

# ASSESSING VULNERABILITY OF SELECTED SECTORS UNDER ENVIRONMENTAL TAX REFORM

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A carbon tax, or a well-designed trading scheme that ensures a credible long-term price on all emissions, would certainly be part of an efficient global system for the reduction of carbon emissions. But what if only some countries impose a carbon price? Could it be that energy-intensive industries would be made uncompetitive in the countries which impose a carbon price? John Fitz Gerald, Mary Keeney and Sue Scott examine whether such fears are justified for key industrial sectors in a recent paper.\*

Six EU member states have already introduced carbon/energy taxes, namely, Sweden, Denmark, Netherlands, Finland, Germany and the UK. The taxes were introduced in these countries since 1990 as part of a policy called environmental tax reform (ETR) that combines the introduction of carbon taxes with the recycling of revenues to reduce other taxes. The analysis looked at potentially vulnerable sectors, selected from those that were energy intensive and had high trade exposure. A more crucial attribute and the focus of this study is whether or not these sectors could pass on an increase in their costs. If they could pass on the increased cost of higher taxes as higher prices without affecting their market share they would have less to fear from carbon pricing. The study examined this question, and the prospects for Ireland, where carbon prices may increase due to the trading scheme now in place.

A sector's ability to pass on its costs depends on its pricing power in its key markets, which was tested by examining the sector's pricing behaviour in the past. The paper examined whether sectors were price-takers, setting prices based on what competitors do, or price-setters, in which case able to pass on to consumers the cost of increased environmental taxes. Market power would indicate that a sector is less vulnerable and this would be the case if its pricing is found to be set as a mark-up on domestic costs.

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A model of long-run price-setting behaviour was specified and applied to quarterly data running from 1975 to 2003, sourced from OECD and Eurostat. For each country the six major sectors analysed included chemicals, food beverages and tobacco, non-metallic mineral products (consisting mainly of cement), paper and paper products, wood and wood products and basic metals. The two sets of influences on price, namely, the foreign or ‘world’ price and secondly the mark-up over marginal costs, were specified in the model. The world price was proxied by the US price, the US being a dominant trading bloc. In a second trial the ‘world’ price was proxied by the German price, representing the EU price. The domestic manufacturing wage in each country was used to represent domestic costs. Different speeds of adjustment to the long-run equilibrium price were allowed, by means of an error-correction representation.

The results of the analysis were statistically significant and plausible. Among the selected sectors, basic metals were found to have least market power and were, therefore, most vulnerable, while non-metallic minerals (cement) had most market power and was least vulnerable. Where the foreign price was a dominant determinant, it was the EU-price (proxied by the German price) that tended to dominate. The important implication is that it is the price set by EU firms rather than firms elsewhere in the world that represents the major competition in each of the sectors. There were a few exceptions, in particular basic metals, where the world price is also a constraint, but for the most part, the results suggest that an EU-wide application of the environmental tax would not adversely affect firms in most of the sectors commonly regarded as vulnerable. Thus, the results support the view that application of environmental tax reform on an EU-wide basis is feasible in most sectors and, by contrast with unilateral application by individual countries, would reduce their concerns about loss of competitiveness.

An advantage of environmental tax reform over environmental regulations lies in the availability of tax revenues that can be used to reduce labour costs and help competitiveness. Use of the market power criterion assessed here can help to identify true vulnerability. The scope for sectors to make profitable adjustments to their technology also has an important bearing on reducing their vulnerability and on their ultimate effect on the environment.

\*Fitz Gerald, J., M. Keeney and S. Scott, 2009. “Assessing Vulnerability of Selected Sectors under Environmental Tax Reform: The issue of pricing power”, *Journal of Environmental Planning and Management*, Vol. 52 No 3 April. The study was part of the COMETR project (Competitiveness Effects of Environmental Tax Reform) funded by the European Commission: [www2.dmu.dk/cometr/](http://www2.dmu.dk/cometr/)