by means of a simple theoretical frame wherein risk attitude is related to both wealth and state of nature. Section 4 describes the data used to implement the empirical analysis. Section 5 presents the identification method while Section 6 contains the results. Concluding remarks are discussed in Section 7.

2. Literature, our insights, and institutional setup

2.1. Existing background

The dependence of risk preferences on wealth and states of nature has been evaluated in order to fit many empirical facts which seem to be at odds with constant risk attitude (Kocherlakota, 1996). It is important to remark that existing studies consider both state and wealth dependence of risk aversion, although these aspects are handled separately.

Some authors investigate if variations in wealth influence assets holding using cross sectional household data (Blake, 1996; Guiso & Paiella, 2008). However, cross-section approaches have been heavily criticized. Bhamra and Uppal (2006) argue that this methodology does not allow for the identification of risk aversion and intertemporal elasticity of substitution. Chiappori and Paiella (2011) show that it is not possible to untangle the effect of wealth on individual preferences from the joint distribution of risk aversion and wealth using cross sectional data since the time variation provided by panel data is required. By using Italian data, these authors show that relative risk aversion does not depend on individual wealth, confirming the CRRA hypothesis. Still, they recognize that the inclusion of business equity among assets reverses their conclusion. In this case, their results are similar to those presented in Bucciol and Miniaci (2011) and Dohmen et al. (2011). Field-experiments have also been implemented to test the stability of risk preferences in wealth and CRRA is often detected (Harrison, Lau, & Rutstrom, 2007). Nevertheless, some difficulties may arise in field experiments since they pose some problems of generalizability outside of the immediate application, especially when financial issues are concerned (Levitt & List, 2007).

The importance of considering the possibility that risk preferences are actually state-contingent has also been stressed. In particular, Andersen, Harrison, Lau, and Rutstrom (2008) highlight that (p. 1105) "common sense and interpretation suggests that individual risk preferences could be state dependent". To investigate the issue, these authors evaluate if risk attitudes change over time using 97 Danish individuals undertaking two times – over a 17 months period – experiments designed to elicit risk aversion. Some variation of elicited risk attitudes over time is detected, suggesting that subjects who become more optimistic about future tend to reduce their risk aversion. Guiso and Paiella (2008) show that consumer's environment affects risk aversion and income uncertainty generates a higher degree of absolute risk aversion.