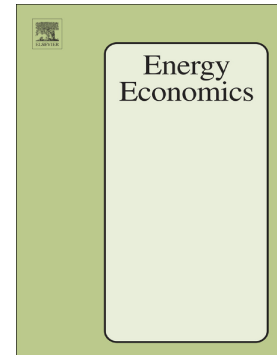


Accepted Manuscript

Carbon emissions abatement: Emissions trading vs consumer awareness

Wen Wen, P. Zhou, Fuqiang Zhang



PII: S0140-9883(18)30391-8
DOI: doi:[10.1016/j.eneco.2018.09.019](https://doi.org/10.1016/j.eneco.2018.09.019)
Reference: ENEECO 4166
To appear in: *Energy Economics*
Received date: 9 February 2018
Revised date: 22 August 2018
Accepted date: 27 September 2018

Please cite this article as: Wen Wen, P. Zhou, Fuqiang Zhang , Carbon emissions abatement: Emissions trading vs consumer awareness. *Energy Economics* (2018), doi:[10.1016/j.eneco.2018.09.019](https://doi.org/10.1016/j.eneco.2018.09.019)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Carbon emissions abatement: Emissions trading vs consumer awareness

Wen Wen^a, P. Zhou^{a,b,*}, Fuqiang Zhang^c

^a College of Economics and Management, Nanjing University of Aeronautics and Astronautics, Nanjing 211106, China

^b School of Economics and Management, China University of Petroleum, Qingdao 266580, China

^c Olin Business School, Washington University in St. Louis, St. Louis, MO 63130, USA

Abstract: This paper studies firms' carbon emissions abatement and pricing strategies in a competitive market when facing the pressure from both emissions trading price and consumer carbon awareness. We develop a duopoly game and investigate how problem parameters affect the equilibrium outcome. We find that carbon price and consumer awareness level have an additive effect on a firm's emissions abatement effort. However, these two factors have different implications for the firms' prices and profits. In particular, the firms' prices first decrease and then increase with consumer awareness level, while the firms' profits first decrease and then increase with carbon price when there is a moderate emissions cap. From both the consumers' and the firms' standpoints, an appropriate emissions abatement strategy for the central planner is to first push up the carbon price and then promote consumer carbon awareness. Such a strategy provides incentives for firms to invest in carbon abatement activities, without causing drastic changes to product prices and firm profits. Finally, we generalize the base model to consider more than two firms. It has been found that raising carbon price may be a better policy choice than promoting consumer awareness for the central planner who aims at reducing carbon emissions in various industries with different competition levels.

Keywords: Carbon emissions trading; Consumer awareness; Emissions abatement; Pricing; Game theory

1. Introduction

In the past decade, global warming has become an increasing concern for the general public as well as governments around the world. It has been widely recognized that a major contributor of global warming is anthropogenic greenhouse gases (GHGs), of which carbon dioxide (CO₂) emissions account for over three quarters. As a countermeasure for global warming, the 2015 Paris Agreement proposed the long-term goals of "holding the increase in global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels" (Höhne et al., 2017).

* Corresponding author. Email: rocy_zhou@hotmail.com (P. Zhou), ww_nuaa@163.com (W. Wen).

Download English Version:

<https://daneshyari.com/en/article/11011999>

Download Persian Version:

<https://daneshyari.com/article/11011999>

[Daneshyari.com](https://daneshyari.com)