

## The Regional Economic Effects of a Reduction in Carbon Emissions

### Abstract:

Climate change has recently lead many governments to undertake policy aimed at reducing CO<sub>2</sub> emissions. The general purpose of such policies is to reduce production activities which have high carbon emissions and encourage those with low emissions and, whatever the specific mechanism suggested, it is almost certain that policy will have differential impacts at the regional level of the economy. While these differential regional impacts will be politically important, very little analysis of them has yet been carried out. This paper aims to contribute to the analysis of this issue. It does so by building a small model involving two regions which are linked by inter-regional trade, capital flows and migration as well as by a federal fiscal system. We incorporate the right to emit CO<sub>2</sub> as a factor of production with the national level of permitted emissions set by the national government. We use a linear version of the model, calibrated using Australian data, to simulate the effects on the regions of the carbon-reduction policy and find that a 10% reduction has relatively small but regionally differentiated effects on key variables such as welfare, output and unemployment. We also explore the effects of policies that may be undertaken by governments at both regional and national levels to ameliorate the effects of the carbon-reduction policy. Standard fiscal policies (both regional and national) are generally ineffective or counter-productive while labour market policies are more useful. (approx 235 words)

Key Words: carbon emission, regional effects, numerical modelling

JEL classifications: **Q52, Q58, R12, R13**

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