Information and Derivatives

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Abstract:

This paper studies a multiasset continuous time economy with heterogeneous information and a derivative market. The derivative has a general payoff written on an underlying stock paying a future dividend distributed as a weighted sum of noncentral chi-squares. The economy is populated by informed and uninformed investors as well as investors trading on noise. The noisy rational expectations equilibrium is derived in explicit form. The equilibrium stock price is positive at all times and has a stochastic volatility which is affine in the fundamentals and the endogenous information signals. The derivative cannot be replicated, except at rare endogenous stopping times when the market becomes incomplete. Properties of equilibrium, such as informational efficiency and its relation to dynamic completeness, volatility structure and asset holdings behavior are examined. The behavior of asset holdings in periods surrounding times of market incompleteness is studied. The model predicts an increase in trading activity, stock holdings and derivatives open interest on expiration dates.