The Role of Entry in a Mixed Oligopoly with Licensing

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Abstract ID: 335
Inviato: 12/04/2024
Evento: XXII Workshop Annuale SIEPI
Argomento: 6. Innovazione, cambiamenti tecnologici e politiche connesse
Parole chiave: entry, license, mixed oligopoly

We consider a mixed quantity-setting oligopoly model in which two private and partially public incumbent firms face further competition from an entrant. The incumbents may acquire the quality-improving license from the innovator. The innovator, an outsider to the market, may decide whether to make the quality-improving license exclusive to one of the incumbents or non-exclusive and decide whether to make such a transaction via an upfront fee or per unit royalty fee. In this environment, we first show that even without quality-improving licensing, a semi-public firm always benefits from the entry, even if the entrant's quality is higher than its own. Although an entrant makes the competition fiercer and reduces the incumbents' private profits, a partially public firm can internalize this externality through increasing social welfare. When firms are innovative and constrained to exclusive contracts, it is optimal for the innovator to sell the license exclusively to the semi-public firm. However, with a new entrant in the production market, in contrast to the existing literature, royalty licensing outperforms fixed-fee licensing regardless of the innovation size and the entrant's quality.