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Individual Preferences and the Exponential Growth Bias[☆]

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Abstract

The exponential growth bias (EGB) refers to individuals' underestimation of the effects of exponential growth and has been shown to affect important financial decisions such as retirement savings. We develop and test a novel experimental design to evaluate the magnitude of the EGB based on multiple price lists. Our design simultaneously elicits the EGB as well as subjects' utility curvatures and time preferences. Allowing for non-linear utility, we structurally estimate the magnitude of the EGB as about half as large as when linear utility is assumed. These results shed light on the relationship between individual preferences and the EGB.

JEL Classification: D03, D91, C91

Keywords: Time Preferences, Exponential Growth Bias, Multiple Price Lists, Maximum Likelihood Estimation

1. Introduction

Starting with Stango and Zinman (2009), several studies have found evidence for the existence of the exponential growth bias (EGB) in financial decisions using surveys as well as laboratory or field experiments. The EGB implies that individuals underestimate the magnitude of exponential growth and more specifically the effects of compound interest. As many countries are increasingly shifting the responsibility for retirement planning from employers to employees (Benartzi and Thaler, 2007), the EGB affects the effectiveness of policies: individuals who underestimate the final value of their savings might be prone to undersave and run the risk of insufficient retirement earnings (Stango and Zinman, 2009; Levy and Tasoff, 2016a).[4] In this study, we suggest a novel experimental method to evaluate the individual magnitude of the EGB. Moreover, we shed light on the relationship between individual preferences and the EGB. When attempting to estimate the welfare effects of different policy interventions (such as different tax, welfare, or retirement

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[4] Even though the level of the risk-free interest rate is quite low at the moment, the EGB is still highly relevant for savings behavior. Take for example the expected returns of long-term investments in the stock market and related asset classes, which have essentially the same compounding structure. Another popular explanation of undersaving is quasi-hyperbolic discounting (Laibson, 1997, 1998). However, in our setup, there are no immediate payments, which rules out a role for quasi-hyperbolic discounting, where a separate discount factor β is assumed for instantaneous consumption and a traditional exponential discount factor δ is assumed for longer-term time preferences. We focus on the latter only and leave the addition of quasi-hyperbolic discounting to future work.