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Timing of entry and product location in a linear barbell model: application to flexible manufacturing systems

Chia-Hung Sun*

Abstract

This paper investigates a preemption game of entry into a market with endogenous product location so as to analyze the flexible manufacturing system. Based on a barbell model with continuous time and repeated purchases, we find that duopoly firms sequentially enter the market and differentiate maximally on product differentiation in equilibrium. The equilibrium timing differentiation between two firms is minimized among all product location combinations of them. We also conduct welfare analysis and show that the optimal differentiation in product location is similar to the equilibrium one, but there is market failure in the choice of entry timing. First entry occurs too late and second entry occurs too early (late, respectively) for a relatively more (less, respectively) flexible production system from the viewpoint of social welfare.

Keywords: Preemption game; Product differentiation; Barbell model; Flexible manufacturing system

JEL classification: L13; D21; O30; R10

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