Sticky Prices, Adjustment Costs, and Cost-reducing Uncertainty in the Presence of R&D Joint Ventures

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Abstract

In this paper, we investigate the dynamic aspects of R&D joint ventures in the context of the simultaneous model. We attempt to fill the gap left by the earlier models by considering sticky prices and adjustment costs in a dynamic duopolistic competition model with cost reducing uncertainty. To be specific, an infinite horizon, two-player, linear-quadratic differential game model is formulated and players (firms) that sell a homogeneous product cooperate in the R&D market but compete in the product market. Our results show that (i) regardless of cost-reducing uncertainty, the firm's R&D effort, R&D knowledge accumulation, and output in the feedback Nash equilibrium are greater than in the open-loop Nash equilibrium, (ii) the higher the sticky prices, the lower the firm's R&D effort level and R&D knowledge accumulation, (iii) if cost-reducing uncertainty is not too large and the firm's risk aversion is not too strong, then RJVs in the open-loop Nash equilibrium and the feedback Nash equilibrium have anticompetitive effects, and (iv) R&D tax can increase each firm's R&D effort level.

Keyword：Research Joint Ventures (RJVs), Sticky Prices, Adjustment Costs, Cost-reducing Uncertainty