

Investment Timing under Incomplete Information *

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Abstract

We study the decision of when to invest in an indivisible project whose value is perfectly observable but driven by a parameter that is unknown to the decision maker ex ante. This problem is equivalent to an optimal stopping problem for a bivariate Markov process. Using filtering and martingale techniques, we show that the optimal investment region is characterized by a continuous and non-decreasing boundary in the value/belief state space. This generates path-dependency in the optimal investment strategy. We further show that the decision maker always benefit from an uncertain drift relative to an ‘average’ drift situation. However, a local study of the investment boundary reveals that the value of the option to invest is not globally increasing with respect to the volatility of the value process.

Keywords: Real Options, Incomplete Information, Optimal Stopping.

JEL Classification: C61; D83.

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