The Macroeconomic Significance of Disequilibrium

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Abstract

This paper establishes that the contribution of granular shocks to aggregate volatility depends on whether the economy exhibits disequilibrium dynamics in response to the shocks. We characterize a system of buyer-seller relations between firms wherein productivity shocks arrive before the economy reaches the equilibrium pertaining to the last round of shocks. We show that within such a system, the aggregate volatility generated by granular shocks is sizeably smaller than that of an economy which promptly jumps from one equilibrium to another. This difference between equilibrium and disequilibrium aggregate volatility arises from the fact that within the disequilibrium setting subsequent rounds of shocks 'average' each other in a manner reminiscent of the Central Limit Theorem. The extent of such inter-temporal averaging of shocks depends on the rate at which the economy converges to equilibrium. Factors that determine the rate of convergence to equilibrium, like the stickiness of prices and Eigenvalues of the production network, therefore play an important role in determining aggregate volatility. We calibrate the model to a large dataset of buyer-seller relations between firms in the US. Our empirical estimates suggest that disequilibrium aggregate volatility lies somewhere between a fifth and a third of its equilibrium counterpart. This means that when disequilibrium dynamics are at play, granular shocks may not generate much of the observed aggregate volatility even with the production network acting as an amplification mechanism.

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Key Words Aggregate Volatility, Disequilibrium, Productivity Shocks, Production Network, Price Stickiness.

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