

Energy efficiency developments in ETS industry

What has the effect of the ETS on energy efficiency in industry been, and what can be done to increase its effect?

Webinar by Joost Gerdes
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Introduction to the ETS and ETS industry



About the Emissions Trading Scheme

- The idea is to reduce greenhouse gas emissions by putting a price on it
- ETS has a EU wide cap on total emissions, represented by tradable allowances
- This should lead to the most cost effective emission reduction
- Allowance prices started around 20 euro per ton and are now down to around 5 euro per ton

Sectors covered

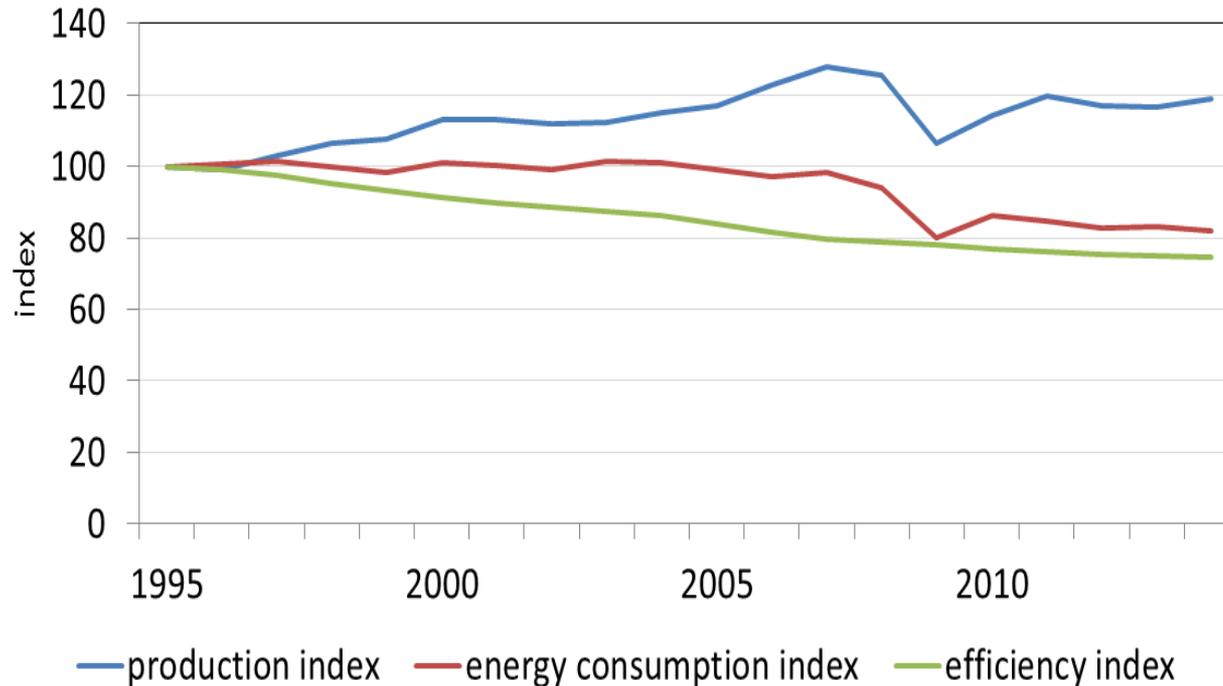
- ETS participants are mainly large industry and the power sector
- In the current phase of ETS, allowances for the power sector are auctioned, but most of ETS industry still gets free allowances

Effects of the ETS on sectors covered by Odyssee

- Odyssee contains data about energy consuming activities and energy consumption of end use sectors
- Industry is covered, but conversion sectors like power plants and refineries are not
- The most accurate way of analysing energy efficiency makes use of physical production data. Odyssee contains these for steel, glass, cement and paper.
- No effect on energy efficiency can be attributed to the ETS by analysis of these industries on country or EU level
- Further analysis involved all manufacturing industry at the EU level

Production, energy consumption and efficiency of industry

Indices for production, final energy consumption and efficiency for the manufacturing industry in the EU from 1995 until 2014 (1995 = 100)

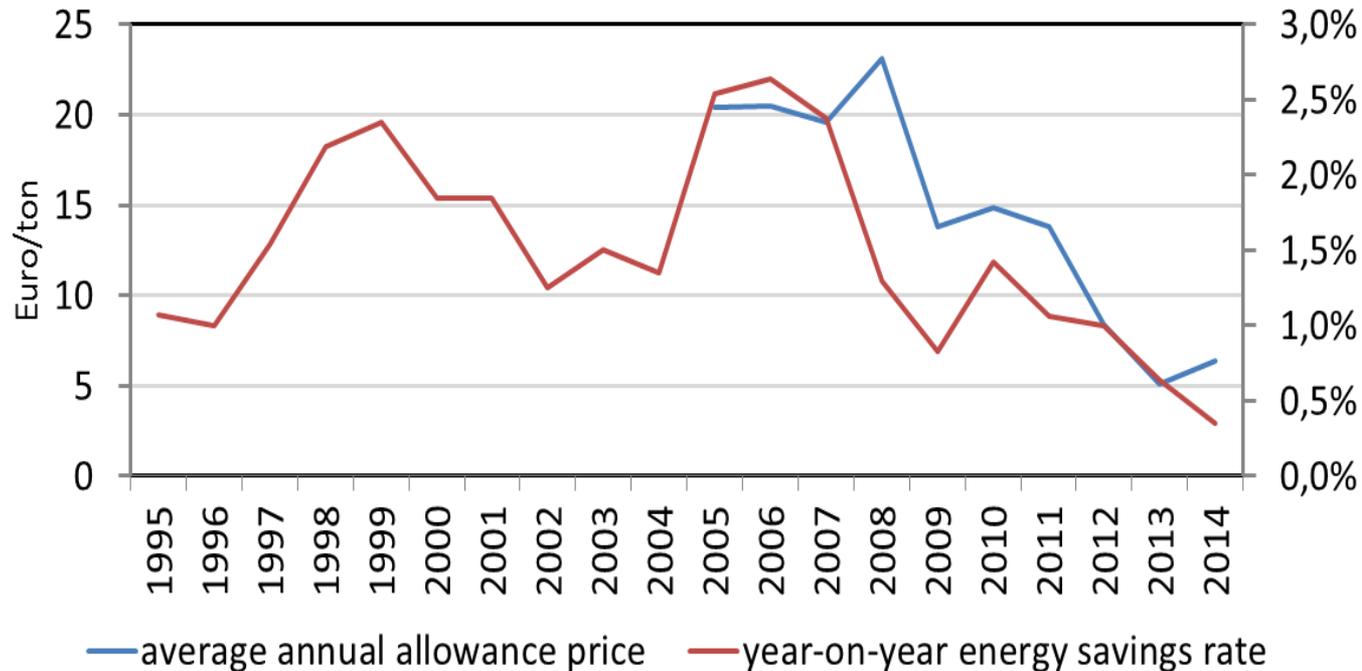


Observations from indices

- The effects of the crisis on production and energy consumption are clearly visible
- The savings index does not show clear variations because the production and the consumption went down with comparable fractions
- The derived savings rate offers more insight

Savings rate and allowance price

Emission allowance price and the energy savings rate in EU manufacturing industry



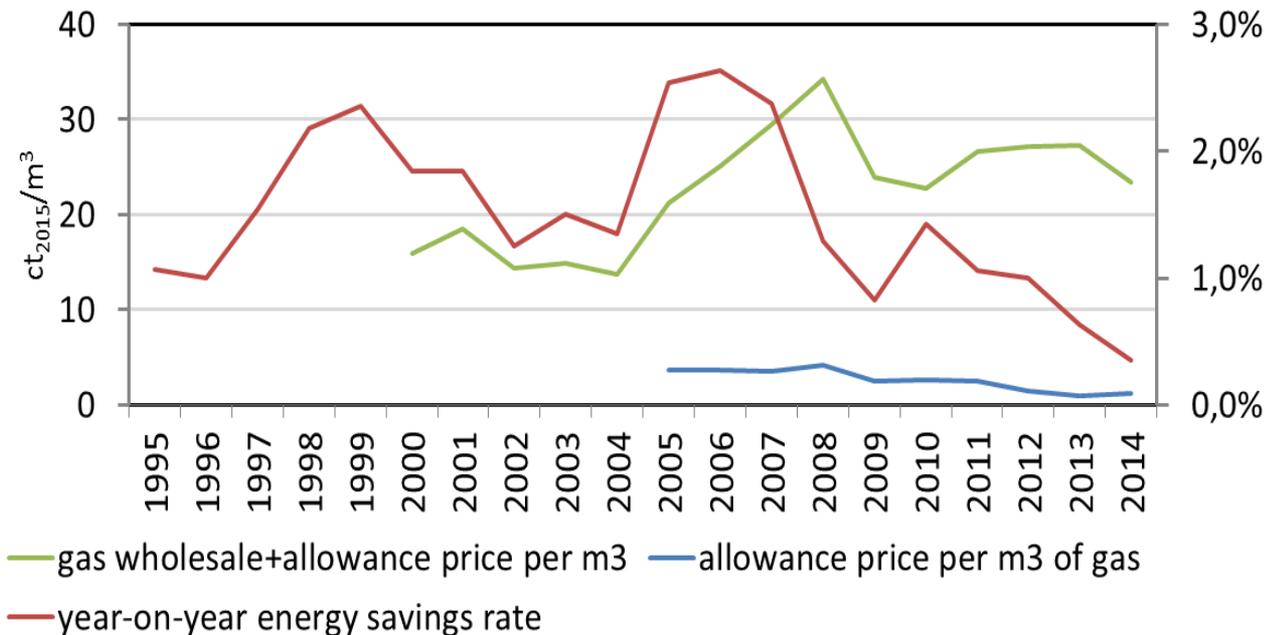
Observations from savings rate and allowance prices

- Savings rates have been high before the start of the ETS, during the late nineties
- High savings rates from 2005 to 2007 could be related to the high allowance price...
- ... but savings went down before allowance prices did
- High economic growth is a more probable cause of high energy savings
- During economic growth investments are higher and new equipment is more efficient than older equipment

- Let's look at the total energy price and the savings rate

Savings rates vs. gas and allowance prices

Wholesale price of natural gas including allowance price per m³, the allowance price per m³ and the energy savings rate in EU manufacturing industry



Observations from savings rate and total energy price

- The allowance price only adds a small amount to the natural gas price
- Expectations in 2005 of higher allowance prices and of rising gas prices may have stimulated savings...
- ... but savings went down at the start of the crisis despite still increasing gas prices
- Lower investments due to the economic crisis are probably dominant for the savings rate

Explanation of the limited effect of the ETS



- The amount of allowances does not change in response to changes in economic development
- Allowances that have not been used can be used later ('banking')
- Companies that compete internationally receive free allowances
- The amount of free allowances was based on estimates of industrial production volumes before the crisis
- Large scale application of flexibility mechanisms (JI/CDM; joint implementation/clean development mechanism)
- Interaction with other policies (energy efficiency and renewable energy)
- The amount of allowances is higher than the cumulative emissions that are in accordance with the long term decarbonisation targets of the EU

Options to increase the effect of the ETS on energy efficiency

Two main approaches

1. Focus on price: make sure allowance prices become consistently higher, also during economic downturns. The question remains: what price will be effective?
2. Focus on limiting yearly availability of allowances: if no allowances are available, no emissions will occur

Options to increase the effect of the ETS on energy efficiency

- Remove allowances from the market. Is addressed by the Market Stability Reserve, but now only temporarily and goal is price stability
- Remove allowances from the market whenever a large emission source disappears as a result of other policy
- Introduce a floor price. Disadvantage: idea of market mechanism partly abandoned, what should the floor price be to be effective?
- Cancel free allowances and compensate with other policies
- Increase the rate at which the emission ceiling goes down
- Cancel the complete surplus of allowances in order to comply with the long term EU policy targets. The cumulative amount of allowances should be compatible with the goals of the Paris Agreement.
- Limit the amount of allowances that may be banked. Companies often focus on short term goals.

Conclusion and recommendation

- An effect of the ETS on energy efficiency improvement in manufacturing industry in the EU cannot be clearly derived from Odyssee data. There may have been an effect from 2005 to 2007, but the economic growth during these years probably had a larger effect than the allowance price, also because the much higher wholesale price of energy had no discernible effect.
- To incentivise energy efficiency measures in industry, allowance prices should increase substantially and consistently, or the yearly availability of allowances should be limited in a gradual and predictable way. This can be done by gradually reducing the annual amount of available allowances in a way that is compatible with the goals of the Paris Agreement.

Thank you for your attention

Odyssee



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