Methodology Note: Assessing the long-run growth impact of a UK-EU Sanitary and Phytosanitary Measures (SPS) Agreement

Introduction

This methodology note provides an overview of the method used to assess the potential scale of impact of a UK-EU Sanitary and Phytosanitary Measures (SPS) Agreement on long-run GDP in the UK.

The analysis uses a Computable General Equilibrium (CGE) model developed by Purdue University, referred to as a Global Trade Analysis Project (GTAP) model throughout this note.[1]

CGE models are frequently used to assess the economic impacts of trade policy changes on key macroeconomic aggregates, such as trade and GDP, when the economy returns to an equilibrium. They capture the interlinkages between different sectors in the economy and provide estimates of the impact of policy changes against a baseline of no change[2]. They are known as a 'comparative static' model, comparing the current equilibrium shape and size of the economy with what it would be, were you to change specific parameters.

Data and baseline

The modelling uses the GTAP model specification and is based upon the associated GTAP11c database (reference year of 2017). Marginal impacts of the agreement are estimated compared to a counterfactual of no policy in place, while maintaining all other factors affecting the UK-EU economic relationship constant.

The baseline in the model is updated to simulate the impact of EU exit by applying the trade costs set out in HMG (2018)[3].

Modelling inputs and trade cost reductions

To simulate the long-run impact of an SPS agreement, analysts at the Department for Business and Trade apply non-tariff measures (NTM) trade cost reductions to UK-EU trade. The scale of NTM trade cost reductions are based upon a research study by the Andersons Centre[4]. The Andersons study provides estimates of NTM costs associated with GB exports to the EU. These trade costs are provided for a range of agri-food and drink, fish and seafood, horticulture and timber products. The study applies a bottom-up approach, developing NTM cost estimates at a product level via detailed interviews, desk-based research and follow up industry workshops.

The trade costs are adjusted using HMRC trade and consignment weight data to produce population estimates at the HS2 and HS4 level[5]. These estimates are categorised by experts in the Department for Environment Food and Rural Affairs (Defra) into types of costs that are

[1] A detailed description of the GTAP model and the associated database available at https://www.gtap.agecon.purdue.edu/models/current.asp

[2] See "Trade modelling review expert panel: report".

[3] https://assets.publishing.service.gov.uk/media/5c00058b40f0b65af36c5d6c/28_November_EU_Exit_-_Long-term_economic_analysis__1_.pdf, average FTA scenario. The baseline additionally captures other significant recent agreements like the UK accession to CPTPP. The very recent India-UK FTA is not incorporated in the baseline due to modelling lead times, but it is unlikely to make material difference to the results.

[4] Currently unpublished research commissioned by Defra.

[5] Harmonized System (HS) is a classification system commonly used for the classification of goods products.

assumed could be potentially be addressed by a UK-EU SPS Agreement including SPS (subject to the outcome of negotiation).

This exercise provides the average trade cost reductions to be applied to the Agri-food sector, that can be used for the modelling exercise. These are weighted by the relative trade shares based on GTAP data (simple non-trade weighted average in brackets) and are shown in Table 1.

Table 1: Trade-weighted average sectoral applied percentage point reduction in Non-Tariff Measures (NTMs) (simple average in brackets)

Sector	UK Imports from EU	UK Exports to EU
Agri-food	5.9pp (8.3pp)	3.0pp (4.3pp)

Source: Defra/DBT modelling

Results – long-run GDP impacts

Applying the trade cost reductions in table 1 to both UK imports from the EU and UK exports to the EU, UK GDP is estimated to increase by up to 0.14%[6] in the long-run (compared to the baseline of no SPS agreement). The phrase 'long run' here reflects the notion of the new equilibrium the economy reaches once all the shorter run transitions have been worked through. It is typically assumed to be around 10-15 years following the implementation of an agreement. This increase is equivalent of up to £5.1bn when compared to projected UK GDP levels in 2040, or up to £3.6bn when compared to UK GDP in 2023[7]. This is subject to negotiated agreement and the interaction with the UK's border target operating model.

There is uncertainty in the extent to which an SPS agreement would reduce trade costs on UK imports. The UK is currently in the process of implementing our Border Target Operating Model. Therefore, the long run impact of an SPS agreement should be considered against a counterfactual of full BTOM implementation, which leads to an assumption that there would be reductions in both import and export barriers. However, we have also examined the impact if the trade cost reductions only applied to exports, which would result in significantly lower increases to UK GDP.

Caveats of the analysis

The modelled impacts are based upon current policy assumptions about the shape of an agreement. This means the estimate impacts may change in future if the eventual agreement differs in detail and scope to those assumed.

Key caveats and uncertainties include:

- This analysis is not a full cost-benefit analysis of an SPS agreement. CGE is a comparative static model and does not include any short-term adjustment costs in the estimates.

[6] Rounded up to 2 decimal places.

[7] The methods used to calculate the £ figures are the same as those used in the technical note of the preliminary economic impacts of the UK-India Free Trade Agreement. Based upon the projections in the 2023 Global Trade Outlook, UK real GDP projected to be around £3.81 trillion by 2040, in 2024 prices.

- The CGE model assesses the broad impacts of the agreement. It is relatively aggregated (e.g. beef and sheep meat are aggregated into a single sector). The estimates are best interpreted as indicative of the broad scale of long-run GDP impacts resulting from the agreement. Alternative, more granular, modelling approaches are preferred when assessing the impact on, e.g. specific agri-food products.
- Estimates are sensitive to the assumed scale and scope of sectoral trade cost reductions. Non-tariff trade costs are not directly observable and therefore must be estimated by other methods which are subject to uncertainty.
- There is uncertainty in the extent to which an SPS agreement would reduce trade costs on UK imports under the UK's Border Target Operating Model.

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Contact details: trademodelling@businessandtrade.gov.uk