Endogenous business cycles caused by nonconvex costs and interactions

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Abstract

This paper shows that endogenous business cycles (inventory cycles) arise from a combination of nonconvex costs and economic interactions among firms. At the micro level, firm behavior is characterized by lumpiness, and the standard production-smoothing theory is empirically rejected. To account for this, a nonconvex cost function is assumed in our model. It might be expected that even if the microeconomic behavior is lumpy, that effect disappears at the aggregate level because of the law of large numbers. However, we show that if there exist interactions among firms, a regular endogenous cycle emerges at the aggregate level given that the degree of the interaction effect exceeds a critical point. That is, the randomly behaving microeconomic agents generate deterministic *collective behavior* via interactions. It offers an explanation for the *Kitchin cycle*.

Keywords: Kitchin cycle; Nonconvex Cost Function; Propagation of Chaos; Bifurcation.
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