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Multistage investment under two sources of uncertainty – a real options approach

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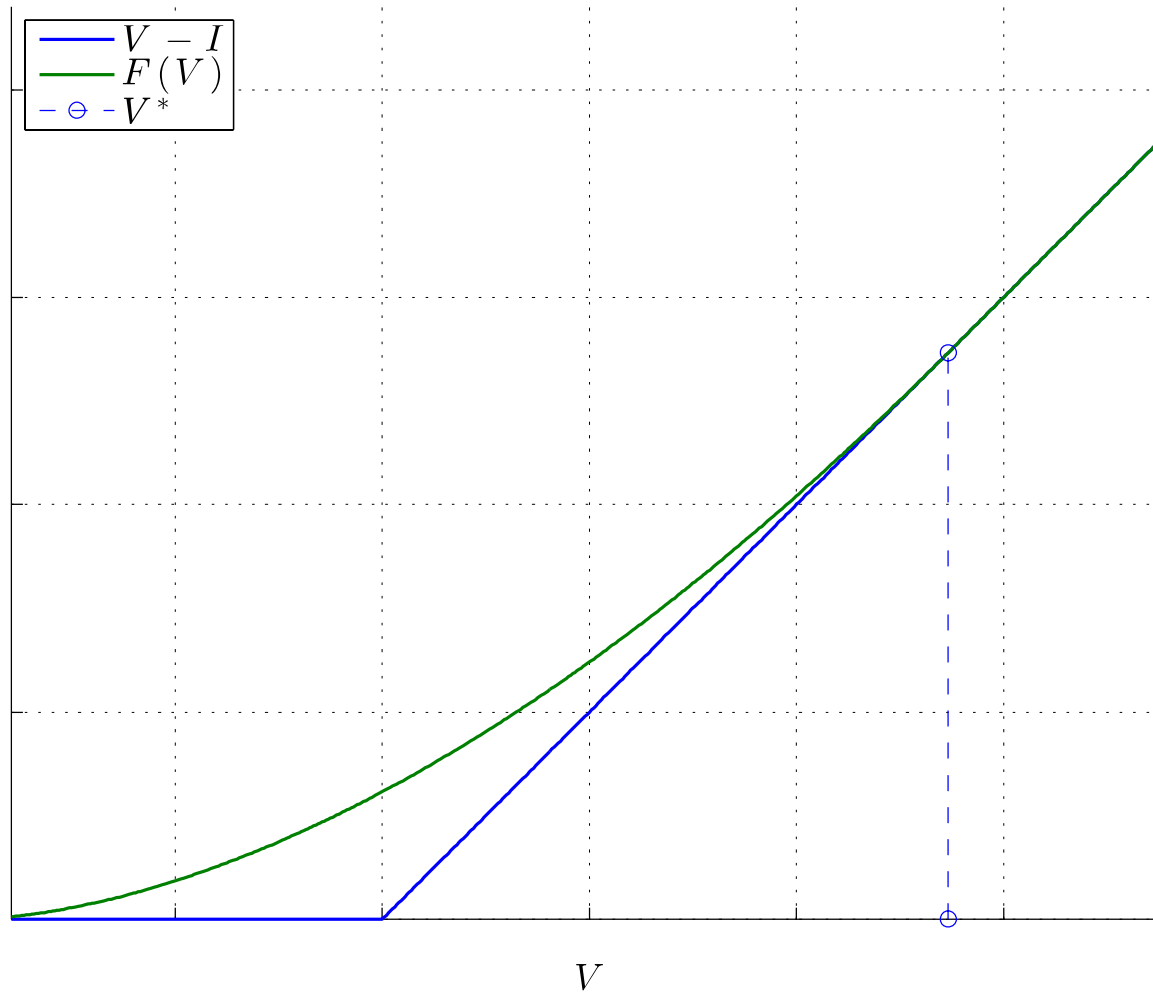
Outline

- Background
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Background

- Net present value (NPV) analysis is a traditional way of valuing investment opportunities
- NPV analysis falls short in modeling uncertainty and optionality in investment decisions
- Real options valuation overcomes these shortcomings
- Real options models have been developed to model a number of different investment situations, but not the one we are interested in

$$I = 1, \alpha = 0.02, r = 0.06, \sigma = 0.1$$



Goals

- Extend previous models to a situation in which an investor has an opportunity to sequentially invest in a project, the payoff of which is a function of two stochastic variables
- Especially study how the inclusion of the second stochastic variable affects the investor's optimal investment policy
- Find a way to solve the model numerically

Sources and methods

- Build on existing real options literature and proposed models
- Utilize MATLAB for the numerical implementation
- Analyze the results using the method of comparative statics
- Use common sense and economic thinking to provide explanation for the results

Schedule

- Most of the work has already been done during the course of summer
- Finish the final version of the thesis by the end of September
- Present the results at the next seminar meeting in November

References

- *Investment under uncertainty*, Dixit & Pindyck, 1994
- *Time to build, option value, and investment decisions*, Majd & Pindyck, 1994
- *The value of waiting to invest*, McDonald & Siegel, 1986