Investment strategies with insurance

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We consider an investment model with two sources of uncertainty: the company's future revenue depends on a random economic indicator, following a geometric Brownian motion; and unexpected adverse events that reduce a company's future revenue, described by a compound Poisson process.

The firm must decide the moment to invest in the market and the insurance contract that it wants to buy. The decision to buy an insurance contract depends on the premium required and how the firm measures its risk. We formulate the model as a control problem that is solved using a dynamic programming approach.