Strategic behaviour in the crude oil market
One-stage vs. two-stage oligopoly models

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The current textbook approach to modelling dominant firms and a competitive fringe in an equilibrium framework combines distinct first-order optimality conditions for Cournot and competitive players. While computationally convenient, this may be counter-intuitive to the notion of market power and lead to inconsistent results. We propose a method to circumvent this shortcoming by including consistent conjectural variations of the dominant firms regarding the fringe. Furthermore, we show that this system can be solved as a Mixed Complementarity Problem with heterogenous firms.

We apply this model to the crude oil market and the role of OPEC suppliers over the past decade. Our approach endogenously captures the increased market power during the financial crisis and the concurrent turmoil in global resource markets. While price results are generally close to the textbook model, production decisions of Saudi Arabia are more plausible in the new framework.