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Many literatures about mixed oligopoly have noticed competition between public and private firms, and the privatization on market performance, and endogenous timing est. For example, Nisimori & Ogawa [2002] investigate the effects of deregulation on the cost-reducing incentives of a public firm by comparing public monopoly case with mixed oligopoly case. They found two results. First, a monopolistic public firm has a greater incentive to make a cost-reducing than a public firm in mixed oligopoly when public firm only R&D investment in the first stage. Second, the consumer surplus in public monopoly is greater than in mixed oligopoly.

In realty, many firms choose to undertake not only competitive behavior level but also cooperative behavior level. For example, when new communication goods is exploited, at first the mobile phone companies advertisement investment to form the goods market. And, the companies compete in formed market. Such situation is called coepetition. Ngo & Okura [2008] applied this concept, and investigate the impact of privatization on the degree of cooperation and competition in a mixed duopoly market that comprises one semi-public firm and one private firm. They found following results. First, the competitive behavior level (made to increase market share) of semi-public firm is smaller than private firm's. Second, there is the case in which only the semi-public firm undertakes cooperative behavior level (made to increase market size). The objective of this paper is to investigate the effect of the emergence of private firms on social welfare by using a coepetition model. Hence, we consider three cases (semi-public monopoly case, mixed duopoly case, mixed oligopoly case), and compare them. We demonstrate two effect of the emergence of private firms. Market size in semi-public monopoly is greater than mixed duopoly. Social welfare in semi-public monopoly is greater than mixed duopoly, if semi-public firm having a high degree of privatization exist.

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