

THE IMPACT OF THE EU EMISSION TRADING SCHEME (EU ETS) ON FIRMS' PERFORMANCE AND ENERGY EFFICIENCY

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Overview

The European Union Emission Trading Scheme (EU ETS) is the cornerstone of the European Union's policy to combat climate change and its key tool for reducing industrial greenhouse gas emissions (GHG) cost-effectively. The EU ETS relies on the principle of “cap-and-trade”, whereby participants in the market are mandated to hold allowances corresponding to the amount of CO₂ they release into the atmosphere. The overall amount of EU Allowances (EUA) is capped and progressively reduced. Participants can choose either to implement emission reduction measures or to buy EUAs from other players that have it in excess. In allowing companies to buy international credits, the EU ETS also acts as a major driver of investment in clean technologies and low-carbon solutions, particularly in developing countries. The introduction of mandatory controls and a trading scheme covering approximately half of all carbon dioxide emissions across Europe has triggered a debate about the impact of emissions trading on the performance of firm and specifically their competitiveness and energy efficiency performance. In fact, a body of studies has been conducted on the carbon trading market, covering issues related to the operation of the EU ETS, the design of the allowance allocation scheme, and its effectiveness at the country or sectoral level.

This paper aims to contribute to the literature by measuring the impact of the EU ETS on the performance of firms in a wide EU context and by comparing the impacts from each of the three operational phases of the EU ETS. Furthermore, the interactions between improvements in energy efficiency and GHG emissions reductions achieved by the implementation of the EU ETS will be analyzed aiming to provide recommendations about how the functioning of the EU ETS could be improved. To this end, and for analyzing the effectiveness of the scheme, panel data on the emissions and performance of a large sample of EU firms covered by the scheme since 2005. The financial crisis that hit in 2008 is also taken into account in the proposed project.

Methods

Many economic, financial and energy data such as stock market return, electricity and carbon prices, relative allowance allocation, added value, the profit margin and employment are analyzed through econometric and non-parametric methods. Data are obtained by a number of databases such as ORBIS for financial data, European Climate Exchange (ECX) Futures market for carbon-emissions trading data and AMADEUS database for sectoral variables. Econometric methods are applied for the empirical measurement of the impact of relative allocation of EU emissions allowances on firms' performance. Models such as Data Envelopment Analysis (DEA) and Stochastic Frontier Analysis (SFA) are also used to estimate how the EU ETS affects the energy efficiency performance of firms.

Results

The research output is expected to be helpful not only to other academics but also to government agencies and stakeholders that are involved in the negotiation of the EU ETS future phases design and in its implementation. By assessing the impact of the European carbon market on energy efficiency and competitiveness, this research has a strong influence on the political acceptability of future carbon markets. The results will encompass the extent of cost pass-through to customers, changes in output, changes in energy market share, and changes in firm profits. The firms that take part in the EU ETS as well as the public at large will also benefit from this research as the knowledge of the effects of the trading scheme on many aspects of society (economy, energy security, competitiveness, environment) is crucial for their performance and behaviour.

Conclusions

The proposed methodology through the project is of major usefulness for monitoring, benchmarking and policy planning purposes. It contributes into a better understanding of the EU ETS mechanism and its role on economic and environmental performance of firms. The findings of this research are expected to have some important policy implications for improving the design of the ETS.