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The effects of an uncertain abandonment value on the investment decision

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Abstract

Using a three-factor stochastic real option model framework, this paper examines the effects of abandonment on the investment decision. Abandonment is classified according to whether the opportunity arises for an active operating asset post-investment, or for holding the project opportunity pre-investment. Separate analytical models are developed for the alternative forms of abandonment optionality. Numerical sensitivity analysis shows that the presence of a post-investment abandonment opportunity makes the investment opportunity appear to be more attractive because of the abandonment option value, but not by a considerable amount. Also, in contrast to the standard real option finding, an abandonment value volatility increase produces a project value threshold fall owing to the increase in the abandonment option value.

Keywords:

real option analysis abandonment value post/pre investment

JEL Classification:

D81 G31 H25

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Disclosure statement

No potential conflict of interest was reported by the authors.

Notes

1. Some authors assume $\theta_\psi = r - \alpha_\psi$, without a risk adjustment. It is likely that these drifts may be related for some types of equipment such as cars, but not perhaps for ships, but we ignore these possibilities.

2. In our base case, we assume zero correlation between V, K and X, that is X may not be reflective of real option investment values. This assumption is relaxed in Figures 5 and 10.

3. A similar result is obtained for the investment cost volatility.

4. An algebraic explanation is available from the authors.

5. All of these numerical results are available from the authors.

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Yunfeng Fan et al.
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