Optimal Business Model Adaptation Plan for a Company Under an Energy Transition Scenario

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Abstract

We propose a model whose goal is to assess how a firm is likely to react to a given energy transition scenario. Precisely, we aim to model its business model transition in order to keep up with new markets requirements and its implications, such as the need for new investment. In order to do so, we use stochastic control theory and random modelling. We differ from other models which use a purely deterministic approach to determine the company's adaptation. Moreover, contrarily to other models where companies' reactions are not anticipated but modelled as an instantaneous reaction to carbon price shocks, we put an emphasis on companies' anticipation and long-term investment strategy given a transition scenario. We find that carbon price disclosure give an incentive to company to adapt their business plan before carbon price shocks, and to decrease their overall carbon emissions levels.

Keywords: climate risks, transition risk, stochastic control, climate scenario analysis

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