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UNCERTAIN R&D, BACKSTOP TECHNOLOGY AND GHG STABILIZATION

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This paper analyses optimal investments in innovation with a stringent climate target and uncertainty on the effectiveness of R&D. The innovation needed to achieve the deep cut in emissions is modeled by a backstop carbon-free technology whose cost depends on R&D investments. To better represent the process of technological progress, we assume that R&D effectiveness is uncertain. By means of a simple analytical model, we show how accounting for the uncertainty that characterizes technological advancement yields higher investments in innovation and lower policy costs. Subsequently, we confirm the results via a numerical analysis performed with a stochastic version of WITCH, an energy-economy-climate model. The results stress the importance of a correct specification of the technological change process in economy-climate models.