Summary 'Cost allocation under the EU ETS : Who will be footing the bill for Phase 3 for the European Emissions Trading Scheme?'

After 2012, the third Phase of the EU Emissions Trading Scheme (EU ETS) comes into place that lasts until 2020. New to this system is the European harmonized allocation of rights. In addition, a larger part of the rights will be auctioned. For the Netherlands the third Phase of EU ETS implies that emissions of companies under the EU ETS have to be reduced by 21% compared to 2005. This results in cost increases. Companies have to reduce their emissions by means of investing in technical measures or buy allowances on the market. Also the cost of inputs may rise, such as electricity used in production processes.

This study, commissioned by the Ministry of Finance, addresses the question who in the end will pay for these higher costs: is that consumers, governments or businesses? This study focuses primarily on direct costs. Indirect effects and costs (such as changes in sales, employment or income from the corporation for the government) are not included in this study. The study takes a quantitative stand in assessing these costs using econometric and statistical techniques.

The analyses in this study show that CO_2-emissions of Dutch plants under the EU ETS are expected to decrease to 68 Mton in 2020. About half of the 68 Mton rights that will be allocated in 2020 will be auctioned – the other half will be distributed for free. Auctioning takes place almost exclusively for electricity generation. Only 2% of industrial emissions are expected to fall under an auction regime, especially in some subsectors of the food industry and the paper industry.

To achieve a 21% reduction companies can buy allowances or install emission reduction techniques. Companies can buy also CDM rights to purchase and convert up to 50% of their reduction target. The cost of emission reduction measures or purchase of CDM credits are the direct additional costs of the EU ETS. As an indirect effect, the costs of inputs such as electricity will increase. As electricity costs constitute an important element of the cost structure of some companies, these costs are included here as well.

The total cost increase is the sum of direct and indirect costs. These depend heavily on (a) the prices that will be prevailing on the European emission markets, and (b) the autonomous development of the sectors. This study uses two exogenous prices for a EUA of € 30 and € 10/tCO_2 and abstains from dynamic developments into the future. Hence the results should be interpreted as a mere numerical exercise to investigate the impacts in the fictitious situation that until 2020 no change in emissions will take place other than endorsed by the EU ETS. This may only reflect the future if, for each sector, the annual efficiency improvements are equivalent to the annual growth rate.

At a trading price of € 30/tCO_2, Dutch industry will be a net seller of allowances. As Dutch industry can reduce more than 21% under that emission price, the surplus can be sold on the ETS market. The total costs for the Dutch industry are merely made up from the increased electricity costs and purchases of CDM: in total over € 0.5 billion per year. The investment costs of emission reduction measures are almost entirely recovered through lower

energy bills and receipts from the sale of CO_2-rights. At a trading price of € 10/tCO_2 the total costs decrease to around € 0.3 billion per year. With this lower price, Dutch industry is no longer provider of allowances on the European market.

The ultimate costs to the industrial sectors are largely determined by the extent to which they can pass on the increased costs to the customers. According to the (neoclassical) economic theory, companies would always pass through (part) of the costs, as firms maximize profits and prefer in the long run higher profitability over maintaining market shares.

If companies pass not only the actual costs, but also the opportunity cost of the freely allocated rights, they will make windfall profits. Economic theory predicts that companies will make windfall profits because pricing should be based on the opportunity cost principle. In contrast, there is an extensive literature on innovation theory (Porter) and market analyses that assumes that firms do not always pass on the higher costs because of, amongst others, strategic considerations, suboptimal utilization rates or cost savings through innovation.

More than 50 studies have tried to answer the question whether companies will be able to pass through the additional costs of the EU ETS in Phase 3. This literature takes an ex-ante perspective and is rather ambiguous on the possibilities of companies to pass through the costs. In this study we take an ex-post orientation and assess whether Dutch industry in Phase 1 and Phase 2 of the EU ETS has passed through the opportunity cost of the EUAs in the product prices. This has been done for a number of products from the refining, iron and steel, and petrochemical sector using time-series analysis. These sectors caused more than 2/3 of industrial CO_2 emissions in 2005 in the Netherlands. For these products a model is formulated that tries to explain price differences between the Dutch and a non-EU market in terms of the fluctuations on the CO_2 markets.

Our econometric analysis shows first that there is ample evidence that the markets of refining, steel and (partially) petrochemical products are characterized by international market integration. Higher prices in the EU markets will return in an increase in imports and upward price in foreign markets. While one would expect a priori that this would limit the potential to pass through the costs, this was not the case. There is ample evidence that Dutch industry has passed through the CO_2 prices in the product prices, especially for diesel and steel. For petrol and polyethylene we also found evidence of this, but it cannot be concluded with certainty that the values are statistically significant.

Based on the econometric analysis, and an additional literature analysis, we conclude that on average nearly 60% of the opportunity costs of the EU ETS for Dutch industry will be passed on to customers. This corresponds to an increase in income of € 1.1 billion annually in 2020 under an EUA price of € 30/tCO_2. This can be compared to the costs for Dutch companies of complying with the EU ETS of € 0.5 billion annually in 2020. This study concludes therefore that Dutch industry under current rules gains a windfall profit of some € 0.6 billion annually in 2020. However, this is not equally spread among sectors. Especially refineries and iron and steel will make substantial windfall profits. However, aluminum, paper and inorganic chemistry face higher net costs because of the EU ETS – especially for relatively high CO_2 prices.

Consumers and the service sectors will be paying the bill. They pay under a EUA price of € 30/tCO_2 nearly € 2 billion annually extra for the increased electricity bills and higher product prices compared to the situation where CO_2 had no price (from 2005). This corresponds to an amount of approximately € 120 per person per year. At lower EUA prices of € 10/tCO_2, the bill decreases to € 0.7 billion. The government will gain in this analysis through the auctioning of emission credits.

The results from this study must be understood in the light of the research approach used and the associated assumptions and uncertainties. Below we list the three most important assumptions and discuss their influence on the results:

a Dynamic effects are not included in this study. The autonomous growth in production is not included and neither is the loss of production due to higher product prices. It is conceivable that if companies pass the opportunity cost of their freely obtained allowances on to the product prices, imports from outside the EU should increase. Therefore, the results of this study can not directly be used for the discussion on competitiveness and carbon leakage. Other indirect effects, such as changing jobs or tax revenues are also not included in the calculations.

b The results from this study on cost pass-through are derived from econometric analysis of the situation during Phase 1 and Phase 2 (until September 2009). These ex-post results have then subsequently been applied to the future (Phase 3). We notice here that this seems to be justified as we have merely tested whether the neoclassical theory was supported by the data. However, changing market conditions (such as occupancy rates or the level of transport costs) could have an influence on the future possibilities of cost-pass through.

c The specific outcome of the econometric analysis is dependent on the model and parameter selection – as well as the chosen lag length. Using a standardized procedure we aimed to achieve the most parsimonious model. Using a sensitivity analysis, in which the cost-pass through rates were on average only 30% (a value that can be conceived as an average from the ex-ante literature), it was concluded that industry still would pass through the full costs of complying to the EU ETS to the consumers. However, as the cost increase would be equivalent to the price increase, no more windfall profits would be made.

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