

ENDOWMENT OR SKILLS? WHAT'S DRIVING CORPORATE PERFORMANCE IN EU EMISSIONS TRADING

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Overview

Since the start of the European Union Emissions Trading Scheme (EU ETS) in 2005, emissions trading has become a legitimate practice for business to deal with climate change. The EU ETS has since grown in terms of countries, greenhouse gases and activities covered by the system, and a considerable number of companies have become active participants in the market for carbon allowances.

In this paper, we analyze the factors related with corporate trading performance in the EU ETS. Only a few papers have explored the factors related to companies' trading success. Cludius (2018) and Liu et al. (2017) both find that trading success is positively related with the level of company emissions and with its net position, i.e. the difference between the amount of allowances allocated for free and verified emissions. In addition, Cludius (2018) finds that trading success is related with company characteristics such as size. Guo et al. (2020) finds that companies with larger emissions reductions were more successful. More generally, Abrell et al. (2021) find that participation in emissions trading and trading volume are related to the size of a company, its net position, its sector affiliation, and productivity. Our paper extends this literature by examining the extent to which trading success is explained not only by free allocation, level of emissions or company characteristics but also by strategic and structural skills. In particular, we investigate whether companies bank allowances efficiently, i.e. do they adequately take into account the opportunity costs of selling allowances on the market when they decide on the number of banked allowances to transfer into future periods.

Methods

We employ multivariate econometric analysis relying on a unique data set which compiles annual data on trading activity (transactions aggregated from daily to annual level), allocation and verified emissions from the EU Transaction Log (EUTL), daily prices of EUAs from the EEX, average annual futures prices from ICE and company characteristics from the ORBIS data base from 2005 to 2017. Our data thus ranges over three trading periods. EUTL installation-level data includes allocation and verified emissions per installation, account data including information on the account owner and transaction data including information on all transactions, transaction types and accounts involved. Daily transaction data were matched to prices, using daily prices for spot trades and prices for futures (identified using typical futures delivery dates). The data was aggregated to the company level based on the company registration number of the accounts and matched with the ORBIS database.

Our dependent variable, *profits*, reflects trading success and is calculated as the difference in the value of transfers and acquisitions in each year. We group our set of covariates into five categories. Allocation, strategic skills, structural skills, market pressure, and regional and period effects. Allocation refers to the *net position* of a company and we expected a positive correlation with *profits*, as a higher *net position* leads to less EUAs to purchase on the market, or more to sell. We included four variables reflecting strategic trading skills related to the EU ETS. First, we expected *banking* to have a negative effect on *profits*. The more allowances a company transfers into subsequent years, the less it can sell in year t , and the lower the profits from trading will therefore be. Second, we included two variables that reflect the timing of buying and selling activities. More specifically, *late buyers* and *late sellers* were defined as the number of allowances traded in February, March, and April. The variables were assumed to reflect the extent to which companies trade for compliance purposes, but the relation to *profits* is not clear and hinges on the EUA price during the true-up period relative to the remainder of a trading year. Third, *transaction frequency*, i.e. the number of transactions in trading year t , is supposed to reflect experience and learning effects. Assuming that frequent trading leads to learning effects (e.g. larger trading network, benefitting from price fluctuations), we expected this variable to be positively correlated with *profits*. Fourth, *use of intermediaries* measures the number of different intermediaries a company used in trading year t . We assumed that this variable reflects access to better information, thus leading to higher *profits*. Finally, *total transactions* reflect the total number of allowances traded in a year. Companies trading higher volumes should have a higher interest

in the trading outcome and because there is more at stake, learning effects were expected to be higher for higher trading volumes. We therefore expected a positive correlation of *total transactions* with *profits*.

We further included covariates which reflect skills-related structural variables, i.e. the number of installations, whether a company belongs to the energy sector, company size, and productivity. These are believed to reflect the extent to which companies have access to complementary assets and capabilities which enable them to trade EUAs more success-fully.

To capture the effect of market pressure on trading performance, the set of covariates contains *carbon leakage*. Companies are assumed to face import competition from outside Europe, if they predominantly produce products which appear on the carbon leakage list of the EU ETS regulations. As these companies should have particularly strong incentives to keep compliance costs low, we expected *profits* to be positively correlated with *carbon leakage*. Finally, we included dummies to control for region-specific effects and to capture differences across trading periods, i.e. 2005-2007, 2008-2012 and 2013-2017.

Because we observe *profits* only for companies participating in emissions trading, we employ the Heckman panel data estimator to address a potential sample selection problem. To do so, we use the shares of companies participating in emissions trading at the country level as an additional covariate in the equation governing company participation in the trading of allowances.

Results

Our results suggest that profits from emissions trading are, as expected, to a large extent related to a company's net position: higher amounts of free allocation lead to higher profits from emissions trading. We also found evidence that profits from emissions trading are driven by strategic skills and skill-related structural factors. With regard to strategic skills, our findings suggest that companies bank allowances efficiently: when they decide on the number of banked allowances to transfer into future periods, companies adequately take into account the opportunity costs of selling these allowances on the market. Further, we found that late buying (late selling) of allowances within a trading year was correlated positively (negatively) with profits from emissions trading in the first trading period. In subsequent trading periods, such results can no longer be observed; this may reflect learning effects achieved by companies. For skill-related structural factors, we found that companies with more installations make higher profits from trading, *ceteris paribus*, possibly reflecting the conducive role of complementary assets in this context. These findings were obtained for the period 2005-2017, which was characterised by relatively low prices of EUAs.

Conclusions

In this paper, we explore the role of company's allocation, strategic skills, structural skills, and market pressure for the financial success in emissions trading. Thus, while previous work focussed on company characteristics and net position, our approach accounts for heterogeneity in the extent to which companies' skill related factors influence trading performance. Our period of analysis is longer than in previous work, and spans over three EU ETS trading periods. While we find support for the role of learning, and forward-looking assessment of the position on the market, we find no evidence that gaining access to information (via intermediaries) leads to higher profits. In addition, our findings confirm earlier findings, that a generous 'endowment' (via free allocation of allowances) leads to higher profits. In general though, we find little evidence that other company characteristics or sector affiliation are systematically related with success in the trading of emission allowances. Finally, we find that companies choose the number of banked allowances efficiently, i.e. they take into account the opportunity costs of selling these allowances on the market.

References

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