Extended Abstract
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Paper/Poster Title	But where did the chicken come from? Estimating Armington elasticities for UK agricultural sectors

Abstract prepared for presentation at the 96th Annual Conference of the Agricultural Economics Society, K U Leuven, Belgium

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Abstract	*200 words max*

Some elasticities, including Armington elasticities, for agricultural commodities in applied trade models are widely thought not to be accurate. Armington elasticities give the degree of substitution between consuming imported and domestic varieties of a commodity (i.e. the import-domestic elasticity) and also between consuming varieties a commodity imported from different countries (i.e. the import-import elasticity).

These elasticities are growing in importance as the UK signs and pursues free trade deals, including with Australia, New Zealand and membership of the Comprehensive and Progressive Transpacific Partnership (CPTPP).

We find estimates of the impact of new trade policy on the UK agriculture sector to be very sensitive to Armington elasticities.

We critically review quantitative methodology to estimate these elasticities as well as existing estimates in the literature.

We present conflicts and choices for discussion to quantitatively improve the accuracy of Armington elasticities for the UK agriculture sectors.

Keywords	Agricultural Commodities; International Trade; Econometric Modeling
JEL Code	General, Trade F10; Agriculture Q1; Econometric Modeling C5; see: www.aeaweb.org/jel/guide/jel.php?class=Q)

Introduction	*100 – 250 words*

The 2020s will see significant change to UK agriculture public policy. This is likely to change the intensity and volume of domestic food production. The policy changes aim to remove any reliance on public subsidies for farms' profitability.*

Therefore, it is important to understand how agricultural markets, which farms will be increasingly reliant upon for profit, will change due to the execution of the UK's new liberal trade policy – which includes free trade agreements with Australia and New Zealand.

The extent these markets will be made more competitive by imports is highly sensitive to Armington elasticities showing, for example, how much domestic consumers might switch to imported beef from domestically produced beef when the price of imported beef falls.

However, the magnitude of these Armington elasticities which represent such critical consumer behaviour, are widely thought to be inaccurate for UK agricultural sectors by economists.

We have explored and assessed both existing estimates and methodologies of agricultural elasticities present in the literature. We have used our assessment of these to discuss how best to estimate Armington elasticities for UK agriculture sectors.

*Department for Environment, Food and Rural Affairs, 2020 The Path to Sustainable Farming: An Agricultural Transition Plan 2021 to 2024

Methodology	100 – 250 words

We reviewed Armington elasticities for agricultural commodities from the literature by comparing them to each other and assessing them against factors influencing the magnitude of Armington elasticities such as home bias and commodity heterogeneity.

We then reviewed the successes, limitations, and challenges of econometric approaches to estimating Armington elasticities including derivation from other economic parameters.

We used both a partial equilibrium and a general equilibrium trade model to demonstrate the sensitivity of results to the magnitude of Armington domestic-import and import-import elasticities. We estimated impacts of fictional free trade agreement between the UK and another country. We then increased and decreased Armington elasticities by 25% to display the range in estimated impacts.

Results	100 – 250 words

Using the assessment of the Armington elasticities for agricultural commodities, we may find those commonly used by trade modellers are higher than those empirically estimated, as some literature suggests. This would mean trade may be overestimated in trade analysis undertaken by applied partial equilibrium and general equilibrium trade models. As the UK is a consistent net-importer in many agricultural commodities, this could mean consumer surpluses may not rise as much, and producer surpluses may not fall as much, as initially estimated by economists when new trade deals are implemented. Conversely, the reverse may be true, given the level of disaggregation we focus on. This is because types of products (e.g. beef) are more substitutable (with say pork or lamb) than broad categories of goods such as meat. In this case, farms and other businesses in the UK agricultural industry may need to prepare for greater competition from international producers. Also consumers

may see food prices fall to a greater extent than previously estimated by these trade models.

We layout a reasoned, skeleton analytical approach to estimate Armington elasticities for UK agricultural commodities. This is based on our assessment of existing econometric approaches in the literature. We present anticipated analytical challenges and choices we will face in developing the estimation approach and undertaking the analysis.

Discussion and Conclusion	*100 – 250 words*

This review of existing Armington elasticities for agricultural commodities and presentation of a new estimation strategy for these elasticities allows trade analysis to estimate impacts of new UK trade policy with greater accuracy. Upon reviewing more accurate trade analysis, the mid-term performance and sustainability of domestic agricultural producers may improve as their plans to compete in changing agricultural markets may be more suitable to the market conditions that arise. Furthermore, via improved estimates of food price changes, underlying assumptions about the quantity of food demanded by UK consumers in the future may improve. This has implications health, environmental and climate policymaking.

However, there are challenges to improving this accuracy. This discussion paper presents conflicts and choices to deal with limited data, avoiding bias when choosing model specifications and ensuring methodological consistency across micro and macro Armington elasticities and across agricultural sectors.