

Title: “Managing the occurrence of adverse events by investing or exiting: a real options approach”

Abstract: We consider a firm that may face sudden decreases in its revenue due to the occurrence of negative events such as the climate events. Its revenue is modelled by a geometric Brownian motion, and the occurrence of adverse events is modelled by a Poisson process. If the firm continue producing without taking any action, then it run the risk of being producing at a loss. Then, we consider that the firm has two options: either to leave the market immediately or to invest in risk mitigation measures to reduce the negative impact on the revenue. After the investment occurs, the firm can still leave the market. The firm’s option value is modelled as a sequential optimal stopping problem. The value of the firm with exit and investment options is analytically obtained. We prove that the optimal strategy is characterized by a disconnected stopping region and by the existence of an inaction region.

Keywords: Climate risk, optimal stopping, disconnected stopping region, real options

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