Abstract:

This paper develops a novel local method to solve recursive stochastic macroeconomic models as an approximation around the ergodic mean of the distribution of the variables. In contrast to standard local approaches, agents fully take risk into account up to a first-order, which helps to solve several well-known limitations of previous algorithms (need of a well-defined deterministic steady state, certainty-equivalence up to a first-order, inability to deal with incomplete markets). The method is very fast, easy to implement, and it provides an excellent degree of accuracy as measured by the Euler equation errors. We introduce the method by solving two well-known examples of incomplete-markets models in the literature: the stochastic growth model with heterogeneous agents and aggregate risk, and the New Keynesian model with heterogeneous agents (HANK).