

## **Emergent behavior in a model of profit-maximizing firms**

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Keen has shown analytically that under neoclassical assumptions, the true profit-maximisation formula for firms in an  $n$ -firm industry is not to equate marginal cost ( $MC$ ) and marginal revenue ( $MR$ ) but to produce where  $MR-MC = (n-1)/n (P-MC)$ , where  $P$  is market price.

This predicted average behavior is confirmed in multi-agent simulations that also reveal complex individual behaviors beneath a convergence of aggregate output to the profit-maximizing level.

Additionally it is shown that convergence to the neoclassical (Cournot) predicted output levels requires a degree of operational irrationality by the agents.