Preemption Games: Theory and Experiment*

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Abstract

Several investors face an irreversible investment opportunity whose value $V$ is governed by Brownian motion with upward drift and random expiration. The first investor $i$ to seize the opportunity before expiration receives the current $V$ less a privately known cost $C_i$; the other investors receive nothing. We characterize Bayesian Nash Equilibrium (BNE) for this game, extending previously known results.

We also report a laboratory experiment with 72 subjects randomly matched into 600 triopolies. As predicted in BNE: subjects in triopolies invested at lower values than in monopolies; changes in Brownian parameters significantly altered investment values in monopoly but not in triopoly; and the lowest cost investor in a triopoly usually preempted the others. Contrary to BNE, subjects’ markups of target value over cost did not systematically decrease in cost, but did decrease over time, and remained in the neighborhood of a constrained optimum.

Keywords: Real Options, Preemption, Incomplete Information.

JEL codes: G13, D83, C91, C73

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