Chapter 3

Firms’ Banking and Pooling in the EU ETS (2005–2007)

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ABSTRACT

This chapter investigates firms’ banking and pooling behaviors in the context of the EU Emissions Trading Scheme (EU ETS) during Phase I (2005-2007). It provides an overview of the questions raised at the firm-level by the introduction and implementation of the EU trading system in terms of allowances management. More specifically, the article details the banking behavior at the installation level, and the pooling of risks at the group level attached to allowance trading between the parent company and its subsidiaries. Based on case-studies of the most significant patterns in terms of allowances management among firms, the empirical analyses underline the efficiency of the banking instrument as a risk-management tool.

INTRODUCTION

On tradable permits markets, banking refers to the possibility for agents to save unused permits for future use, while borrowing represents the possibility to borrow permits from future allocations for use in current period\(^1\). Without uncertainty, firms with banking smooth their emissions between trading periods (Rubin [1996], Kling and Rubin [1997], Leiby and Rubin [2001]). The introduction of uncertainty\(^2\) provides further incentives for firms to bank permits, and to consider collusion as a way of insurance (Von der Fehr [1993], Ehrhart et al. [2008]). In the context of the European Union Emissions Trading Scheme (EU ETS), unlimited banking and borrowing was allowed within Phase I (2005-2007), but not towards Phase II (2008-2012)\(^3\).
Pooling allowances implies the introduction of a cooperation agency between firms, which is responsible to maximize the sum of firms’ profits whatever the uncertainties. This agency may either correspond to a “parent agency” with N subsidiaries, or to a centralization of production decisions.\(^4\) Alberola et al. (2009a) evoke the existence of the pooling behavior in the EU ETS, and emphasize that it appears as a fruitful area for future research.

To our best knowledge, there are no previous empirical studies in the area of banking and pooling at the installation level in the EU ETS during 2005-2007. As a brief state of the art, we can only mention previous work by Ellerman and Buchner (2008) who provided a preliminary analysis of the 2005-2006 compliance data in the EU ETS. In this chapter, we use compliance data during the first three years of the scheme. We provide the first empirical analysis of the banking behavior at the installation level, and the pooling behavior at the group level. We identify the impact of different allocation rules and overall regulatory uncertainty on the variation of firms’ banked permits, and the existence of risks-pooling by parent companies to save penalty and permits purchases costs.

The allocation of permits in the EU ETS during Phase I followed the grandfathering principle, which allocates permits freely based on business-as-usual emissions. If a firm encounters an uncertainty and goes beyond its emissions forecasts during the current allocation period, then it is basically left with two choices: either use its banked permits, or go on the market to buy permits (see Alberola et al. (2009a, 2009b)). We investigate the changes in banked permits at the installation level that occurred in a context of regulatory uncertainty on the EU ETS during 2005-2007.

The remainder of the chapter is structured as follows. Section 2 provides background information on the EU ETS. Section 3 develops our empirical analysis. Section 4 discusses the policy relevance of the results. Section 5 concludes.

**BACKGROUND INFORMATION ON THE EU ETS**

The EU ETS has been created on January 1, 2005 to reduce by 8% CO\(_2\) emissions in the European Union by 2012, relative to 1990 emissions levels. This aggregated emissions reduction target in the EU has been achieved following differentiated agreements, sharing efforts between Member States based on their potential of “decarbonisation” of their economy.

The EU ETS covers energy intensive companies above the threshold of 20MW, in application of the Directive 2003/87/EC. Sectors covered include power generation, mineral oil refineries, coke ovens, iron and steel and factories producing cement, glass, lime, brick, ceramics, pulp and paper, which represents 10,600 installations (see Alberola et al. [2009a, 2009b]). Such markets have already been introduced at the country level, such as for lead in gasoline, SO\(_2\) and NOx in the U.S. For greenhouse gases, a domestic emission trading scheme has been introduced in the UK in 2002 and Denmark has created a market for CO\(_2\) in 2000. The European market covers 46% of European CO\(_2\) emissions. The EU ETS draws on the U.S. sulfur dioxide trading system for much of its inspiration (Ellerman et al. [2000]), but relies much more heavily on decentralized decision making for the allocation of emissions allowances and for the monitoring and management of sources (Kruger et al. [2007]). Each country is required to develop a National Allocation Plan (NAP), which, among other design features, addresses the national CO\(_2\) emissions target. The sum of NAPs determines the number of quotas distributed to installations in the EU ETS. In this institutional framework, 2.2 billion allowances per year have been distributed during 2005-2007. 2.08 billion allowances per year will be distributed during 2008-2012.\(^5\) The allocation methodology consisted in a free distribution of quotas in proportion of recent emissions. Some Member States also allowed for auctioning in Phase I (2005-2007) and II (2008-2012), but the
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