Nash Equilibrium Points in an Asymmetric Duopoly: Comparative Analysis[1]

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Based on [1], we consider an asymmetric duopoly model in the gas market where two players produce a homogeneous commodity. One of the players maximizes its profit, while the other maximizes its revenue. The asymmetry also includes a security constraint, saying that the revenue-maximizing player can sell no more than a certain proportion of the quantity of its rival. Cournot and Stackelberg models are compared, with and without security constraint [1,2] and the comparative analysis is executed.

Conclusions can be generalized as follows. There is an continuum of Nash-Cournot equilibria and the constraint is active under some additional conditions; the Stackelberg equilibrium is unique. In both Stackelberg and Cournot model the security constraint punishes player f and rewards player l; the Stackelberg game with active security constraint punishes even further player f and the revenue is even lower compared to unconstrained market conditions. A special Nash-Cournot equilibrium exists where player f maximizes its revenue. As typical to oligopolistic markets price is higher and quantity sold is lower even under imposed security constraint.

References

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