How Trade Can Cause Heavy-Tailed Prices In an Economy With Gaussian Fundamentals

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Abstract

Even if changes in economic fundamentals are governed by a gaussian law, we argue that ensuing price adjustments cannot be smooth, unless traders ignore trends in prices, as would be the case in the presence of "zero intelligence traders" (ZITs). ZITs react only to local conditions (costs/rewards), and do not take into account system-wide information such as market prices and volume. Through simulations, we confirm that ZI traders cause adjustment to equilibrium changes to be smooth. They actually create a particular type of long-term dependence in prices called "pink noise." More intelligent traders would want to exploit the pink noise. We conjecture that this causes frequent outliers, and hence, heavy-tailedness. We conclude that, if markets are to behave in more "normal" (i.e., gaussian) fashion, access to system-wide information should be limited.

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