

Stochastic Differential Games and Applications to Energy and Consumer Goods Markets

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We discuss Cournot and Bertrand models of oligopolies, first in the context of static games and then in dynamic models. The static games, involving firms with different costs, lead to questions of how many competitors actively participate in a Nash equilibrium and how many are sidelined or blockaded from entry. The dynamic games lead to systems of nonlinear partial differential equations for which we discuss asymptotic and numerical approximations. Applications include competition between energy producers in the face of exhaustible resources such as oil (Cournot); and markets for substitutable consumer goods (Bertrand).

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