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Destabilizing effects of market size in the dynamics of innovation. (English) Zbl 07505355

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Summary: In existing models of endogenous innovation cycles, market size alters the amplitude of fluctuations without changing the nature of fluctuations. This is due to the ubiquitous assumption of CES homothetic demand system, implying that monopolistically competitive firms sell their products at an exogenous markup rate in spite of the empirical evidence for the procompetitive effect of entry and market size. We extend the Judd model of endogenous innovation cycles to allow for the procompetitive effect, using a more general homothetic demand system. We show that a larger market size/innovation cost ratio, by reducing the markup rate through the procompetitive effect, has destabilizing effects on the dynamics of innovation under two complementary sets of sufficient conditions; i) when the price elasticity is “not too convex” in price; and ii) when the demand system belongs to the two parametric families, “generalized translog” and “constant pass-through”, each of which features the choke price and yet contains CES as a limit case. Interestingly, the destabilizing effects become amplified as the demand system approaches to the CES limit within each family. We also discuss some cross-sectional implications in a multi-market extension. Because innovation/entry activities fluctuate more in larger markets, they are not always higher in larger markets than smaller markets. Furthermore, the sale of each product is more volatile in larger markets.

MSC:
91B24 Microeconomic theory (price theory and economic markets)
91B38 Production theory, theory of the firm

Keywords:
endogenous innovation cycles; Judd model; H.S.A.; procompetitive effect; market size and volatility; piecewise-linear dynamical system

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