

Modelling international carbon markets using a CGE model

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International carbon markets can provide a cost effective mechanism for countries to reduce their greenhouse gas emissions. They allow companies or governments to meet any given emission reduction target by trading abatement either amongst a group of countries who have agreed targets, or with countries who have no agreed emission targets. If the cost of reducing emissions domestically is higher than in other countries, then buying abatement from overseas provides a lower cost way of reducing emissions, for the individual country concerned and the global economy as a whole. Similarly, if domestic abatement is cheaper than overseas, then selling abatement can generate an income stream into the country.

The amount of abatement traded between nations is not only depends on the cost of abatement within each economy, it will also depend on the policy framework adopted. For example, countries may impose constraints on trade such as limits on the number of permits or offsets allowed to be imported or exported.

This paper will use an international CGE modelling structure to explore different policy frameworks for international trade in abatement. It will examine different trading regimes such as within and between countries with and without agreed emission reduction targets and the implications of placing constraints on trade. It will discuss how the trading price is determined via the market clearing of the supply and the demand of permits or offsets, how domestic policy on constrained trade affects the trading price, and how non-committed countries with low cost abatement could earn an “abatement rent”.

The CGE model used in this paper is the preliminary Treasury Computable General Equilibrium (TCGE) model. This model, while still under development, has all the required elements to illustrate the carbon market modelling discussed above. It is intended that this analysis will provide useful insights for additional work on international carbon markets.