

R&D Collaboration in Collusive Networks

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Abstract

The paper aims at analyzing the R&D incentives of oligopolistic firms that can form R&D collaborations and reciprocal market sharing agreements, which restrain them from entering each other's market. We develop a model to examine the architecture of strategically stable networks and the relation between individual incentives and social welfare in networks.

We find that in absence of R&D collaborations, as the number of collusive agreements increases, R&D effort level of an individual firm decreases and the profits increase at the expense of consumers resulting in lower social welfare. When firms undertake collaborative R&D and collude in the market, we show that besides the degree, the configuration of the network becomes crucial. In regular networks with complete components, the equilibrium level of R&D effort decreases in the degree and lowest compared to ring lattices and bipartite graphs. Industry profits increase with respect to the degree in all these configurations but the highest social welfare and R&D is attained under the complete bipartite graph. We also show that the regular networks with two complete components are stable only when R&D spillovers are very low. The complete network is always stable but not socially optimal, while the stability of the empty network depends on the number of firms and the level of R&D spillovers.