

The exposure of households' food spending to tariff changes and exchange rate movements

IFS Briefing Note BN213

Peter Levell
Martin O'Connell
Kate Smith

The exposure of households' food spending to tariff changes and exchange rate movements

Peter Levell, Martin O'Connell and Kate Smith

Copy-edited by Judith Payne

Published by

The Institute for Fiscal Studies

ISBN 978-1-911102-59-5

The authors gratefully acknowledge financial support from the British Academy under pf160093, the European Research Council (ERC) under ERC-2015-AdG-694822, the UK in a Changing Europe initiative under ES/R000980/1 and the Economic and Social Research Council (ESRC) under the Centre for the Microeconomic Analysis of Public Policy (CPP), ES/M010147/1, and under the Open Research Area, ES/N011562/1. The UK in a Changing Europe initiative promotes rigorous, high-quality and independent research into the complex and ever-changing relationship between the UK and the EU. It is funded by the ESRC and is based at King's College London. Data were supplied by TNS UK Limited. The use of TNS UK Ltd data in this work does not imply the endorsement of TNS UK Ltd in relation to the interpretation or analysis of the data. All errors and omissions remain the responsibility of the authors.

Executive summary

This briefing note discusses how changes in prices of imported food – for example, as a result of changes to tariffs and movements in exchange rates – might affect the prices that different households pay for their overall food baskets.

Key findings

The UK imports a lot of food, with the majority coming from the European Union.

Around 30% of food purchased by households in the UK is imported. The major source of total food imports is the EU (which accounts for 70% of gross food imports). This means changes in the costs of imports – for example, through changes to tariffs or movements in exchange rates – are likely to have a big impact on the price consumers pay for food.

The UK currently benefits from tariff-free trade within the EU.

The UK and other EU members currently levy common tariffs on products imported into the EU from other countries. These tariffs are, on average, higher on agricultural products than on non-agricultural products and in some cases considerably higher. There is a lot of variation in tariffs both across and within broad food groups.

Brexit could potentially have a big impact on the UK's trade arrangements, not only with the EU itself, but also with other countries with which it currently has trade deals through the EU.

If the UK leaves the EU customs union, it would be free to adjust the tariffs it charges on agricultural goods. Under World Trade Organisation (WTO) rules, the UK would not be able to set tariffs that discriminate between trading partners, unless as part of a free trade agreement or to give developing countries special access to its market.

If the UK and the post-Brexit EU fail to strike a free trade deal, it is likely tariffs would be imposed on EU imports into the UK. This is because the UK would be unable to impose zero tariffs on imports from the EU without also extending tariff-free access to all other WTO members.

Exchange rates also affect the price of food.

Imports are purchased in foreign currency: when these currencies become more expensive relative to sterling ('sterling depreciation'), more sterling is needed to purchase the same quantity of foreign currency, and therefore the same quantity of foreign goods. In 2007–08, there was a 21% depreciation in the effective sterling exchange rate; over the same period, there was an 8.7% increase in the price of food relative to other goods.

It is still too early to tell whether the 13% depreciation in sterling between January 2016 and March 2017 will be associated with similarly sized and persistent effects on food prices.

There is, however, evidence that producer prices for food have increased since the referendum. The consumer price for food relative to the overall consumer price level initially declined after the referendum, but started to increase towards the end of 2016.

Tariff changes and movements in the exchange rate directly affect the cost of getting imported food products onto supermarket shelves. This will feed into the prices faced by consumers for imported goods. The extent to which tariff changes and exchange rate movements feed through to prices is uncertain and may vary across goods.

The prices of domestically produced products are also likely to change, for two reasons. First, many domestically produced products use imported inputs, and changes to firms' costs will tend to feed through to the price they charge for their final product. Second, changes in the price of imported goods are likely to lead to changes in the price of similar domestically produced goods because of competitive effects: for example, if the price of imported goods rises then domestic producers who were competing in the same markets might take advantage of the opportunity to increase their prices too.

Lower-income households allocate a higher proportion of their spending to food than higher-income households.

The lowest-income tenth of households allocate 23% of their spending to food, compared with 10% for the highest-income tenth. Poor households will therefore be more affected by rises in the general level of food prices.

There is variation in the share of spending on imported products within different food groups.

For example, 39% of fruit products are imported, while only 20% of bread and cereal products are imported. However, an additional 12% of spending on bread and cereal products goes on buying products that use imported inputs.

Variation in the share of spending on different food groups means that different households buy more or less of their food from abroad.

There is little variation across income deciles, but considerable variation across households that is not correlated with income or other household characteristics that we observe in the data.

This variation increases when we look at differences in spending *within* food groups.

On average, households buy around 35% of their beef, lamb and pork from abroad, but some households buy all of it from overseas and others purchase none from abroad. These households are likely to experience different price increases if the costs of imports rise.

1. Introduction

Brexit is likely to see large changes to the UK's trading arrangements, which will feed through into changes in import tariffs. The past year has seen a substantial depreciation in the price of sterling: the effective sterling exchange rate fell 13% from January 2016 to March 2017. Around 30% of food purchased by households in the UK is imported. The major source of total food imports is the EU (which accounts for 70% of gross food imports).¹ Both tariff changes and movements in exchange rates are therefore likely to have a considerable impact on the prices of food faced by households. The extent to which households are differentially affected by these changes will depend on what types of products they buy.

The relationship between changes in costs – for example, the tariffs imposed on food imported and goods used in the manufacture of food – and changes in retail prices depends on a number of different factors. Tariff changes and movements in the exchange rate will directly affect the cost of getting imported food products onto supermarket shelves. This will feed into the prices faced by consumers. However, competitive effects in the retail market may mean that the prices of domestically produced products change following changes in the price of similar imported products. Finally, domestically produced products may also be more expensive to produce if they use imported inputs. In Section 2, we provide a more detailed discussion of what factors are likely to be important in determining how tariff changes and exchange rate movements affect consumer prices.

It is difficult to conclude precisely how potential changes in tariffs and exchange rates would affect the cost of households' shopping baskets. However, households that get a greater share of their food from imports, or from goods that are produced using a lot of imported inputs, are more exposed to changes in the cost of importing, whether through tariff changes or exchange rate movements.

In Section 3, we use data on households' food purchases to analyse the variation in relative exposure to tariff changes and resulting price changes. By combining information from two data sets, we calculate the share of food spending that is spent on imported food. We do this for the entire shopping basket, and then zoom in on differences across four food groups. We show that there is some variation across the income distribution and socio-economic groups, but that this variation is relatively small. However, the overall degree of variation across households is substantial. This suggests that some households face substantially greater exposure to changes in the cost of imports than others.

¹ Authors' calculations using UN COMTRADE data. Food imports are calculated by summing over the two-digit HS codes 02–04, 07–13 and 15–23. Available at <https://comtrade.un.org/>.

2. Tariffs, exchange rates and prices

Food prices are determined by the interaction of many factors including costs, consumer demand and the degree of competitiveness in the market. One important determinant of food prices is the costs of getting foods onto supermarket shelves. These costs include the prices of inputs into the final on-the-shelf product. If inputs are purchased from overseas, exchange rates will be an important determinant of these prices. The costs also depend on any tariffs that are levied on imported products or inputs.

How changes in costs, due to changes in tariffs or exchange rates, feed through to consumer prices is uncertain and depends on the degree of competition in the market. If firms have some market power, then changes in prices could be more, or less, than the changes in costs. In this section, we discuss how changes in tariffs and exchange rates can affect costs, and how these costs may be passed on to consumer prices.

Effect of tariffs and exchange rates on costs

Governments can levy tariffs on products that are imported into the country. Currently, the tariffs imposed by the UK are set by the European Union (EU). The EU's rules specify (i) that no tariffs can be imposed on products imported from other EU countries and (ii) what tariffs are applied to products imported from non-EU countries.

Table 1. Distribution of tariffs for agricultural and non-agricultural goods

	Average duty	Frequencies				
		No duty	0–25%	25–50%	50–100%	>100%
<i>Agricultural products</i>						
Final bound (2015)	10.9%	32.3	53.6	9.4	2.3	0.4
MFN applied (2015)	10.7%	31.7	53.7	8.4	2.4	0.3
Percentage of imports into EU (2014)		46.7	42.9	7.7	2.5	0.1
<i>Non-agricultural products</i>						
Final bound (2015)	3.9%	28.4	71.6	0	0	0
MFN applied (2015)	4.2%	26.5	73.4	0.1	0	0
Percentage of imports into EU (2014)		63.1	36.9	0	0	0

Note: Final bound tariffs refer to the legally binding ceilings WTO members have agreed to charge on individual 'tariff lines' (products). MFN applied tariffs refer to the tariffs actually charged. Final bound tariff averages exclude unbound tariff lines. Tariff averages are simple rather than trade-weighted. The percentages by duty ranges may not add up to 100% if non-*ad-valorem* tariffs cannot be converted to *ad-valorem* equivalents or if tariff lines cannot be allocated to individual products. See source for further details.

Source: World Trade Organisation, *World Tariff Profiles 2016*, https://www.wto.org/english/res_e/publications_e/world_tariff_profiles16_e.htm.

Table 2. EU MFN tariffs for food and agricultural products

	Average duty (%)	Percentage with no duty	Maximum duty (%)
Dairy products	35.5	0.0	96
Sugars and confectionery	20.6	11.8	63
Beverages and tobacco	19.0	19.2	135
Animal products	16.9	28.4	111
Cereals and preparations	15.7	13.0	42
Fish and fish products	11.0	8.2	26
Fruit, vegetables and plants	9.9	19.6	146
Coffee and tea	6.0	27.1	19
Oilseeds, fats and oils	6.0	48.1	138
Other agricultural products	3.1	65.5	58
Cotton	0	100	0

Note: Includes all goods classed as agricultural products plus fish and fish products. Tariff averages are simple rather than trade-weighted. The middle column shows the percentage of products within each product group that attract zero tariffs.

Source: World Trade Organisation, *World Tariff Profiles 2016*, https://www.wto.org/english/res_e/publications_e/world_tariff_profiles16_e.htm.

The World Trade Organisation (WTO) publishes information on the ‘final bound’ tariffs, which give the legally binding ceilings that each WTO member has agreed to charge on individual tariff lines, as well as on the most-favoured-nation (MFN) tariffs that are actually applied to each product. The latter are typically lower than the former.² Table 1 summarises the distribution of the tariffs that EU members levy on agricultural and non-agricultural goods. It is clear that tariff rates tend to be higher for agricultural than for non-agricultural goods. The average MFN tariff for agricultural products in 2015 was 10.7% for agricultural products and 4.2% for non-agricultural products. Agricultural products also appear to be more likely to be affected by ‘tariff peaks’ (relatively high tariff rates for individual products): 11.1% of agricultural tariff lines (which account for 10.3% of imports into the EU) are subject to tariff rates above 25% compared with just 0.1% of non-agricultural products; 0.3% of agricultural products are subject to tariff rates of over 100%.

Table 2 breaks the tariff rates charged across different agricultural products down further into broad product groups. The largest average tariffs are applied to dairy products such as milk, cheese and cream, which attract an average tariff rate of 35.5%. Moreover, no products within this category are allowed in duty free. The next-highest average tariffs apply to sugars and confectionery (with an average tariff rate of 20.6%) and beverages and tobacco (with an average tariff rate 19.0%). The lowest average tariffs are charged on imports of oilseeds, fats and oils, other agricultural products and cotton (which attracts no tariff). It should be noted that these averages can conceal a great deal of variation. For

² The average of final bound tariffs excludes product lines that are not bounded, which means that the MFN average tariff can sometimes be greater than the final bound tariff.

example, while the average tariff charged on fruit, vegetables and plants is relatively low (at 9.9%), products within this category can attract a tariff of up to 146%.

MFN tariffs do not in themselves tell us all we need to know about the extent to which tariffs affect the cost of a given product. The principle behind MFN tariffs is that WTO members should not set tariffs that discriminate for or against particular countries (i.e. each country should be granted the same trade access as the 'most favoured nation'). However, WTO members do not necessarily charge MFN tariffs on imports from all sources, for instance, if they have a preferential trade agreement. As a consequence, the actual tariff rates charged on imports may be lower than the MFN rates. In addition to tariffs, the EU applies other trade barriers such as quantity restrictions and tariffs that are charged at different rates above or below some threshold level of imports. Food imports are especially affected by these measures, which will also impact on the costs of imports.

Tariffs can affect the costs of food products *directly* and *indirectly*. The direct effect is on food products that are imported into the UK and sold directly to consumers. However, there is often also an indirect effect on costs if UK food manufacturers import intermediate goods for use in manufacturing. For example, consider two ready meals: one is manufactured outside the UK and then imported, and the second is manufactured in the UK but uses imported meat. Changes in tariffs could directly affect the cost of the first ready meal and could indirectly affect the cost of the second by increasing the cost of the imported meat. This indirect effect means that assessing how tariff changes affect costs requires knowledge of the tariffs paid through the entire supply chain.

Movements in the exchange rate can also have both direct and indirect effects on the costs of food. When sterling depreciates, it becomes more expensive both to buy imported foods and to import inputs into foods that are produced in the UK. However, as with tariff changes, how exactly exchange rate movements affect the prices of different products is uncertain.

Pass-through of costs to consumer prices

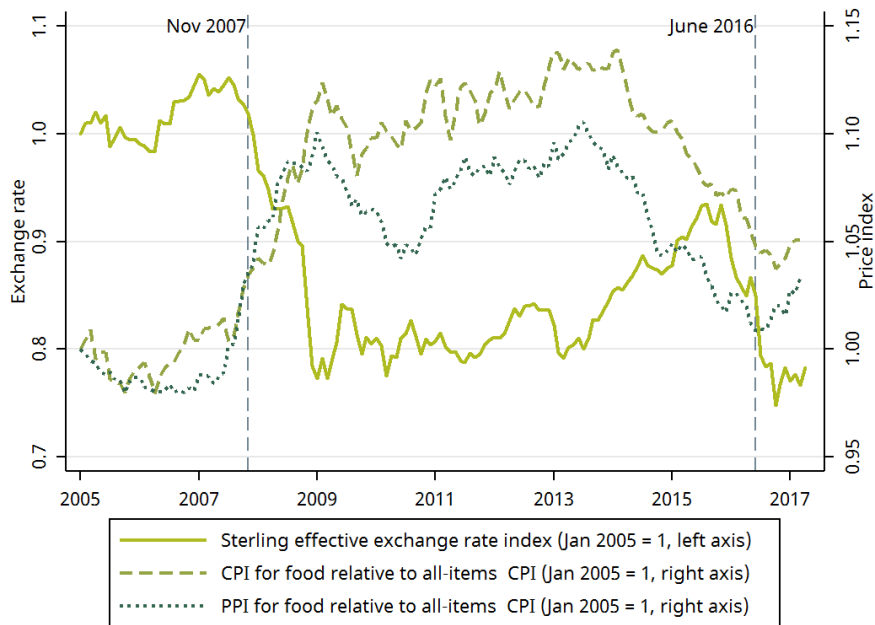
Tariff changes and exchange rate movements can affect the costs of producing food products in complex ways. Even knowing how costs change is not enough to conclude what the resulting changes in prices will be. This is because retailers and manufacturers often have incentives to change prices by more or less than any change in costs. Additionally, firms may have incentives to change prices of products that are not affected by cost changes if changes in the costs (and prices) of other goods impact demand for these products.

There is a large literature that studies how costs are passed through to consumer prices, which has found that pass-through depends on a variety of factors, including the market structure, how demand responds to price, local costs, and price rigidities.³

Some idea of the importance of exchange rate movements in determining food prices can be gleaned from the large depreciation in sterling that happened around the financial

³ For example, see E. Nakamura and D. Zerom, 'Accounting for incomplete pass-through', *Review of Economic Studies*, 2010, 77, 1192–230, and P. Goldberg and R. Hellerstein, 'A structural approach to identifying the sources of local currency price stability', *Review of Economic Studies*, 2013, 80, 175–210.

Figure 1. Exchange rate movements and the real price of food



Note: The PPI for food gives output ('factory gate') prices for producers of food products selling to the UK market. This is the price received by UK manufacturers. It covers any margin they make on the goods they sell, as well as any costs such as labour, raw materials and energy, interest on loans, site or building maintenance, and rent. Both the PPI and CPI (food) are shown relative to the all-items CPI. The effective exchange rate and the price indices are rebased to equal 1 in January 2005.

Source: Bank of England and Office for National Statistics.

crisis. The effective sterling exchange rate (which is an index of the weighted average of the value of sterling in foreign countries, where the weights are their trade shares with the UK) fell by 21% between November 2007 and the end of 2009. This large depreciation contributed to food price increases around this time: the price of food relative to other goods rose by 8.7% from 2007 to 2009, as illustrated in Figure 1.

The effective sterling exchange rate depreciated further in advance of the referendum in June 2016, and has further declined since then. It is now below its lowest level since the Bank of England introduced the index in 1980. Food prices have increased slightly since the beginning of this year, but it is too early to tell how large or persistent this increase will be.

One indication of potential rises in the consumer price of food is the producer price of food. This is the price received by UK manufacturers. It covers any margin they make on the goods they sell, as well as any costs such as labour, raw materials and energy, interest on loans, site or building maintenance, and rent. Figure 1 shows the Producer Price Index (PPI) relative to the all-items Consumer Prices Index (CPI). The producer price of food relative to the overall consumer price level increased sharply towards the end of 2007, and increased again in 2011. Notably, it has increased significantly in the period since the June 2016 referendum.

It is important to emphasise that the 2016 and 2007–08 depreciations were different episodes with different underlying causes, and both coincided with other, potentially

confounding, changes. 2007–08 saw sharp increases in world commodity prices for key agricultural inputs, which are likely to have contributed to increased food prices. However, while other countries (whose currencies did not depreciate) experienced food price rises, these were neither as large nor as persistent as the increase in the UK. This suggests that exchange rates played an important role in driving higher food prices in the UK.

Although we have discussed the implications of exchange rate movements for the average price of food, it is important to note that there might also be implications for the relative prices of different food groups. Whether these relative prices change depends on the relative importance of imports in the supply chain and on other market factors. Griffith, O’Connell and Smith (2015) show that in 2007–08 there were large changes in the relative prices of different food groups, with the price of processed foods falling relative to the price of other foods, as well as an overall increase in the average price of food.⁴

Post-Brexit tariff arrangements

The tariff arrangements that the UK will have in place after its exit from the EU are unclear. Possible arrangements vary from continued membership of the EU single market and customs union, to reverting to WTO rules for governing tariffs between the UK and the post-Brexit EU. The former would potentially entail no change in UK tariffs from their current level. The latter could see the introduction of substantial tariffs on food imports from the EU. It may also entail changes in tariff arrangements between the UK and non-EU countries if the UK alters the set of existing trade arrangements it already has with non-EU countries (via the EU) or if it decides to adopt different MFN tariffs for food imports from those the EU currently imposes.

In the next section, we present evidence for considerable variation among households in their exposure to tariff increases or decreases (and to further exchange rate movements).

⁴ R. Griffith, M. O’Connell and K. Smith, ‘Relative prices, consumer preferences and the demand for food’, *Oxford Review of Economic Policy*, 2015, 31, 116–30.

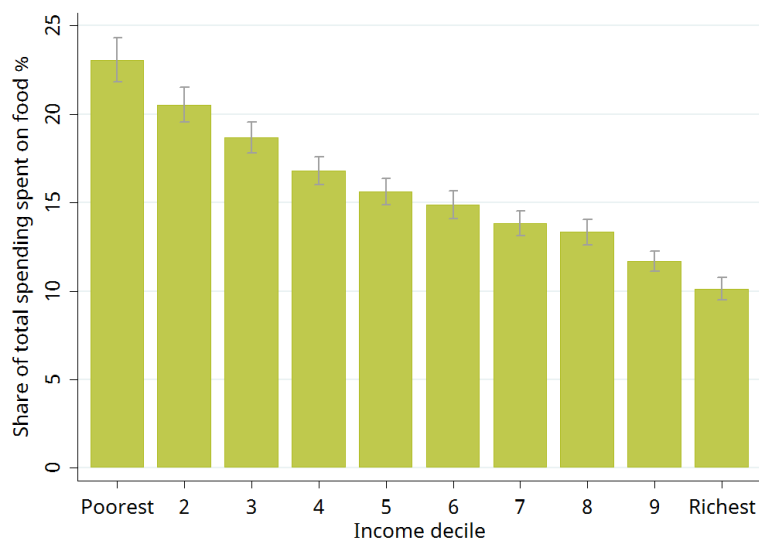
3. Variation in food spending

Tariff changes and exchange rate movements are likely to have the biggest impact on food products that are imported or are domestically produced but use imported inputs. In this section, we describe how the shares of imports vary across food groups and across households.

The importance of food in total spending

We begin by describing the importance of food in consumers' overall budgets using the Living Costs and Food Survey (LCFS) for 2014, which covers England, Scotland, Wales and Northern Ireland. Food represents a considerable share of overall spending – the average share of their total spending that households allocate to food was 15.9% in 2014. Figure 2 shows how the share of total spending on food varies across the income distribution. Lower-income households generally spend a greater proportion of their budgets on food than higher-income households. The share of total spending devoted to food more than halves from an average of 23% in the poorest tenth to an average of 10% in the richest tenth. This means that any factors that increase the general cost of food are likely to hit lower-income households hardest. Similarly, the poorest are likely to benefit most from any developments that reduce food prices.

Figure 2. Shares of total spending on food, 2014



Note: Deciles are defined using equivalised net income. Incomes are equivalised using the modified OECD scale. Total spending is the sum of spending on food, tobacco, clothing, rent, utilities, furnishings, health, transport, communication, recreation, education, restaurants and hotels, personal care, financial products and insurance. It excludes mortgage payments. For each household, we compute food spending as a share of total spending. Bars show the average across households in each decile. The grey lines show 95% confidence intervals on the average.

Source: Authors' calculations using the Living Costs and Food Survey 2014.

Variation across food categories

We now look at the importance of imports across broad food product categories. One way to measure the importance of imports is to look simply at the share of final products sold to UK consumers that are imported. This gives what we refer to as the direct import share. These shares are provided at an aggregate level by the Office for National Statistics (ONS).⁵ Table 3 shows these values across nine different categories, which together make up total food spending, in the year 2010. The importance of direct imports varies greatly across food groups. While 39% of fruit sold in the UK was imported, only 20% of the food included in the category 'bread and cereals' comes directly from abroad. Around one-third of fish and meat consumed in the UK is imported.

These direct import shares do not tell us the total importance of imports for each product group, however. As we discussed in Section 2, final goods sold in the UK may in part be produced using imported inputs (or goods that are themselves produced using imported inputs). ONS input-output tables provide details on how much of final produce in each

Table 3. Direct and indirect import shares by product group, 2010

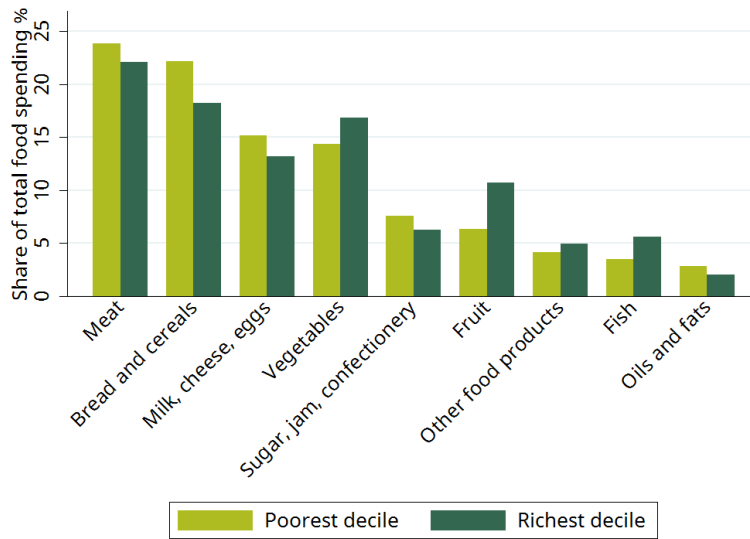
	Import intensities		
	Direct	Indirect	Total
Fruit	39%	10%	49%
Vegetables	38%	6%	44%
Oils and fats	35%	5%	40%
Fish	33%	4%	37%
Meat	32%	11%	43%
Other food products	31%	7%	38%
Sugar, jam and confectionery	27%	6%	33%
Milk, cheese and eggs	22%	9%	31%
Bread and cereals	20%	12%	32%
Total food	29%	9%	38%

Note: The total share is a weighted average of the import intensities of the individual product categories, using spending shares from the Living Costs and Food Survey for 2010 as weights.

Source: Authors' calculations using Living Costs and Food Survey 2010 and Office for National Statistics, 'Import intensity for each COICOP class', 'Indirect import content of domestic final demand by product and component, 2010', 'CPA-COICOP converter for household consumption, 2013' and 'Input-output supply and use tables, 2010'. See text for details.

⁵ Office for National Statistics, 'Import intensity for each COICOP class', <https://www.ons.gov.uk/economy/inflationandpriceindices/datasets/cpiimportpenetrationrates>.

Figure 3. Shares of food spending on different product groups, 2014



Note: Deciles are defined using equivalised net income. Incomes are equivalised using the modified OECD scale.

Source: Authors' calculations using the Living Costs and Food Survey 2014.

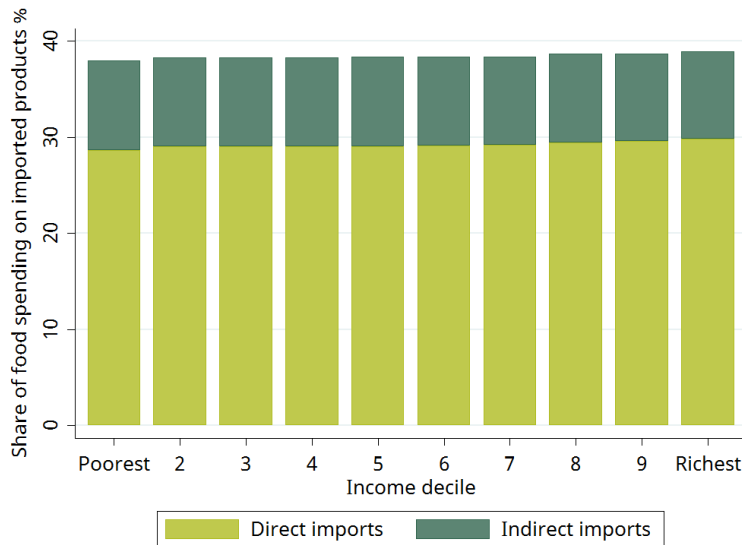
food category is from imported inputs.⁶ We use this information to compute an alternative measure, *total* import intensity, for each food group, which captures both the direct and indirect exposure to imports. This is shown in the last column of Table 3, ranging from 31% for milk, cheese and eggs to 49% for fruit.

Data on spending by each household in the LCFS are collected over a two-week period. We use this expenditure information to calculate the shares of total food spending associated with each of the nine food product groups across the income distribution. We show these for the poorest and richest deciles in Figure 3.

The figure shows that for both groups, the largest individual share of spending is devoted to meat (accounting for, on average, 24% of the food budget of the lowest-income tenth of households and 22% of the food budget of the highest-income tenth of households). The poor tend to spend more of their food budget on meat, bread and cereals, milk, cheese and eggs, sugar, jam and confectionery, and oils and fats than the rich. The rich tend to spend relatively more on fruit, vegetables, other food products and fish. It should be borne in mind, though, that the poor tend to devote a much greater share of their total spending to food than the rich, as we showed in Figure 2. This means, for instance, that while the poor tend to spend a slightly higher proportion of their food budgets on meat

⁶ Indirect import values are provided by the ONS for different products classified according to Classification of Product by Activity (CPA) group in the publication 'Indirect import content of domestic final demand by product and component, 2010'. We then map these to Classification of Individual Consumption According to Purpose (COICOP) product groups using the publication 'CPA-COICOP converter for household consumption, 2013', <https://www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts/adhocs/006611cpacoicopconverterforhouseholdconsumption2013>. Finally, we divide the contribution of imports by the value of final sales to UK consumers using table 3 of ONS's 'Input-output supply and use tables, 2010', <https://www.ons.gov.uk/economy/nationalaccounts/supplyandusetables/datasets/inputoutputsupplyandusetables>. This gives indirect import intensities at the three-digit COICOP level as reported in Table 3.

Figure 4. Share of spending on imported food by income decile, 2014



Note: Direct and indirect import intensities by product group are taken from 2010 data. Deciles are defined using equivalised net income. Incomes are equivalised using the modified OECD scale.

Source: Authors' calculations using Living Costs and Food Survey 2014 and Office for National Statistics, 'Import intensity for each COICOP class', 'Indirect import content of domestic final demand by product and component, 2010', 'CPA-COICOP converter for household consumption, 2013' and 'Input-output supply and use tables, 2010'.

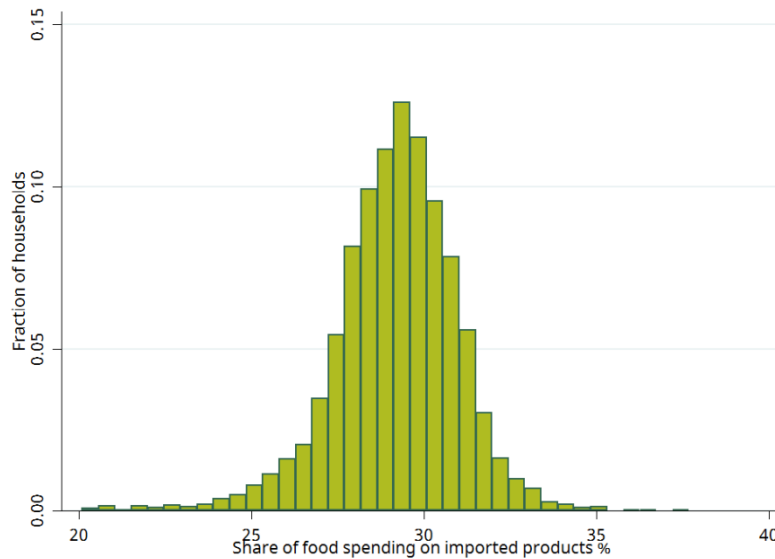
than the rich, the importance of meat in the total budget is much greater for the poorest decile than it is for the richest.

The budget shares plotted in Figure 3 indicate that the rich tend to devote more of their food budgets to the most import-intensive products (in particular, fruit and vegetables). To see how this might translate into the overall importance of imports in the budgets of the rich and the poor, we multiply the import intensities of each product by their shares in each consumer's food budget, and then plot the differences this implies across income groups in Figure 4. This analysis of course assumes that the importance of imports *within* each of our nine product groups does not vary with income. We make this assumption because while the LCFS does contain more detailed spending data than we plot here, we do not directly observe the origin of the products that people buy. We investigate within-food-category variation in the importance of imports further using more detailed data in the next subsection.

Figure 4 indicates that there is not much variation in the direct import share of food consumption across income deciles. The import share of the budget is, on average, 28.6% for the poorest decile, rising to 29.8% for the richest decile. The differential between rich and poor does not change greatly when we include the indirect import intensity of each product group to get a total import share. The total import intensity of households' food consumption ranges from 38.0% in the poorest decile to 38.8% in the richest.

Although there is very little variation in the share of food spending on imports across income groups, this does not necessarily mean that there is no variation in the importance of imports across different consumers. Figure 5 shows the distribution of direct import shares across the entire sample calculated in the same way as in Figure 4. It reveals a much greater degree of variation than exhibited in Figure 4. A tenth of consumers have

Figure 5. Distribution of share of spending on imported food, 2014



Note: Calculated using direct import intensities from 2010 data only.

Source: Authors' calculations using Living Costs and Food Survey 2014 and Office for National Statistics, 'Import intensity for each COICOP class', 'Indirect import content of domestic final demand by product and component, 2010', 'CPA-COICOP converter for household consumption, 2013' and 'Input-output supply and use tables, 2010'.

import shares greater than 31.2% and a tenth have import shares less than 27.1%. We find using regression analysis that only a very small part of this variation is explained by observable household demographics, such as age, education of head of household, region and household income. Of course, as with Figure 4, Figure 5 is likely to understate the true variation in the importance of imports as it does not include any differences in purchasing patterns within food groups.

Variation within food categories

To look in more detail at the importance of imports within food categories, we use data from the Kantar Worldpanel on the food grocery purchases made by a representative panel of over 30,000 households in 2015. Households record purchases made and brought into the home using hand-held scanners. We add up each household's spending over 2015.

The data contain information on the country of origin of some product categories, which together constitute around 17% of total food grocery spending: fresh fruit (5%), fresh vegetables (5%), butter (2½%) and beef, lamb and pork (4½%).⁷ We use purchases made in supermarkets (Tesco, Sainsbury's, Asda, Morrisons, Aldi, Waitrose, Lidl and Marks & Spencer), which constitute over 80% of total food grocery spending.

⁷ These categories are defined differently from the COICOP categories used in the analysis earlier in this section, which means the shares of total food spending are not comparable. 'Fresh fruit' includes apples, bananas, citrus fruits, berries, grapes, tropical fruit and other fresh fruits; it excludes canned and dried fruit and fruit juices. 'Fresh vegetables' includes potatoes, carrots, green vegetables, onions and other fresh vegetables; it excludes salads, tomatoes and frozen and canned vegetables.

Variation by socio-economic group

We compare the spending patterns of households on each of these food categories across socio-economic groups. Table 4 gives a description of these socio-economic groups and shows the percentage of households in each one.

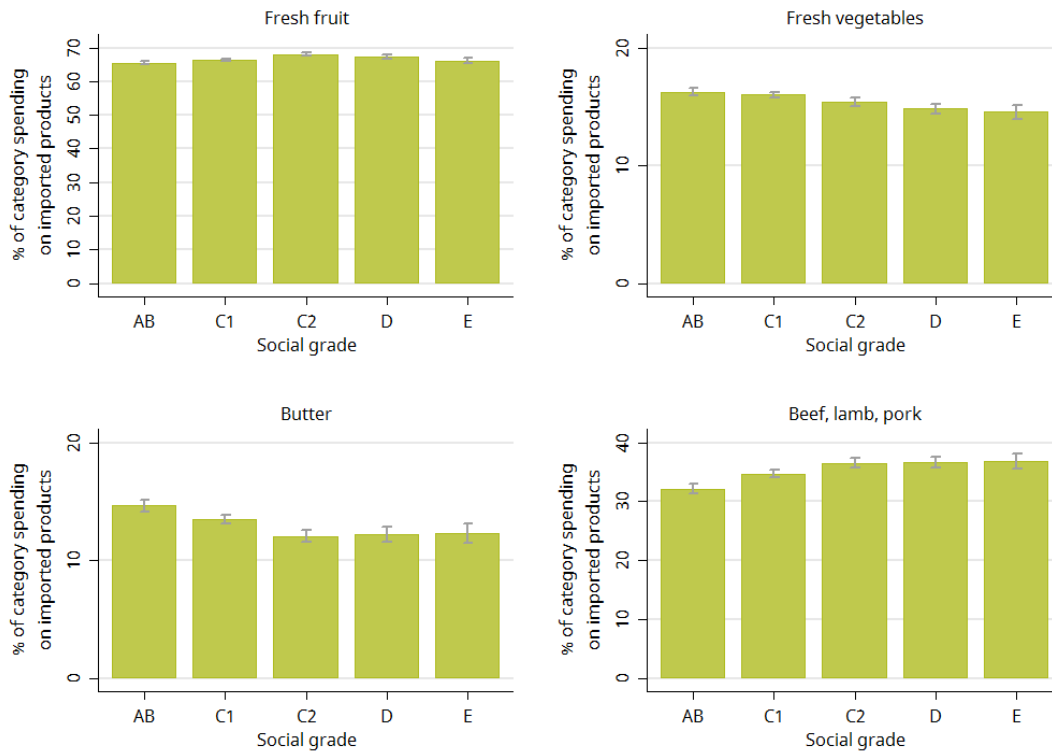
Table 4. Distribution of households by socio-economic group

Socio-economic group	Description	Percentage of households
AB	Higher and intermediate managerial, administrative and professional	21
C1	Supervisory, clerical and junior managerial, administrative and professional	38
C2	Skilled manual workers	19
D	Semi-skilled and unskilled manual workers	13
E	Non-working (casual or lowest-grade workers, pensioners, others who depend on state for income)	9

Note: These socio-economic groups are based on the occupation of the head of the household and come from Social Grades, which is a classification system developed for use on the National Readership Survey (NRS).

Source: Data from the Kantar Worldpanel in 2015.

Figure 6. Share of spending on imported products in different food categories, by socio-economic group



Note: In each food category, we include spending on products for which the country of origin is unknown in the denominator of the share: fresh fruit (30%), fresh vegetables (33%), butter (5%) and beef, lamb and pork (10%). The grey lines show 95% confidence intervals.

Source: Authors' calculations using the Kantar Worldpanel.

For each household, we calculate the share of total spending in each food category that is on imported products. The socio-economic group averages are shown in Figure 6. The country of origin is available for 70% of spending on fresh fruit, 67% of spending on fresh vegetables, 90% of spending on beef, lamb and pork, and 95% of spending on butter. We include in the measure of total spending (i.e. the denominator of this share) products for which the country of origin is unknown.

Higher socio-economic households get slightly less of their beef, lamb and pork from imported products, but slightly more of their fresh vegetables and butter from products produced outside the UK. These patterns suggest that higher socio-economic households are likely to experience higher average food price increases if the prices of imported vegetables and butter increase, but will be less exposed to increases in the price of imported beef, lamb and pork, relative to households from lower socio-economic groups. However, these differences are very small relative to the variation across all households.

Variation across households

We have shown above that there is some variation in spending patterns across socio-economic groups. However, it is possible that there are larger differences *within* these groups. For each of the four food groups, Figure 7 shows a histogram of the distribution of the share of spending on imported products.

Figure 7. Distributions of share of spending on imported products in different food categories



Note: In each food category, we include spending on products for which the country of origin is unknown in the denominator of the share: fresh fruit (30%), fresh vegetables (33%), butter (5%) and beef, lamb and pork (10%).

Source: Authors' calculations using the Kantar Worldpanel.

There is considerable variation across households in the share of spending on imported products within each category. For example, although on average households spend roughly 35% of their beef, lamb and pork spending on imported products, some households buy all of their beef, lamb and pork from overseas. In contrast, other households purchase none in the period we observe them. This suggests that households' experiences of food price changes associated with tariff changes and exchange rate movements are likely to vary considerably.

We also calculate the share of imports that come from the EU. On average, this is approximately 43% for fresh fruit, 87% for fresh vegetables, 85% for butter and 53% for beef, lamb and pork. These shares are roughly constant across the socio-economic groups.

4. Discussion

The cost of getting food onto supermarket shelves is a key determinant of the prices that consumers pay. This cost includes any tariffs levied on imported food products and imported inputs into foods manufactured in the UK. The exchange rate also affects the costs of final food products and inputs to production. The effect of changes in tariffs and the exchange rate on prices is complex. Nonetheless, it seems likely that consumers who buy a greater share of their food from abroad, or a greater share of food that is produced using imported inputs, would experience greater price increases than other households if these import costs rise. Conversely, they would enjoy greater price reductions if import costs decrease.

In this briefing note, we have used two data sets to look at variation across households in the share of total food purchases that is imported food. There is some variation across socio-economic groups and income deciles, particularly in the share of imported goods within specific food groups. There is also a large amount of variation across households that is not correlated with either income or socio-economic group. This suggests that different households could experience very different price increases if the cost of importing food rises.

There is a great deal of uncertainty over what the nature of the UK's post-Brexit trading arrangements will be. Continued full membership of the single market and customs union would see little change relative to current arrangements. On the other hand, leaving the EU without a free trade deal and falling back on WTO tariffs would quite likely imply the imposition of agricultural tariffs on food imports from the EU. This scenario also leaves open the possibility of the UK changing tariffs for imports of food from outside the EU. It is also unclear whether sterling will depreciate further – or appreciate – as Brexit proceeds. These uncertainties over tariffs and the exchange rate mean that UK households are potentially going to be exposed to considerable and unpredictable changes in food prices.