

Extended Abstract

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Paper/Poster Title	Discussion Paper – Assessing options for estimating carbon offshoring impacts of UK trade agreements in agriculture
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Abstract prepared for presentation at the 97th Annual Conference of the Agricultural Economics Society, The University of Warwick, United Kingdom

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Abstract	<i>200 words max</i>
<p>The UK has signed several significant Free Trade Agreements (FTAs) since leaving the European Union. In some cases, these FTAs have included significant liberalisation on UK agricultural products, particularly beef and sheepmeat. The UK Government's published assessment of these agreements demonstrates that it expects some UK consumption to shift from domestic production to imports. Given the significant emissions associated with these sectors, there is likely to be some offshoring of carbon emissions. This paper sets out a variety of options to estimate the emissions impacts of this agri-food liberalisation on both the UK and partner countries. We attempt to fully capture the range of global emissions sources, including both domestic and international production and international transport emissions. A recommended approach is set out. We test this approach on the UK's FTAs with Australia and New Zealand.</p>	
Keywords	Trade, Modelling, Climate Change, Carbon Leakage
JEL Code	Agriculture Q1, Trade F1, Environmental Economics Q5 see: https://www.aeaweb.org/jel/guide/jel.php?class=Q
Introduction	<i>100 – 250 words</i>
<p>The UK has several significant FTAs since leaving the European Union, with potentially significant implications for domestic agricultural sectors. Published analysis from the UK Government suggests rising imports are likely, particularly for beef and sheepmeat. Internal modelling suggests this could induce rising production in partner countries. This could generate rising global production and international transport emissions. A variety of approaches could be taken to estimate these impacts, including differing emissions factors and monetisation approaches. The costs and benefits of these approaches will be discussed.</p>	

Methodology	<i>100 – 250 words</i>
<p>We have simulated various Free Trade Agreement scenarios in Defra’s trade models. We use these to estimate changes in international trade flows. We also examine changes in output levels in both the UK and various partner countries. One approach involves using FAO STAT estimates of on-farm production emissions alongside JNCC estimates of deforestation emissions to estimate total production emissions changes per country in the medium-term. An alternative approach uses the FAO GLEAM lifecycle emissions intensities for agricultural production in a given region. We also discuss a methodology for converting trade flow changes into international transport emissions. Finally, we also discuss options for monetising the impacts of rising global emissions, using alternative values of carbon derived from both international carbon prices and UK Government guidance on the value of meeting the UK’s 2050 Net Zero target.</p>	
Results	<i>100 – 250 words</i>
<p>The purpose of this paper is to assess both the proposed approach and alternative approaches to estimating the global emissions impact of UK liberalisation of agricultural goods in Free Trade agreements. Given this, results are at an exploratory stage. Initial results suggest that production emissions for beef and sheepmeat are expected to fall in both the UK and EU following liberalisation, as producers in both blocs see their preferential access to the UK market eroded. Elsewhere, production emissions are expected to rise in both Australia and New Zealand. Meanwhile, sea freight emissions are also estimated to increase. Overall global impacts are found to be sensitive to assumptions on trade elasticities but with the potential to be substantial. We find that the methodological options can make a substantial impact on final results. Variation in emissions factors and carbon valuations are able to significantly affect final estimates.</p>	
Discussion and Conclusion	<i>100 – 250 words</i>
<p>To conclude, our modelling demonstrates potentially substantial impacts of the UK’s Free Trade Agreements on global production emissions. A full assessment of the impacts of agri-food liberalisation should incorporate analysis of likely changes in global Greenhouse Gas (GHG) emissions. This paper explores alternative options for estimating changes in GHG emissions. The paper recommends a combination of on-farm and deforestation emissions, combined with a robust estimation of sea-freight emissions. The limitations of this approach, and the value of sensitivity testing with alternative approaches, are also set out.</p>	