Behavioral Expectations under Indeterminacy: An Empirical Evaluation

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Abstract

This paper investigates the quantitative implications and empirical relevance of behavioral expectations (BE) in dynamic stochastic general equilibrium (DSGE) models under equilibrium indeterminacy. Alongside the rational expectations (RE) benchmark, we examine two BE frameworks—diagnostic expectations (DE) and cognitive discounting (CD)—in both expectation formation and forecast error specifications. Using a simple example, we show that each combination yields a distinct equilibrium law of motion and different dynamic responses to fundamental and sunspot shocks. To evaluate their empirical relevance, we then estimate a medium-scale DSGE model for Japan's prolonged zero interest rate period, a likely episode of indeterminacy, under various BE specifications. The DE model with RE-based forecast errors outperforms other specifications in replicating key macroeconomic dynamics, particularly the overreaction of aggregate variables to major shocks. Variance and historical decompositions reveal technology and sunspot shocks as primary drivers of output and inflation, respectively. Sunspot shocks stabilize output but amplify inflation volatility. Relative to the RE benchmark, the DE model assigns greater importance to sunspot shocks, highlighting the role of BE and indeterminacy in Japan's macroeconomic fluctuations.

Keywords: Equilibrium indeterminacy, Diagnostic expectations, Cognitive discounting, Rational expectations, Bayesian estimation

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