

# Leadership and Commitment in Oil Markets: Market Power Meets Climate Policy\*

Hassan Benchekroun

McGill University

CIREQ

Simon Elgersma

Rijksuniversiteit Groningen

Gerard van der Meijden

Vrije Universiteit Amsterdam

Tinbergen Institute

Cees Withagen<sup>†</sup>

Vrije Universiteit Amsterdam

Tinbergen Institute

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## Abstract

We examine how leadership and commitment in oil markets affect climate damages, welfare, and the effectiveness of climate policy. Using a cartel–fringe model with renewables and climate damages, we compare Nash–Cournot, open-loop von Stackelberg, and feedback von Stackelberg equilibria. Our results show that leadership changes extraction patterns: when the cartel acts as a von Stackelberg leader, relatively more polluting extraction by the fringe is postponed, reducing climate damages relative to Nash–Cournot. However, the absence of commitment in feedback equilibria limits these gains and can even increase damages with respect to Nash–Cournot. We quantify these welfare losses and decompose them into a conservation and sequence effect. We show both for carbon taxes and renewable subsidies that small policy changes can trigger abrupt shifts in extraction regimes, causing large jumps in welfare and climate damages. Marginal changes in climate policies can have qualitatively different impacts on climate damages than non-marginal changes. These findings highlight that a von Stackelberg type of leadership can either amplify or reduce climate damages, and that policy design must account for discontinuous responses.

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<sup>†</sup>Corresponding author: Department of Spatial Economics, Vrije Universiteit Amsterdam. E-mail: c.a.a.m.withagen@vu.nl.