Vibe Busk Larsen, Stud.MSc. Environmental and Natural Resource Economics, IFRO

Vanish into the blue: Economically efficient regulation of Danish firms' emissions from fossil fuels

Abstract

Combusted fossil fuels vanish into the blue but they leave behind externalities, which are not included in the transaction. These externalities, air pollution and greenhouse gases, cause damage to the environment and human life. Regulation is commonly thought of as the best remedy since it considers the cost of the damage. But when is regulation economically optimal?

The purpose of the study is threefold; first, an investigation of the current Danish regulation of emissions from fossil fuels used by firms for production is conducted. Using welfare economic theory and theory of optimal regulation, an evaluation of the economic efficiency of each instrument and of the overall regulation scheme will be developed. The economic instruments scrutinised are the energy tax, the CO_2-tax, the NO_x-tax and the SO_2-tax.

The main findings conclude that the energy tax does not tax according to marginal damage from emissions, but according to the calorific value. Furthermore, the input of fuels is taxed making it indirect regulation and lastly the tax in combination with the other taxes can be seen as double regulation. The CO_2-tax uses differentiated regulation by giving a basic tax allowance to heavy processes. Also, it would be preferable if more firms were included in the EU ETS, rather than being levied the CO_2-tax, since the damage from CO_2 is global. The main issues with the NO_x-tax are that it allows for taxation of input, which corresponds to indirect regulation. In addition, the tax is lower than the monetary cost of the marginal damage and lastly the tax ought to be differentiated according to sectors as well as spatial distribution due to varying damage from the sectors and the firms' location. Last, the SO_2-tax uses differentiated regulation by giving a basic tax allowance to heavy processes and it allows for taxation of input (i.e. indirect regulation). Again, the tax is lower than the monetary cost of the marginal damage. Moreover differentiation according to sectors and spatial distribution is necessary. Consequently, these are implications resulting in distorting incentives and loss of resources meaning that the overall regulation scheme is economically inefficient.

Keywords: Economic efficiency, economic instruments, regulation of fossil fuels, externalities, energy tax, CO_2-tax, NO_x-tax, SO_2-tax, Danish energy regulation