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Optimal consumption and savings with stochastic income and recursive utility[☆]

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Abstract

We develop a tractable incomplete-markets model with an earnings process Y subject to permanent shocks and borrowing constraints. Financial frictions cause the marginal (certainty equivalent) value of wealth W to be greater than unity and decrease with liquidity $w = W/Y$, and additionally, makes consumption to decrease with this endogenously determined marginal value of liquidity. Risk aversion and the elasticity of inter-temporal substitution play very different roles on consumption and the dispersion of w. Permanent earnings shocks, especially large discrete stochastic jumps, make consumption smoothing quantitatively difficult to achieve. Borrowing constraints and permanent discrete jump shocks can generate empirically plausible values for marginal propensities to consume in the range of 0.2 to 0.6.

JEL Classification: G11, G31, E2

Keywords: buffer stock; precautionary savings; incomplete markets; borrowing constraints; permanent income; non-expected utility; marginal value of liquidity

1. Introduction

A fundamental question in economics is how an agent dynamically chooses consumption when markets offer limited opportunities for her to smooth consumption and manage earnings risk. Since Friedman's permanent-income hypothesis and Modigliani's life-cycle hypothesis developed in 1950s, economists have developed a large body of research on income-fluctuation, self-insurance, and optimal savings problems.[1]

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[1]Early work includes Leland (1968), Levhari and Srinivasan (1969), Sandmo (1970), Dreze and Modigliani (1972), and Schechtman (1976), among others. Hall (1978) formalizes Friedman's permanent-income hypothesis via martingale (random-walk) consumption in a dynamic programming framework. Zeldes (1989), Caballero (1990, 1991), Deaton (1991, 1992), and