

Growth Uncertainty, Rational Learning, and Option Prices*

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Abstract

We demonstrate that incorporating parameter learning into a production economy can capture salient properties of the variance premium and index option prices with empirically consistent equity returns, the risk-free rate, and macroeconomic quantities. In a model estimated on post-WWII U.S. data, the investor learns about the true parameters governing the persistence, mean, and volatility of productivity growth. Rational belief updating amplifies the impact of shocks on prices and conditional moments. The agent, in turn, pays a large premium for variance swaps and options because they hedge his concerns about future revisions, particularly concerning the mean and volatility of productivity growth.

Keywords: Uncertainty, Rational Learning, Business Cycles, Variance Premium, Implied Volatilities

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