

## Optimal investment with random innovations

Manuel Guerra<sup>1,2</sup>      Cláudia Nunes<sup>3</sup>      Pedro Pólvora<sup>1</sup>

<sup>1</sup>ISEG - Tech. University of Lisbon, Lisbon, Portugal

<sup>2</sup>CEMAPRE, Lisbon, Portugal

<sup>3</sup>IST - Tech. University of Lisbon, Lisbon, Portugal

We consider a simplified model of a firm whose performance is a function of the technology level. The firm operates with an initial technology level  $m$  and the current (best) technology available is assumed to be a renewal process  $N_t$  with discrete increments. At any moment the firm can switch to the best technology available, incurring an investment cost. We seek the strategy (i.e., the best investment time) maximizing the life-time discounted value of the firm.

We provide a general characterization of the optimal solution. For some particular structures of the renewal process' intensity, it is possible to derive explicit solutions.