

Methodology note

How Defra has estimated the potential effect of import tariffs on UK food prices

May 2016

1. If the UK left the European Union (EU) and simply relied on WTO rules, it would set its own import tariffs. But if it kept tariffs at zero with EU countries, it would have to lower tariffs unilaterally with all other WTO members where it did not have a preferential trade agreement,¹ giving up a key bargaining position in negotiating new trade arrangements. The alternative would be to raise tariffs with the EU with implications for UK prices and higher costs for consumers.²
2. This note sets out how Defra has estimated the potential impact on UK food prices of setting tariffs on imports from the EU at the same level as tariffs currently applied on imports to the UK from outside of the EU. The analysis also considers the impact of non-tariff trade barriers, such as costs at the border. Other factors will also impact on food prices, including any changes in macroeconomic variables but these are not considered in this analysis.
3. In 2011 Defra published an academic study³ of the drivers of the UK's Food Consumer Price Index (Food CPI), a component of the overall Consumer Price Index (CPI). The model developed in that study (the academic model) estimated the relationship between Food CPI and a number of factors, including global food commodity prices (represented by the International Monetary Fund's world food price index). The model has been updated and results are due to be published in the Journal of Agricultural Economics.⁴

¹ Under WTO rules, countries cannot normally discriminate between trading partners that are members of the WTO. So a country or trading bloc cannot grant another a preferential arrangement (such as a lower customs duty rate for one of their products) without doing so for all other WTO members. This principle is known as Most Favoured Nation (MFN) treatment and so MFN tariffs are the default tariffs applied to other WTO members, in the absence of trade agreements. The main exception to this rule is where a country of trading bloc enters into a preferential trade deal with another country of economic bloc.

² HM Treasury analysis: the long-term economic impact of EU membership and the alternatives.

³ Lloyd et al. (2011) "Retail Food Price Inflation Modelling: Final Report to Defra".
<http://randd.defra.gov.uk/Document.aspx?Document=FinalDefraReport280411.doc>

⁴ Davidson, J., A. Halunga, T. Lloyd, S. McCorrison and C.W. Morgan (in press) 'World Commodity Prices and Domestic Retail Food Inflation: Some Insights from the UK' Journal of Agricultural Economics.

4. The introduction of new trade barriers, both tariff and non-tariff barriers, would increase the effective price of global food commodity prices faced by the UK. We therefore use the outputs of the updated academic model to estimate the change in Food CPI and the impact on annual household expenditure on food.

Step by step process

To estimate the potential increase in food prices if the UK applied the same tariffs on imports from the EU as it currently does on those from other countries, the following steps were taken:

Establishing the impact of tariffs on commodity prices

5. We assume that once outside the EU, imports from the EU into the UK face the same tariffs that are currently applied to other non-EU countries that do not have a preferential trade deal with the EU. In addition we assume that exports into the UK face new non-tariff barriers, such as additional costs at the border that are equivalent to a 2% increase in cost.⁵
6. So that we can draw on the coefficients produced by the academic model, we have treated higher tariffs placed on UK imports as if they were an increase in world food commodity prices. We have done this by applying the UK's tariffs with other countries to the commodities imported by the UK from the EU. We aggregate the commodity price increases into a single weighted figure using the International Monetary Fund (IMF) world food price index.
7. If we left the EU, and applied the same tariffs as we currently do from the rest of the world, then we would import from the cheapest source and EU imports would have to compete with those from the rest of the world.
8. We have therefore 'deflated' the tariff applied to reflect existing price gaps for some commodities, based on data from the Organisation for Economic Co-operation and Development (OECD). If the price of a given commodity is above the OECD's estimate of the border price we subtract the difference between the two prices from the tariff increase. This still produces a 'tariff shock' but one which is lower than a simple addition of the EU MFN tariff would imply.

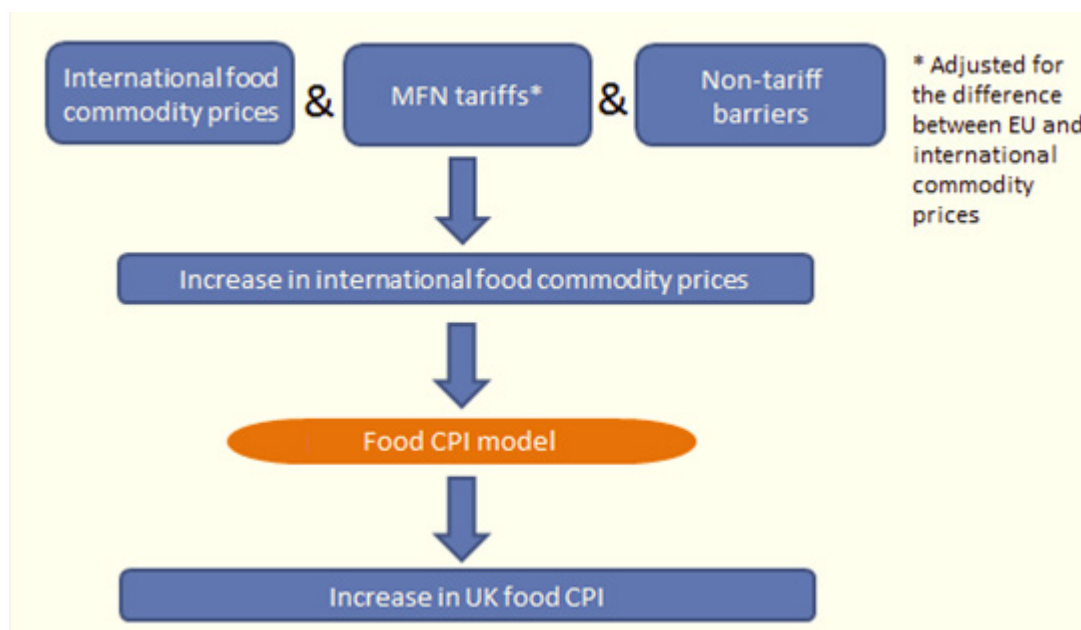
⁵ *Trade Costs: What have we learned? A synthesis report, Moise and Le Bris, OECD trade policy paper No. 150. (2013).* We have taken the lower end of the estimate of non-tariff barriers to be conservative.

Using the academic model to estimate changes in UK consumer food prices

9. Using the approach above, we estimate that applying tariffs would increase the import price of international food commodities faced by the UK by 9%. We have assumed a further 2% increase to represent the cost of non-tariff barriers. The total increase in international food commodity prices faced by the UK is therefore estimated to be $9\% + 2\% = 11\%$.
10. The estimated impact on consumer food prices is then determined by multiplying the resulting percentage change in commodity prices faced by the UK by the coefficient that represents the relationship (estimated by the academic model), between world food commodity prices and UK consumer food prices.
11. The academic model estimates that every 1% increase in global food commodity prices leads to an increase in the food component of CPI of 0.27% after two years. Accordingly, an increase of 11% in global food commodity prices is estimated to lead to an increase in food CPI of $11\% \times 0.27 = 2.9\%$.

The methodology behind our estimate is summarised in Figure 1.

Figure 1. Framework for estimating impact of MFN tariffs on UK food prices





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