**Solving nonlinear models**

In mathematics and applied mathematics, perturbation theory comprises methods for finding an approximate solution to a problem, by starting from the exact solution of a related, simpler problem (especially useful for non-linear models).[1][2] A critical feature of the technique is a middle step that breaks the problem into "solvable" and "perturbative" parts.[3] In perturbation theory, the solution is expressed as a power series in a small parameter {\displaystyle \varepsilon }\varepsilon .[1][2] The first term is the known solution to the solvable problem. Successive terms in the series at higher powers of {\displaystyle \varepsilon }\varepsilon usually become smaller. An approximate 'perturbation solution' is obtained by truncating the series, usually by keeping only the first two terms, the solution to the known problem and the 'first order' perturbation correction.

Time iteration over Euler equation is basically faster and more efficient than VFI…

**Individual risk, inequality, and monetary policy**

Focus on Heterogenous-Agent New Keynesian (HANK) models, as opposed to representative agent: aggregate demand fluctuations dominant, impact of heterogeneity on the propagation of business cycles, monetary policy matters for stabilization and inequalities.

We have 3 potential amplification mechanisms: (new) Keynesian cross, precautionary saving spiral, flight to liquidity

Forward guidance puzzle? Solved by incomplete markets?