



UECBV

RED FLAG



The EU Meat Industry in a Hard Brexit Scenario

# CRISIS

The European Livestock and Meat Trades Union (UECBV) is the voice of meat and livestock professionals in Europe. As the representative of meat and livestock trade sectors across Europe, we are constantly alert to issues and threats that may affect our members' businesses, and to advocate for them when such challenges arise.

In our view, Brexit represents the greatest current threat to European producers, consumers and distributors of meat, with a potential impact much greater than the Russian political embargo on EU agrifood exports.

By potentially cutting off one of the largest and highest value meat markets in Europe, Brexit threatens to be catastrophic for the industry across Europe and the UK.

In the worst case scenario, in which no deal between the EU and the UK is agreed, the impact on the meat sector will be monumental, due to the particular exposure of this sector to tariff costs, veterinary checks and increased customs and transport costs.

UECBV commissioned Red Flag to undertake this analysis and report to find out how great that impact would be. The findings confirm our worst fears: a Hard Brexit would send shock waves



through the European meat industry, eliminating jobs, increasing consumer prices and destroying the livelihood of small business owners working in the meat sector.

The scale of this problem is too great to ignore, and we implore policymakers to recognise the catastrophic impact of a Hard Brexit for the meat sector, to follow through on the recommendations put forward in this report, and to protect this vital European sector.

*Philippe Borremans,  
UECBV President*



**UECBV**  
European Livestock and Meat Trades Union

[uecbv.eu](http://uecbv.eu)



[thisisredflag.com](http://thisisredflag.com)

Brussels | Washington DC | Los Angeles | Dublin | London | Paris

## Contents

### 4-5 Executive summary

Why meat will face the highest tariffs in a Hard Brexit Scenario

### 6-7 Top-line figures

Billions in losses - the real cost a Hard Brexit will have on the meat sector

### 8-9 Trading in the EU

The current state of meat trade

### 10-17 The Hard Brexit Scenario

Tariffs, veterinary checks, customs, WTO quotas, the Irish border and using the UK as a land-bridge

### 18-19 Other factors affecting the meat trade

Examining the hidden dangers

### 20-21 Overall impact

The shock to the European meat market a Hard Brexit would have

### 22-23 The solution

Desired negotiation outcome and mitigating measures

### 22-31 Annex 1 & 2 and references

# Executive summary

The United Kingdom will leave the European Union on March 29, 2019. In the event of a 'no deal' scenario, in which the UK exits the single market and customs union without a transitional period or trade deal in place, trade between the UK and the EU27 will be severely disrupted.

The European meat market would be uniquely vulnerable in this situation. Meat products would face the highest tariffs of all sectors, and would face additional costs, such as veterinary checks and a loss in value of fresh trade.

UECBV commissioned Red Flag to carry out an analysis of the potential impact of this scenario and produce a report including recommendations.

This report analyses how great the impact of this outcome on the meat sector would be. It finds that the European meat sector would be devastated by a no deal outcome, with trade collapsing and market prices falling, resulting in job losses across the EU.

## About UECBV

The European Livestock and Meat Trades Union (UECBV) is the EU representative body for national federations representing the meat industry, meat traders, and livestock traders and markets. UECBV represents national livestock and meat federations in each Member States, EEA and candidate countries for EU accession, which in turn have membership comprising of 20,000 companies employing 230,000 people across the EU Community. The vast majority of these enterprises are small and medium enterprises (SMEs).

## About Red Flag

Red Flag is a specialist strategic communications and campaigns consultancy with offices in Brussels, London, Paris, Washington DC, Los Angeles and Dublin. Through its Regulatory Futures Division, Red Flag helps clients understand critical issues and their implications, map out scenarios and prepare the necessary interventions. Partnering with think-tanks, academics and other experts, Red Flag's expert analysis informs significant decisions for major multinational companies and sectoral organisations.

## Authors & editorial board

Conor McGlynn, Séamus Conboy, Paul Fitzsimmons, Jean-Luc Mériaux, Cormac Healy, Liz Murphy, Erik Kam

*We are grateful to Professor Alan Matthews, Professor Emeritus of European Agricultural Policy in the Department of Economics at Trinity College Dublin, Ireland for advice in the preparation of this report.*



## The top-line figures

- The meat sector faces the highest tariffs of all sectors under WTO rules, with an estimated average tariff rate close to 50% and exceeding 100% for some products.
- The export costs imposed by tariff barriers, customs and veterinary checks and increased transport costs would reduce exports of meat on conservative estimates from the EU to the UK by up to 84% for beef, 48% for pigmeat and 76% for sheepmeat.
- This reduction in trade will create a surplus of EU beef and pigmeat, affecting market price: this will reduce the value of EU production of meat and result in a structural reduction in EU beef market price of over 8% and pigmeat price by over 7%.
- This price shock would reduce the value of EU production of beef by approximately €2.4 billion in the short run, and of pigmeat by over €2.3 billion.
- With the potential for EU27 beef market self-sufficiency to dramatically rise to 116% and a major jump in pigmeat self-sufficiency, a Hard Brexit will result in significant surplus production on the internal market and the resultant price effect will impact all countries, even those that have limited direct trade with the UK.
- The magnitude of the shock of a Hard Brexit would be significantly greater than that caused by the Russian food import ban in 2014, and it would also be far more difficult to find alternative markets for diverted products.
- The many SMEs in the meat sector would be particularly affected by the additional burden of veterinary and health checks on animal products, factors not faced by many other sectors. This would increase costs at current trade levels for EU meat exporters by over €43 million per year.
- Major disruption to modern fresh meat trade flows which are underpinned by sophisticated, just-in-time logistic systems will create further losses for the meat sector.
- This scenario would result in the loss of at least 32,000 jobs.

## Recommendations

- 1 Ensure a timely and sufficiently-long transitional period to allow businesses to adjust to the new arrangements.
- 2 Reach a future trading relationship that creates a minimum burden for businesses, especially SMEs, and maintains current arrangements as far as possible.
- 3 Ensure regulatory convergence between the UK and the EU.
- 4 Implement market support mechanisms to facilitate the transition for businesses in the meat industry, including increasing international market access, introducing a simplified sealed container system, approved consignor/consignee status for transitors, and investment in port facilities.

The export costs imposed by tariff barriers, veterinary checks and customs, and increased transport costs, would reduce exports of meat on conservative estimates from the EU to the UK by up to **84% for beef, 48% for pigmeat and 76% for sheepmeat**, resulting in a **reduction in EU beef market price of in excess of 8%, and pigmeat price in excess of 7%**

THE PRICE SHOCK WILL DECREASE THE VALUE OF EU PRODUCTION BY...



Meat sector faces the **HIGHEST TARIFFS** of all sectors under WTO rules - avg. rate of

**50%**

As the European meat sector disassembles its product, and thus has to find a market for all parts of the carcass, the tariff/market price effect will be transmitted throughout the single market, and hence will impact all countries, even those that have limited direct trade with the UK

The **tariff rate** exceeds

**100%**

for some meat products

The impact of a Hard Brexit on the European meat industry

The magnitude of the shock of a Hard Brexit would be **significantly greater** than that caused by the **Russian food import ban** in 2014, and it would also be far more difficult to find alternative markets for diverted products

A Hard Brexit would result in at least

**32,000**  
job losses

A Hard Brexit scenario will have a profoundly negative impact on the EU meat market, given the major trade flows in meat between the EU27 and the UK, the complexly intertwined nature of supply chains and the importance of the UK as a principally deficit meat market in terms of overall market balance in the wider EU. The negative impacts will have ramifications for the beef, pigmeat and sheepmeat sectors throughout the EU.

MAJOR DISRUPTION TO MODERN FRESH MEAT TRADE FLOWS WHICH ARE UNDERPINNED BY SOPHISTICATED, JUST-IN-TIME LOGISTICS SYSTEMS WILL CREATE FURTHER LOSSES FOR THE MEAT SECTOR

# Current state of EU meat trade

Since joining the European Community in 1973, the UK has enjoyed tariff-free trade with the other EU countries, and since the Single European Act of 1992, it has enjoyed a large reduction in technical barriers to trade. When the UK joined the European Community in 1973, 35% of its trade was with the 12 other European Economic Area countries. This share had risen to 45% in 2014.

Meat products constitute a large quantity of this trade, with the UK being an extremely important market for EU farmers, as well as a large producer of meat.

By quantity of animals in 2015, the UK was the number three producer of bovine animals, the number two producer of poultry, and the number one producer of sheep in the EU.

Meat and livestock make up a considerable share of UK-EU27 trade, and the UK plays a central role in the EU meat market, as a supplier and, more importantly, as a consumer.

The UK is a significant net importer from the EU in overall terms, and the trade deficit is even greater for meat. The EU28 is currently 102% self-sufficient in terms of beef production, for example, while without the UK, the EU27 countries would be 116% self-sufficient. This means that in the event of a rupture in trade, there will be a large excess of production in the EU27, while there will be a large shortfall in the UK. Such a level of trade disruption will have serious market implications throughout the EU, and in the UK market.

The UK is an extremely important market for EU27 meat exporters. The table (above centre) demonstrates the reliance of a number of countries on the UK market, and the scale of the risk to the EU economy, with Ireland and Denmark the most exposed to the problem.

UK's share of intra-EU meat exports (beef, pigmeat and sheepmeat)	
Austria	2%
Belgium	5%
Bulgaria	1%
Cyprus	0%
Czech Republic	0%
Germany	8%
<b>Denmark</b>	<b>25%</b>
Estonia	1%
Spain	5%
Finland	2%
France	7%
Greece	1%
Croatia	0%
Hungary	2%
<b>Ireland</b>	<b>56%</b>
Italy	10%
Lithuania	2%
Luxembourg	0%
Latvia	1%
Malta	0%
Netherlands	13%
Poland	12%
Portugal	8%
Romania	7%
Sweden	5%
Slovenia	0%
Slovakia	0%

Source: Eurostat trade dataset DS-057380

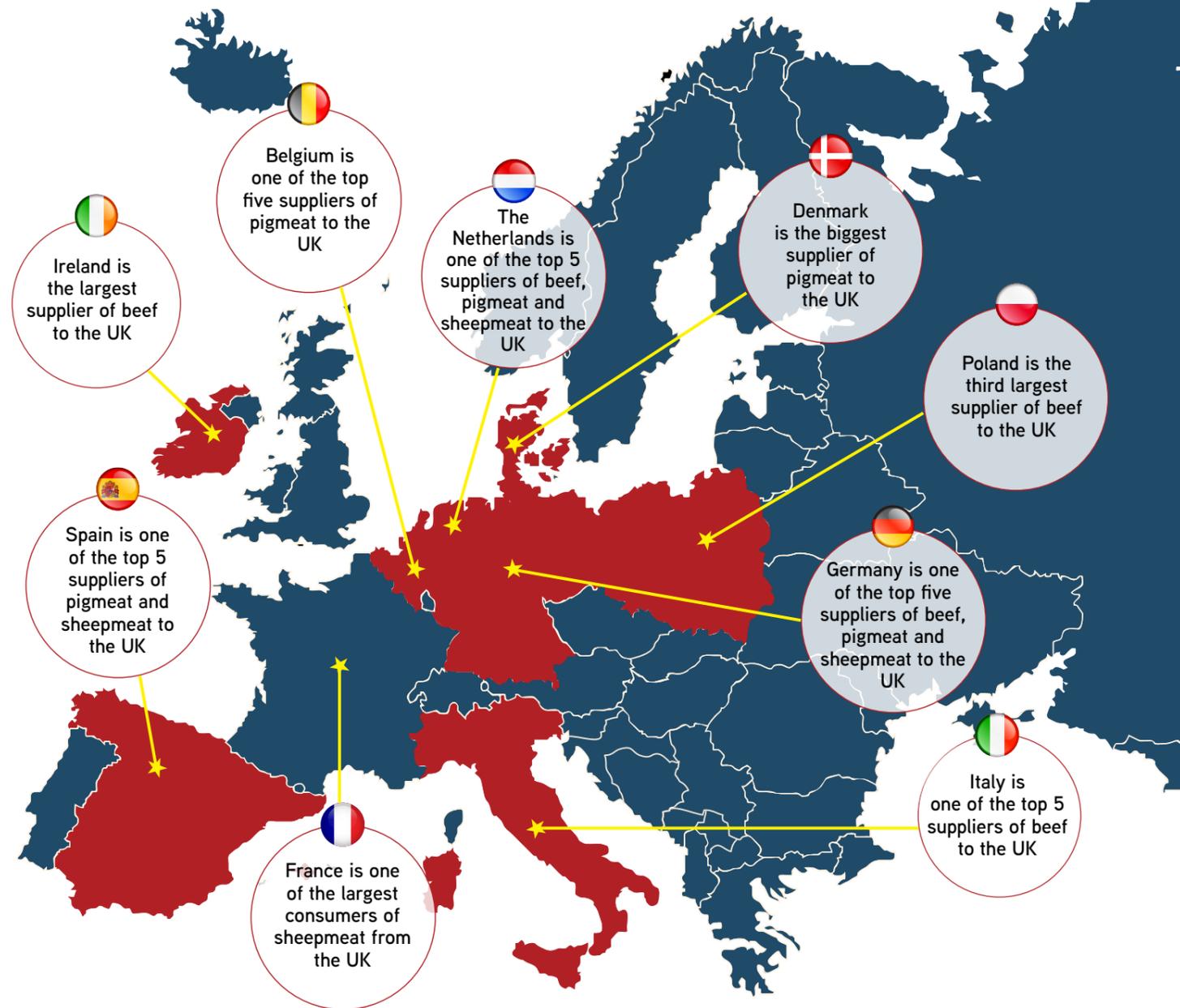
The UK is primarily a premium market. It imports relatively higher-priced cuts of meat. Less than 20% of EU27 pigmeat exports go to the UK, for example, but it accounts for the majority of EU exports of higher-priced bacon. It is also primarily a fresh market, importing more chilled than frozen meat. In 2015, for example, the UK imported in excess of five times more chilled than frozen beef.

As a product, meat is also unlike other goods, where the final consumer offerings are assembled from different constituent parts. Meat cuts and products, on the other hand, are products of a disassembly process – trade is not in carcass, but in a wide range of cuts of meat.

Every carcass, whether beef, pig or sheep, is dissected into an array of cuts, each with differing value and sold across multiple markets and market channels in order to match supply and demand and maximise the overall market revenue for the full carcass.

Meat trade therefore involves a carcass-balancing element. The UK, for example, imports and exports a similar quantity of lamb. However, its imports are primarily leg while its exports are primarily carcass. Thus, trade is important for finding a market equilibrium, as it would be impossible for producers to extract value from cuts for which there is no domestic demand.

The UK trades meat directly with all 27 other EU countries, to varying extents. This trade has a significant impact on the meat markets of all EU countries, even those that do not have a significant amount of direct trade with the UK, due to the transmission mechanism of the Single Market. Disruption of EU-UK trade would have a significant effect on market price and production in every EU country.



Source: Eurostat trade data 2015

## UK v EU average meat price



## The principal EU suppliers to the UK

The UK market is one of the highest value markets for EU meat, and the UK beef price is one of the highest in Europe. The same largely holds true for pigmeat and sheepmeat prices. A situation in which trade with the UK was severely restricted would therefore not only mean a massive loss in volume of trade for the EU27, but also a loss in high value trade with a sophisticated consumer market.

It would be extremely difficult to replace this loss, both in volume and value terms, in Europe or abroad, in the event of a rupture in trade.

The UK will leave the EU on March 29, 2019. If, on this date, the UK drops out of the Single Market and Customs Union with neither a trade deal nor a transition arrangement in place, then trade between the UK and EU would revert to World Trade Organisation (WTO) rules.

Without an agreement, both blocs would observe the most-favoured-nation (MFN) tariff principle, which says that a country can not discriminate between other WTO members in the tariffs it charges on imported goods.

The EU would have to apply the same tariffs to UK goods as it does to the goods of other third countries. Assuming the UK government does not take unilateral action - such as dropping all tariff barriers - and decides to maintain tariffs at the level it currently applies to non-EU countries, this outcome is known as the Hard Brexit Scenario.

This paper assumes the worst: that the Hard Brexit Scenario comes about, with no contingency plan in place by the EU and the UK, and no unilateral action from the UK to mitigate against the impact.



## 1 Tariff costs

If this result comes about, the EU and the UK would introduce MFN tariffs currently levied on third countries on imports of goods. While the EU tariffs that would apply to imports from the UK are known and laid down in the EU's TARIC (Integrated Tariff of the European Communities) code, the UK's MFN tariffs are not yet decided.

However, they will likely be the same as those applied by the EU in the immediate aftermath of Brexit - the UK government says that it plans "to replicate our existing trade regime as far as possible in our new schedules," and keeping the same MFN tariffs is a natural way to maintain continuity.

In the Hard Brexit Scenario, the meat sector will be disproportionately affected by the tariffs imposed. Due to the sensitivity of the EU food market, meat products face the single-highest average tariff rate of all sectors (see graph on page 13).

Lawless and Morgenroth (2016) estimated the MFN duty rate facing different sectors in trade with the EU, and found duties on meat products to be higher than on any other product category. This leaves the sector particularly vulnerable to a WTO-style tariff environment.

A wide range of meat types or cuts would attract a tariff up to or in excess of 100% of the product value, which would render them uncompetitive and result in major displacement in trade flows.

Even compared to food products, which as a group attract higher tariffs than manufacturing products, meat products attract much higher average tariffs.



# The **HARD** **BR**EXIT scenario

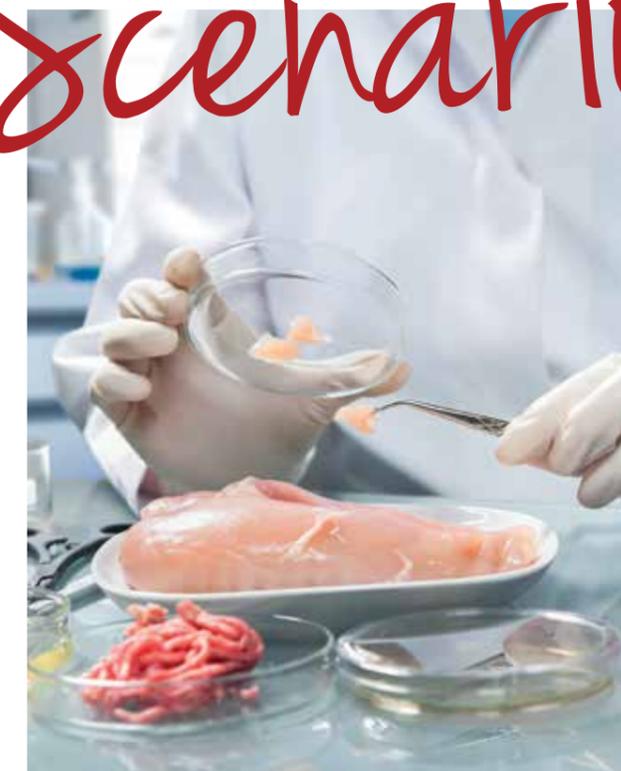
## 2 Veterinary checks

Non-EU meat and livestock products are subject to some of the tightest and most comprehensive controls at EU borders, and can only enter the EU through designated Border Inspection Posts (BIPs).

Under EU official controls legislation, consignments are subject to both documentary, identity and physical examinations. Samples taken at these BIPs must be dispatched to separate laboratory facilities for further tests.

In future, these official controls on animal products will apply to UK meat entering the EU, and similar checks could be maintained by the UK on products entering the market from the EU. This means a new regime of veterinary checks and restrictions would apply on meat trade between the EU and the UK which heretofore did not exist.

It could also introduce further limitation on the ports of entry that could be used and major pressure on limited inspection and laboratory facilities. Evidence from third countries shows that these veterinary checks are expensive and arduous for exporters and importers, with physical inspections and off-site testing increasing wait times at borders.



### 3 Customs controls

Leaving the Customs Union will lead to the imposition of customs formalities at the border, and increased administrative requirements for trade. This will lead to increases in transactional and transportation costs, caused by additional documentation, long delays at customs posts, as well as increased costs for the meat and livestock industry relating to refrigeration and the maintenance of animals, employing freight forwarders and hiring additional logistics staff. These costs will disproportionately affect small- and medium-sized enterprises (SMEs), which constitute a large proportion of companies in the meat sector. There will be significant implications for production scheduling, delivery logistics and stock levels to be carried.

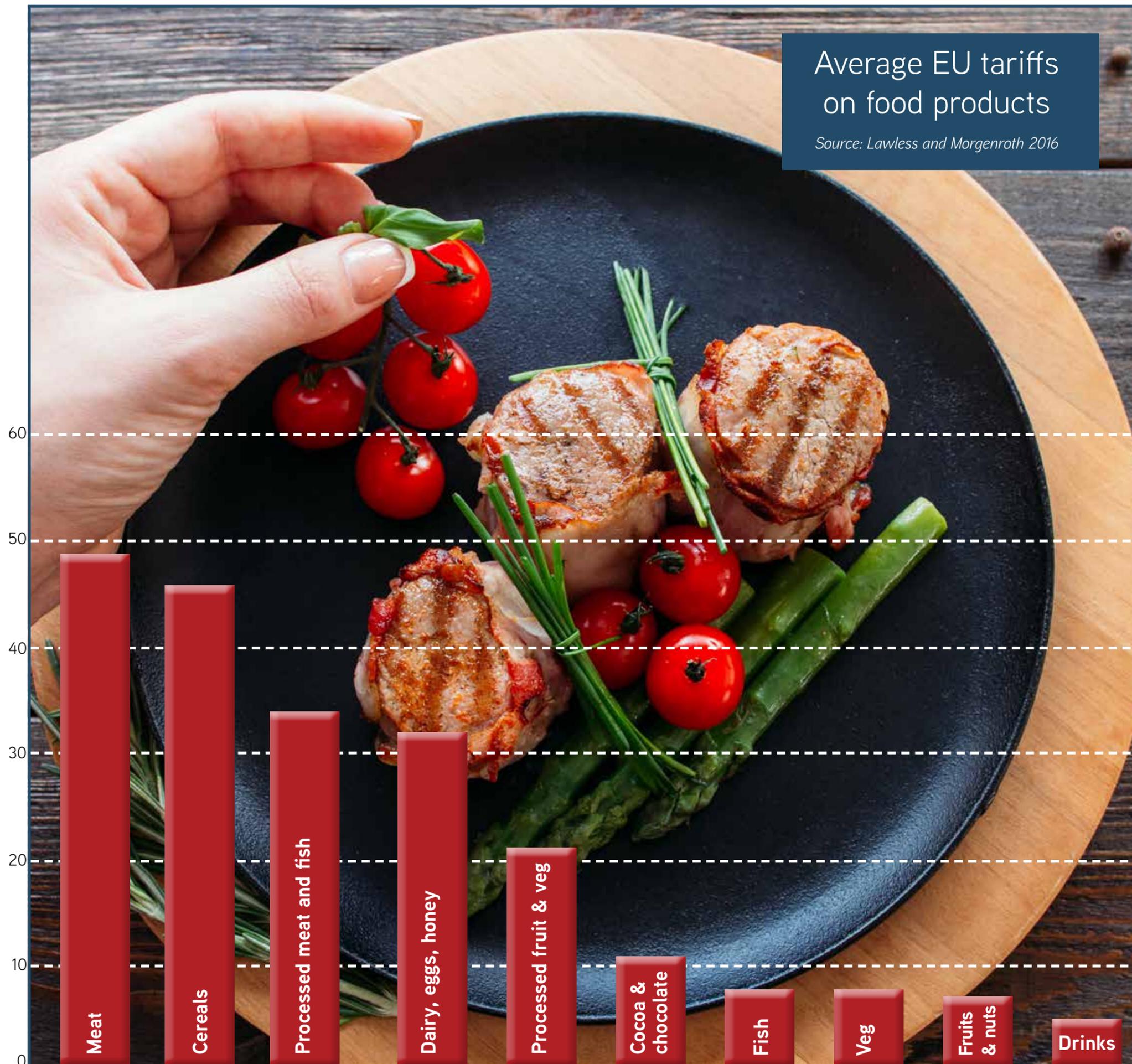


### 4 Irish border

In the event of a Hard Brexit, and in the absence of finding new ways to facilitate 'frictionless trade' when the UK leaves the Customs Union and Single Market, it seems inevitable that full customs controls and veterinary checks will be imposed between the EU and the UK and, as a consequence, between Ireland and Northern Ireland. This will not alone be a major setback to the interconnected meat and livestock business on the island of Ireland, but it will undermine existing supply chains and lead to massive disruption to trade while imposing considerable additional transaction costs on top of the burden of trade tariffs.

### 5 The UK as a 'land-bridge'

For the two-way trade between Ireland and the other 26 EU countries and vice versa, the island of Great Britain acts as a 'land-bridge' for trade, and this is particularly relevant for food and meat products. As well as the additional transport costs for freight carriers in the Hard Brexit Scenario, continuing to use the land-bridge would effectively double the non-tariff barriers faced by this intra-EU trade in the absence of a bonded sealed container system.





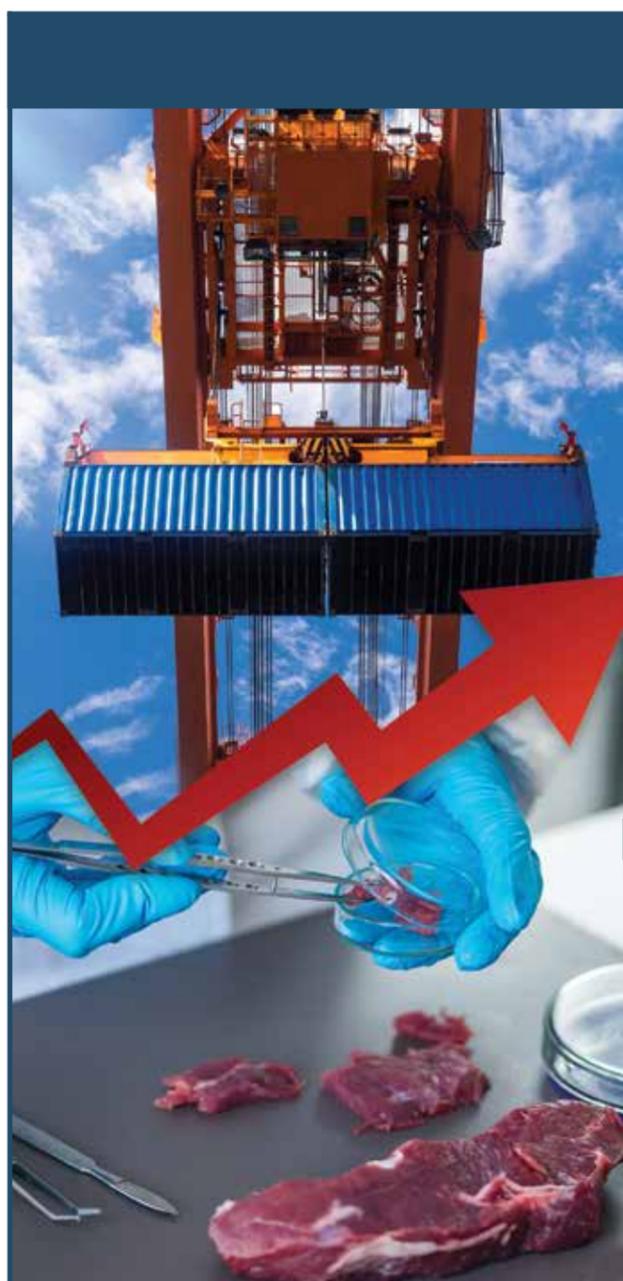
# Direct cost of a Hard Brexit

In the Hard Brexit Scenario, a number of factors will impact on trade, market balance and prices of meat in the EU27 and the UK. The meat sector will be particularly affected by:

- ① Tariffs on imports
- ② Veterinary checks
- ③ Customs checks and administration
- ④ Transport costs

This section presents a two-stage economic model for estimating the magnitude of the effect of these costs. First, by adapting a model from Lawless and Morgenroth (2016), we can provide an estimate of the effect on import demand from an increase in tariff and non-tariff barriers, and hence estimate trade reductions. Second, using a partial price equilibrium model, we can provide estimates of the effect on price of the Hard Brexit Scenario.

In each of these models we use combined average tariff rates for beef, pigmeat and sheepmeat with estimates of customs, veterinary and transport costs, which yields a single figure which acts in the model like a tariff (an ad valorem equivalent or AVE). The methodology for calculating these costs can be found in Annex 1.



## Effect on import demand

The impact of these tariff, customs, veterinary and transport costs will be to make it more expensive for EU producers to export to the UK, and for UK producers to export to the EU, leading to a fall in demand. How much import demand falls depends on the responsiveness of consumers and producers to the increase in the import price, known as the import elasticity of demand.

The Lawless and Morgenroth model makes several key assumptions. First, it assumes that the entire burden of tariff costs would fall on the consumer. In reality, the producer would absorb some of this burden, although the generally tight margins on meat products mean that the amount producers can absorb is limited. The model is also static, in that it assumes a constant demand curve.

Our model first calculates how much both UK and EU demand falls due to the imposition of MFN tariffs and other increased costs. Cost estimates are based on a number of different studies on veterinary and customs checks. The cost of veterinary checks and transport costs are estimated to be

between 2% and 5%, while customs costs are estimated as between 5% and 8%. **At current levels of trade, veterinary costs alone would increase the total costs for European producers exporting to the UK by in excess of €43 million.** The methodology for calculating these costs can be found in Annex 1.

A Hard Brexit Scenario will devastate trade between the EU and the UK. It is important to note that these are likely conservative estimates of the fall in trade. The scale of the change in trade in any predictive model depends largely on how responsive producers and consumers are assumed to be to price changes.

We use a conservative figure for import elasticity of demand. Clearly, even in this conservative scenario the effect on trade is devastating. However, to emphasise how negatively the Hard Brexit Scenario may impact trade, in Annex 2 we present the results of the same model run with a less conservative estimate of import elasticity. If import demand responsiveness is higher, trade in all meat products between the UK and the EU will likely be eliminated. This extreme outcome is within the bounds of possibility in a Hard Brexit Scenario.

Fall in meat trade between the EU and UK in a Hard Brexit Scenario



# Effect on price

We use a pared-down partial equilibrium model to predict the effect of the estimated trade fall in beef, pigmeat and sheepmeat on price. The effect of the trade fall on EU market price will depend on how responsive producers and consumers are to changes in price.

With this in mind, we model two scenarios: a short-run scenario, in which producers are relatively unresponsive to a change in quantity demanded (i.e. supply is inelastic). This reflects the difficulty for producers to adjust meat supply quickly, as it takes time to either rear more animals or to cut down the size of existing herds.

We also model a long-run scenario, in which producers have time to adapt production (i.e. supply becomes more elastic). This model assumes that trade takes place on a strictly bilateral basis, taking place solely between the EU27 and the UK. As such, it assumes there is no 'rest of the world' region, which in reality would mitigate these effects somewhat, as exports to third countries rise in lieu of lost demand.

The effect of the trade fall on market price will also depend on the responsiveness of consumers to changes in the price they face (demand elasticity). For both supply and demand elasticities we use the standard elasticities found for beef and pigmeat by the FAPRI research institute. FAPRI does not list elasticities for sheepmeat, so we use the same elasticities as beef. However, in the case of sheepmeat, we use a higher consumer demand elasticity (double the FAPRI estimate) for reasons which are explained in Annex 2

In monetary terms, this would reduce the value of EU production of beef by approximately €2.4 billion in the short-run, and of pigmeat by in excess of €2.3 billion (calculated using Eurostat production values for cattle and pig in the EU27). The combined overall value loss for EU meat output would mean the loss of more than 32,000 jobs in the meat sector across the EU, disproportionately affecting rural areas.

A crucial point is that these price effects will affect producers in all 27 EU countries. The single market will transfer the price effect to all countries in the bloc, even those that have little direct trade in meat with the UK.

Value of EU production of beef would reduce by  
**€ 2.4 billion**

The overall value loss for EU meat output would be  
**32,000**  
 jobs in the sector, most in rural areas



## The Russia Experience...



One of the biggest shocks to the European meat sector in recent years was the ban on EU food imports imposed by Russia in 2014.

The ban, imposed in response to the EU's economic sanctions on Russia for its role in the political crisis in Ukraine, cut off access to a huge export market for EU meat producers.

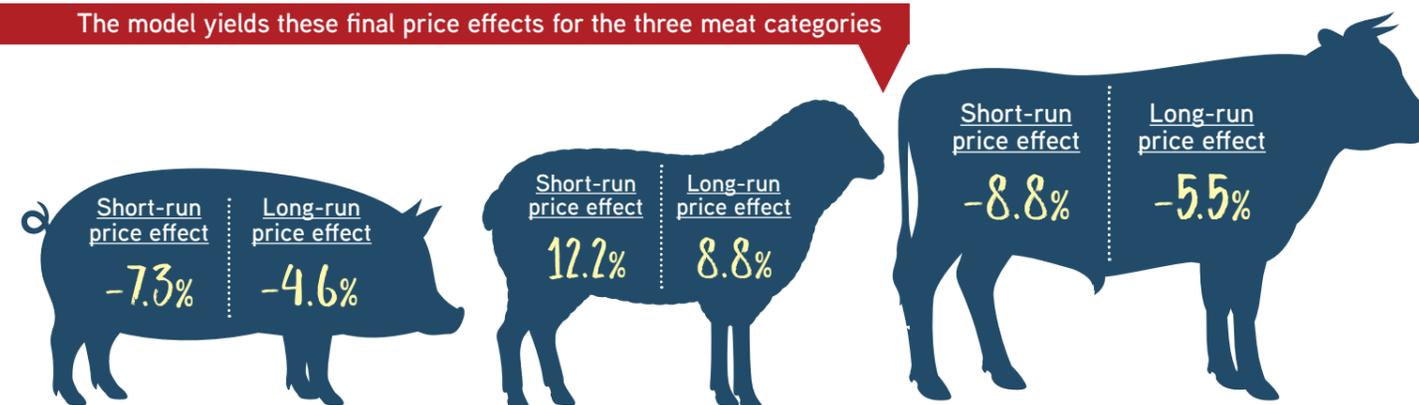
The European Parliament Research Service estimated that meat exports to Russia exposed to the ban were worth just over €1.2 billion. Total meat exports from the EU27 to the UK, by contrast, were worth €4.3 billion in 2015.

The impact on the EU meat sector in the event of the Hard Brexit Scenario, then, would be far greater loss on EU producers than the Russian import ban. Our model estimates a fall in exports of beef, sheepmeat and pigmeat alone to the UK far greater than the loss from trade with Russia.

The losses imposed by the Russian ban were also largely offset by rapid growth in other EU export markets in 2015, in particular China. A similar offsetting force for exporters in the Hard Brexit Scenario seems highly unlikely.

Even if new additional markets are secured internationally, which is dependent on significant progress on market access, as discussed above, it would be impossible to replace a high volume, high price market like the UK.

The model yields these final price effects for the three meat categories



The loss in trade and the price effects due to costs arising from tariff barriers, customs checks, veterinary requirements and increased transport costs are significant. However, in the Hard Brexit Scenario there are a number of other factors at play, not included in these models, that exacerbate the price and trade effects or throw up issues of their own. These include:

- 1 Specific duties, based on weight, will affect premium and cheaper cuts of meat differently, distorting the market.
- 2 Just-in-time and fresh trade in meat will face particular threats from transport delays.
- 3 Exporters who use Great Britain as a 'land-bridge' to export goods from mainland Europe to Ireland and vice versa are particularly vulnerable to cost increases.

# Other factors affecting meat trade

## 1 Different categories of meat

One of the main elements not accounted for in the models on the previous pages is the different effects a Hard Brexit Scenario would have on different cuts of meat.

This is especially true for beef, on which there is little differentiation in tariffs applied to different value cuts.

Since there are significant disparities in the price consumers are willing to pay for different cuts and categories of meat, it follows that certain produce will be disproportionately impacted.

Specific duties (tariffs based on weight) particularly affect higher- and lower-quality cuts differently. For example, the EU has a MFN specific duty of 12.8%+ €3,034 per tonne of boneless fresh or chilled beef. Taking approximate prices for manufacturing beef and striploin, the price per tonne of manufacturing beef is approximately €3,500, while the UK price per tonne of striploin is approximately €13,000.

This means that, after the specific duty is applied, the price of striploin will increase by approximately 36% to €17,698. The price of manufacturing beef, however, will increase by just under 100% to €6,982, a much larger proportional increase. This means that exporters of the cheaper cuts of meat will be disproportionately affected by the introduction of MFN tariffs. The same is true for expensive cuts of pigmeat, such as bacon, which will have a smaller relative price rise than cheaper cuts.

The disassembly of animals into different cuts of meat also creates issues of carcass balance that are not captured by

The price of **manufacturing beef** will increase by almost

**100%**

The price of **striploin** will increase by

**36%**



the model. Cuts require to be sold across many markets and market segments. Trade between the UK and the EU27 plays an important balancing role in this regard.

The example of sheepmeat trade has already been given, and the same applies to beef and also pigmeat where trade with the UK in certain cuts is far greater than in others. Denmark, for example, sends less than 20% of its pigmeat exports to UK. For bacon products however, which are higher price cuts, the UK takes 82% of the total Danish export in value terms.

A breakdown in trade disrupts the carcass balance, causing greater losses than predicted by the model.

## 2 Fresh & just-in-time trade

Increased transit times will disproportionately affect time-sensitive industries and logistic systems such as the fresh meat sector, reducing shelf-life and potentially increasing spoilage. Meat products with a shorter shelf-life (poultry and pork) would be particularly affected.

The UK is predominantly an importer of fresh rather than frozen meat products, and will hence be especially sensitive to increases in transit times. Furthermore, due to particular regulatory conditions laid down for certain meat products (e.g. fresh minced beef must be produced from carcasses within six days of slaughter) existing fresh trade may be forced to revert to a frozen business, which also impacts on price and consumer choice.

Just-in-time delivery is an inventory management strategy for retailers whereby they seek to receive stocks as they need to sell them, rather than storing stock themselves. It is particularly used for fresh products such as meat. Supermarkets which have predominantly removed their in-store butchery capability do not want to hold large amounts in case of spoilage. Instead, they order goods as they are needed, for example using next-day delivery.

This sort of trade will obviously be affected by increases in costs, as retailers are forced to hold more stocks and plan deliveries of imported goods further in advance. A very sophisticated logistics system which has been developed over years will be severely undermined.



## 3 The UK as a land-bridge

With the UK outside the Single Market and Customs Union, transiting the UK as a land-bridge for trade within in the EU27 - the two-way flow of product between Ireland and the other 26 EU countries - would become extremely problematic and, at a minimum, highly bureaucratic.

More than 90% of Irish meat exports to continental Europe flow via the land-bridge through the UK, due to the cost effectiveness and speed of this transit route compared to, for example, the sea route direct to France. Transit using the land-bridge from Ireland to Calais takes an average of 10.5 hours, compared to 20 hours by sea to the port of Cherbourg in northern France, or at least 38 hours to the port of Zeebrugge in Belgium.

The increased transport and customs costs would be compounded for freighters using the land-bridge, as goods transiting would be subject to two customs checks (entering and leaving the UK) rather than one. This double-check could be avoided or minimised through the use of a bonded sealed container system for transiting the UK.

However, this would impose groupage costs - expenses arising from transporting goods in a container at less than full load - as currently many freighters drop off and pick up goods in the UK while travelling to mainland Europe or Ireland. Public and private administration costs associated with the trade would also increase.

The importance of the land-bridge for Irish exporters means that in the Hard Brexit Scenario the cost for Irish exporters to the rest of the EU26 is likely to increase. Likewise, exporters of meat or other animal products from the other EU26 countries to Ireland would face an increase in cost. This curtails the ability of EU producers to offset their losses by increasing trade within the EU27 bloc.

This analysis suggests that, if a Hard Brexit Scenario comes about without mitigating action, the result will be a massive shock to the entire European meat market, with hundreds of millions in lost revenue, thousands of job losses at farm and processing level, and a devastating supply and demand mismatch.

The inevitable reduction in trade will leave many EU countries with a considerable surplus production of meat, while the UK will face a shortfall in supply.

Since the production lead-time in this sector is both long and fixed (rearing of animals), surplus production can not be avoided with an immediate change in production patterns, so the issue of surpluses will inevitably arise in the immediate aftermath of a Hard Brexit. This mismatch will change the trading patterns of both parties, and generate significant production surpluses which must be reallocated. This will have knock-on implications for pricing, consumption and future production.

This section will provide a qualitative analysis of what may happen to meat trade patterns in both the UK and EU27 in the wake of a Hard Brexit.

## The EU27 problem: Excess production

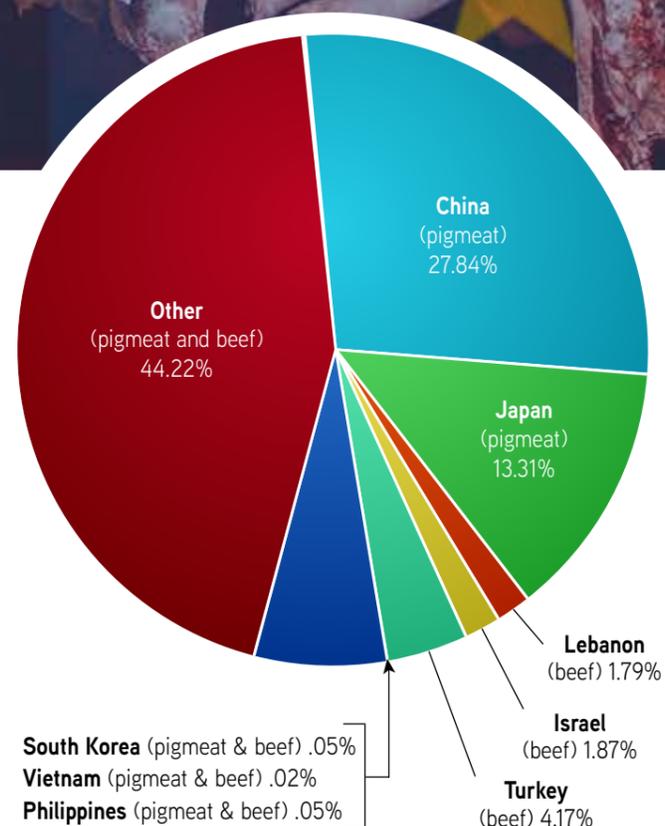
Overall, the EU27 is a net exporter of meat to the UK (although it is a net importer of sheep meat). In the event of the Hard Brexit Scenario, the fall in trade with the UK will mean the EU27 will be left with a large surplus of meat products, leading to a fall in the price of most meat products, as outlined in the previous pages.

It is difficult to assess what may happen to surplus meat production in the EU27, due to the complex and multifaceted nature of the Single Market, and the difficulty in projecting consumer behaviour, production patterns or future third country trade in such unprecedented circumstances. However, there are indications of how the reallocation may go. The main effects are likely to be:

- 1 Shifts in consumer behaviour
- 2 Increase in third country exports
- 3 Change in production after an initial period
- 4 Significant fall in beef and pigmeat prices



# Overall impact of a Hard Brexit



In 2016, the EU exported €2.2 billion in beef and €7.8 billion in pigmeat products to third countries. The main destination for EU red meat exports were China and Japan.

Supply of meat is relatively inelastic in the short-run, as it often takes a number of years to change supply. This is what makes the price impact in the short-run greater than in the long, and exacerbates the shock to the market. In the long-run, however, supply of beef and pigmeat will likely fall, which will mean loss of jobs, especially in rural areas, as well as a fall in economic activity. Without a replacement market, EU meat production will fall to a permanently depressed level, with fewer people employed and less economic activity generated.

The effect of the Hard Brexit Scenario on the EU meat industry will be severe and difficult to reverse. It would be devastating for jobs, growth and production in the industry across the EU.

Consumers' preferences may shift towards relatively cheaper meat products - such as pigmeat and poultry - and away from relatively more expensive meat like beef and lamb.

The surplus European supply is also likely to result in an increased requirement for exports of meat products to third countries, the markets of which are overwhelmingly likely to be lower-priced markets than the UK, making it difficult to reallocate more expensive cuts or achieve an overall carcass value similar to that when the UK market was in the mix.

Furthermore, it takes time to increase trade with third countries, due to existing market access constraints, particularly for Asian markets where demand is growing. After the Russian food import ban, the European agricultural sector was only saved from crisis by a large increase in trade with China. It is extremely unlikely that a similar market will open up in the wake of Brexit. Any reallocation to external markets will likely take many years to come about.

## ① Transition period to provide greater business certainty and avoid cliff-edge

Long-term trade arrangements that mitigate the harsh-est trade effects of Brexit will take time to implement. This is why ensuring there is a transition period, during which time businesses can adapt to new arrangements, is an important part of the regulatory approach to Brexit. There is now an urgency for confirmation of a transition period in order to give some business certainty. The transition period should maintain current trade arrangements as far as possible, in order to ensure continuity of tariff-free trade, regulatory and export process for businesses.

## ② Future trade partnership

The desired outcome of the negotiations is that the future trade relationship between the EU27 and the UK would preserve existing trading conditions. A result in which current arrangements were preserved as closely as possible would greatly benefit the EU and UK meat sectors. Apart from avoiding the disastrous impact of tariffs, this would also avoid the disruption associated with customs and veterinary control checks.

Crucially for the meat industry, maintaining the current arrangements of the Single Market would mean no additional costs stemming from veterinary and health checks. Full liberalisation is the single-most effective way of avoiding the worst effects of a Hard Brexit.

Due to the particular impact customs checks will have on the meat industry - due to the impact of delays on perishable goods - preserving current customs arrangements as far as possible is vitally important.

However, it is important to note that maintaining the structures of the customs union alone will not avoid veterinary checks for products or the need for importers to obtain a Single Administrative Document, and hence will only partially mitigate against damage to the industry. Mitigating tools for addressing burdensome customs procedures and transactional costs are considered below.

## ③ Regulatory convergence - equivalence agreement

In the event that the UK leaves the Single Market, the negative implications of differing standards and the imposition of veterinary checks can be minimised through ensuring a bespoke equivalence agreement on vet standards, grounded on the maintenance of the EU Acqui Communataire.

# the Solution

Market support measures to address the immediate surplus in meat supply in the event of a Hard Brexit

The negative impact of this shock can be at least somewhat offset by ensuring the right policy measures are in place. These include the four steps identified below...

### STEP 1

#### Urgently increase international market access for companies

The loss of the UK market in the Hard Brexit Scenario would be devastating for EU meat producers. While it is unlikely that the UK market could be replaced, due to its uniquely high value, it is urgently important for the EU to look for alternative markets internationally. Opening up new third country markets would help to mitigate the shock of the UK's exit, and dampen job loss and price effects.

### STEP 2

#### Simplified sealed container system

Introducing a sealed container system - whereby containers transiting across the land-bridge between Ireland and mainland Europe would be officially sealed - would avoid the need for separate customs checks entering and exiting the UK. While a sealed container system is envisaged in EU regulation, a simplified system, which reduces burdensome regulations, would best suit the Hard Brexit Scenario. However, this would still disrupt current trade patterns, including increasing groupage costs for operators, or making groupage inoperable.

### STEP 3

#### Mutual recognition and Approved Consignor/Consignee status

Mutual recognition of standards would expedite trade between Approved Consignors/Consignees, a status given to importers and exporters who then benefit from a more streamlined customs procedure. Having this status means operators undergo fewer safety and security checks. Ensuring companies trading with or transiting through the UK have Approved Consignor/Consignee status is key to reducing administrative costs of customs checks. This is particularly important for SMEs, who will be most impacted by the cost of checks.

### STEP 4

#### Investment in port facilities

Investment in port facilities by both the UK government and in the EU will be essential in order to accommodate customs and official controls checks while also minimising delays to product transport. It is essential that preparations of ports begin ahead of time, in order to protect against a possible Hard Brexit outcome.

## How to prevent a meat trade crisis

**T**he shock of the Hard Brexit Scenario will seriously impact meat trade with the UK, and have significant negative implications for the entire EU meat sector.

**In the absence of the UK remaining in the Single Market, negative implications arise for the EU meat sector, which will be most extreme in the context of a Hard Brexit.**

**While fully recognising the complexity of negotiations of the withdrawal of the UK from the**

**EU and determination of the future trading relationship between the UK and EU27, the EU meat sector can highlight the massive implications such a fracture of the single market will have.**

**The sector urges the EU authorities and UK government to avoid any cliff-edge exit, and to give businesses the certainty they need to plan for their futures, preserving present trading arrangements as far as possible. In terms of these negotiations, UECBV calls for the steps outlined here...**



## ANNEX 1 & 2

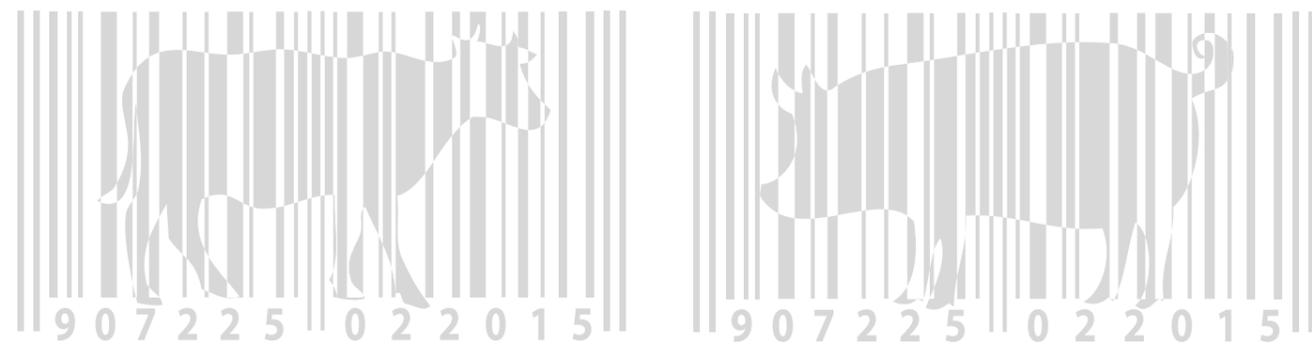
---

# COSTS, TRADE, PRICE MODELS

# Calculating the direct costs...

## ① WTO TARIFF COSTS

The EU's MFN tariffs for meat products include both ad valorem tariffs, charged on the value of imports, and specific duties, charged based on weight. In order to calculate the total tariff burden for the models, specific duties must be converted into percentages, yielding an ad valorem equivalent (AVE) tariff which is combined with the ad valorem tariff. This data comes from the WTO database.



## ② VETERINARY CHECKS

While customs checks are common to all categories of goods under the Hard Brexit Scenario, the meat and livestock sector will also be affected by veterinary checks.

Live animals and products of animal origin are deemed by the EU to present a high level of risk, and so are subject to more stringent import requirements than other products, such as mandatory channelling of products to border control entities, known as Veterinary Border Inspection Posts (BIPs), where they are subject to mandatory product checks.

These checks are expensive and take time for both exporters and importers, and would further push up trade barriers between the EU and UK.

Any import of live animals or animal products from third countries can only enter the EU if it has undergone and passed the Sanitary and Phytosanitary checks set out in EU Directive 97/78/EC, and has been issued a Common Veter-

inary Entry Document (CVED) by the Trade Control and Expert System (TRACES). TRACES is an EU database which allows for monitoring of shipments of live animals and animal products checked at the BIPs.

In the event that the UK imposes these checks on EU imports, and likewise the EU maintains its checks, this will add significantly to the cost of trade in animals and animal products between the EU27 and UK.

The combined cost of veterinary checks and port clearance for exporters to the EU from third countries is estimated to be over €625 per consignment.

Cost of vet checks and port clearance for exporters to the EU will be approx. **€635** per consignment



## ③ CUSTOMS COSTS

In the Hard Brexit Scenario customs controls will be an unavoidable reality. Third countries outside the Customs Union are required to provide a range of documents and declarations to comply with the Single Administrative Document, the passport required for exporters to bring goods into the EU. These include:

- **Certificate of origin:** to comply with EU Rules of Origin and show that correct duties have been paid.
- **Transit permit:** required by exporters from third countries without a transit agreement.
- **Commercial invoice:** required for calculation of tariffs and customs declaration.
- **Security certificates:** to prove the safety of imported goods.
- **Freight documentation:** for haulage and shipping.
- **VAT certification:** unless a country has an agreement with the EU on VAT, additional documents are needed.
- **Customs valuation document:** to calculate customs duties owed at the border.
- **Paper import licences.**

Such customs controls will be common to all categories of goods transiting between the EU27 and UK, and will not on their own create a significant additional burden on the meat sector relative to other sectors (veterinary checks, additional time and transit costs, and the impact on fresh and just-in-time produce are considered).

While product level estimates for customs costs are not available, UECBV calculated customs costs of 5-8% for meat products.

*These estimates are based on actual costs at the point of export and import, but do not take into account factors such as increased costs from additional logistics staff and product devaluation as a result of delays, and are therefore likely conservative estimates of the full costs.*

Customs costs on meat products could be up to **8%**

## ④ INCREASED TIME & TRANSIT

In the event of customs and veterinary checks being imposed at borders, wait times for freight carriers transporting goods between the EU27 and UK will increase. This will mean an increase in transit costs for suppliers. Meat would be substantially affected by the increase in transit time affected relative to other categories of goods, as the necessary refrigeration or freezing of meat products adds to transit costs.

Documents checks at borders would increase wait times by an estimated three hours, while inspections would add an extra five. A delayed driver with a refrigerated truck at a border crossing costs approximately €550 (£500) per day. This yields an estimated cost increase of €183 per consignment. At an estimated average weight per consignment of 20 tonnes, this will increase cost per tonne by approximately €21. Combined with the cost of vet checks, this would mean a percentage increase of between 2% and 5% for meat products.

These are likely conservative estimates for transport costs. Wait times may be longer; truck drivers entering the EU from Turkey, for example, can wait for up to 30 hours. For cargo left in port, the cost of delays are even higher due to demurrage: charges from port operators to ships that go beyond their allocated time in loading and unloading their cargo. Daily demurrage rates at UK ports in 2013 cost up to £110 per day, plus a further £60 to £110 in additional charges typically kicking-in after three to five days. It also does not include cost estimates for spoilage of fresh food in the event of a delay. All of these factors would push up transit costs for firms.

A delayed driver with a refrigerated truck at a border crossing costs approximately **€550** per day



# Meat trade & price model

## TRADE MODEL

The model assessing the impact of increased tariff and non-tariff costs on trade flows is based on a model from Lawless and Morgenroth (2016), in which the authors assess the sectoral level impact of WTO MFN tariffs on EU-UK trade in the event of a Hard Brexit. The model is static, and estimates how much demand for imports of meat products falls in the event of consumers facing a higher tariff price.

The model uses trade data from 2016, collected from the European Commission's Eurostat database (DS-057380). It will include exports from each of the EU27 countries to the UK, and exports from the UK to each of the EU27 countries. The Eurostat database lists trade in goods according to the Harmonised System nomenclature. The model focuses on the second category of goods, HS02 – Meat and Edible Meat Offal. Following Lawless and Morgenroth we analyse trade at the HS 6 digit level for beef, pigmeat, and sheepmeat, in the following HS 4 digit categories:

- HS0201 - Meat of bovine animals, fresh or chilled
- HS0202 - Meat of bovine animals, frozen
- HS0203 - Meat of swine, fresh, chilled or frozen
- HS0204 - Meat of sheep or goats, fresh, chilled or frozen
- HS0206 - Edible offal of bovine animals, swine, sheep and goats
- HS0210 - Meat and edible offal, salted, in brine, dried or smoked
- HS1602 - Prepared or preserved meat, offal or blood

Meat of sheep and goats are treated together in order to maintain consistency between the HS product categories, and referred to as simply 'sheepmeat' due to the relatively small amounts of goat meat traded in the EU. Animals fats are excluded, due to the nomenclature not giving a sufficiently fine-grained breakdown of these product categories.

The import elasticity of demand comes from Ghodsi et al. (2016). This paper gives country-level estimates of import elasticities for all countries worldwide. We chose this paper as our source for elasticities as it gives different elasticities for agri-food and manufacturing goods. Using this elasticity measure rather than an aggregate measure contributes to the explanatory power of the model, as the demand for these groups of products often have a different responsiveness to price changes.

The tariff data comes from the World Bank database of the EU's schedule of WTO MFN tariffs. As these tariffs consist of both ad valorem and specific duties, a combined AVE is calculated for each of HS 6 digit product category. Customs costs are estimated from a range of sources as being between 5% and 8%. A median value of 6.5% is used for each product. Veterinary and transport costs are estimated and applied at the product level, and lie in a range of between 2% and 5% depending on the value of meat to which the cost is applied.

## PRICE MODEL

We use a partial equilibrium model for estimating the effect on market price in the Hard Brexit Scenario. The key assumption is that there is no rest of world in the model. As noted in the report, in reality the trade and price effects would be offset by an increase in trade with third countries, a possibility which is not allowed for in this model.

The price effects generated should therefore be seen as a worst-case scenario, offset by whatever extent trade increases with third countries. By treating the EU27 as one bloc the model also assumes a common price within the bloc; the price effect should therefore be interpreted as the aggregate effect on prices in the EU.

» The model has two regions, the EU27 and the UK, each of which produces a certain amount of beef, pigmeat and sheepmeat. Supply is given by Eurostat figures for slaughterings in 2015, and net exports are given by Eurostat trade statistics for 2015. The difference between these two figures gives a figure for demand in the UK and the EU in each of the three goods:

$$S_{EU} - NX_{EU} = D_{EU}$$

$$S_{UK} - NX_{UK} = D_{UK}$$

We use high and low estimates of supply and demand elasticities to generate price effects in each scenario. For the reasons explained in the paper the effect on EU market price is not greatly affected by changes in supply or demand elasticity, although net trade flows are significantly impacted.

The supply and demand equations are therefore given by:

$$Q_x = aP^a$$

The world market is in equilibrium: the sum of the supply and demand equations is equal to zero.

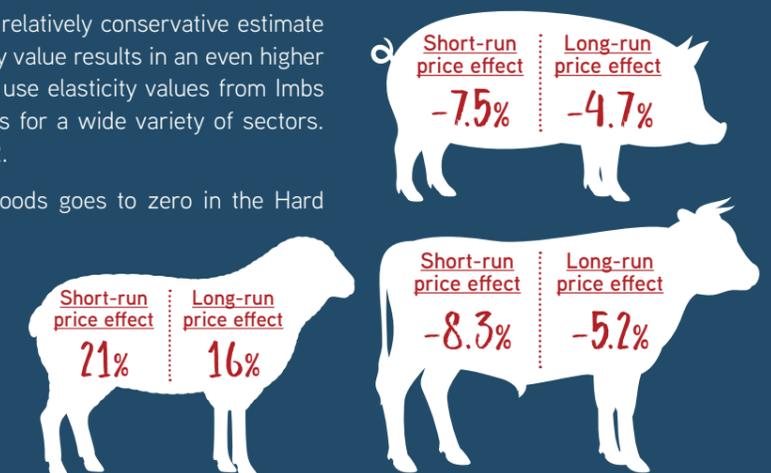
Once tariffs are introduced the equality becomes:

$$Q_x = a(1+t)P^a$$

## HIGH IMPORT ELASTICITY OF DEMAND SCENARIO

As mentioned in the paper, the trade model uses a relatively conservative estimate of import elasticity of demand. Using a high elasticity value results in an even higher drop in trade. Lawless and Morgenroth themselves use elasticity values from Imbs and Mejean (2016), who estimate import elasticities for a wide variety of sectors. Their elasticity value for food is estimated to be -6.2.

Using this value in our model, trade in all meat goods goes to zero in the Hard Brexit Scenario, and the price effects generated are higher. As noted in the report, while this result is extreme it is certainly within the bounds of possibilities. When faced with such large increases in price for imported meat, consumers may simply turn to other domestic meat or non-meat products as alternatives.



» This creates disequilibrium in the world market; prices must adjust to restore equilibrium. In the model we use the Excel Solver tool to solve for the new price, which provides us with the price change in the EU market.

As the UK is a net importer of beef and pigmeat, the EU market price of these products will drop, while as the UK is a net exporter of sheepmeat, the EU market price will rise (as the model assumes no increased import from non-EU origin).

The initial results show a very large increase in sheepmeat price in the EU, of over 20%. This large price effect, however, is likely an overestimation of the true effect for two reasons. First, estimations of price elasticity of demand are based on small incremental changes in price. The size of the price shock in this case, however, is much larger.

Consumers' response to a price shock of this magnitude can not be captured simply by looking at how they respond to relatively much smaller price changes. With such a large price change, people are much more likely to switch to an alternative meat or reduce the quantities of meat they purchase.

» The second reason is that price elasticities of demand are estimated assuming the prices of competing products remain constant. However, in the case of Brexit there would be significant falls in the price of beef and pork, which are relatively close substitutes for sheepmeat.

Thus, coupling the rise in sheepmeat price with a fall in the price of substitute goods would likely result in a much larger demand response than is given by conventional elasticities. As the share of sheepmeat of total EU meat consumption is relatively small the reverse effect of sheepmeat on the demand for other meat products is likely quite small, and we will hence disregard it here.

For these reasons we use a price elasticity of demand for sheepmeat that is two times the FAPRI estimate. Again it should be noted that the figure for sheepmeat, due to its being a net import good in the EU, is likely overestimated in this model.

It could be expected that a resultant deficit in sheepmeat supply in the event of a Hard Brexit would lead to additional non-EU imports.

# References

- **Agriculture and Horticulture Development Board (AHDB). 2017a. 'The WTO and its implications for UK Agriculture'.** Available at: <<http://www.eurocommerce.eu/media/143254/The%20WTO%20and%20its%20implications%20for%20the%20UK%20agriculture.pdf>>
- **AHDB. 2017b. 'What can the UK learn from New Zealand's experience of agricultural reform?'** Available at: <[https://ahdb.org.uk/brexit/documents/what\\_can\\_the\\_uk\\_learn\\_from\\_new\\_zealand\\_subsidy\\_reforms-revised.pdf](https://ahdb.org.uk/brexit/documents/what_can_the_uk_learn_from_new_zealand_subsidy_reforms-revised.pdf)>
- **AHDB. 2016. 'What might Brexit mean for UK trade in beef and lamb products?'** Available at: <[https://ahdb.org.uk/brexit/documents/BeefandLamb\\_bitesize.pdf](https://ahdb.org.uk/brexit/documents/BeefandLamb_bitesize.pdf)>
- **Agri-Food and Biosciences Institute. 2017. 'Impacts of Alternative Post-Brexit Trade Agreements on UK Agriculture: Sector Analyses using the FAPRI-UK Model'.** Available at: <<https://www.afbini.gov.uk/sites/afbini.gov.uk/files/publications/FAPRI-UK%20Brexit%20Report%20-%20FINAL%20Clean.pdf>>
- **British Retail Consortium. 2017. 'A fair Brexit for consumers: Customs roadmap'.** Available at: <<https://brc.org.uk/media/190045/customs-roadmap-report-final.pdf>>
- **Canada Agriculture and Agri-food. 2017. 'Red meat conversion factors'.** Available at: <<http://www.agr.gc.ca/eng/industry-markets-and-trade/market-information-by-sector/red-meat-and-livestock/red-meat-and-livestock-market-information/carcass-weight/conversion-factors/?id=1415860000020>>
- **Dhingra S., S. Machin and H. Overman. 2016. 'The Local Economic Effects of Brexit'.** Available at: <<http://cep.lse.ac.uk/pubs/download/brexit10.pdf>>
- **Emerson, M., M. Busse, M. Di Salvo, D. Gros and J. Pelkmans. 2017. 'An Assessment of the Economic Impact of Brexit on the EU27'.** Available at: <[http://www.europarl.europa.eu/RegData/etudes/STUD/2017/595374/IPOL\\_STU\(2017\)595374\\_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/STUD/2017/595374/IPOL_STU(2017)595374_EN.pdf)>
- **Ghods, M., J. Grüber and R. Stehrer. 2016. 'Import Demand Elasticities Revisited'.** Available at: <<https://wiiw.ac.at/import-demand-elasticities-revisited-dlp-4075.pdf>>
- **Grainger, A. 2013. 'Trade and customs procedures: the compliance costs for UK meat imports: a case study'.** Available at: <<http://eprints.nottingham.ac.uk/2143/>>
- **Haverty, M. 2017. 'Impact of WTO trading on the Northern Ireland beef and sheepmeat industry'.** Available at: <[https://www.lmcni.com/site/wp-content/uploads/2017/09/LMC-Final-Report\\_31\\_Aug\\_17.pdf](https://www.lmcni.com/site/wp-content/uploads/2017/09/LMC-Final-Report_31_Aug_17.pdf)>
- **House of Lords European Union Committee. 2016. 'Brexit: The options for trade (5th report)'.** Available at: <<https://publications.parliament.uk/pa/ld201617/ldselect/ldcom/72/7202.htm>>
- **Institute for Government. 2017. 'Implementing Brexit: Customs'.** Available at: <[https://www.instituteforgovernment.org.uk/sites/default/files/publications/IfG\\_Brexit\\_customs\\_WEB\\_0.pdf](https://www.instituteforgovernment.org.uk/sites/default/files/publications/IfG_Brexit_customs_WEB_0.pdf)>
- **Irish Farmers' Association. 2017. 'Brexit: The Imperatives for Irish Farmers & the Agri-Food Sector'.** Available at: <<https://www.ifa.ie/wp-content/uploads/2017/03/763773Brexit-imperatives-policy-paper55629.pdf>>
- **Lawless, M. and E. Morgenroth. 2016. 'The Product and Sector Level Impact of a Hard Brexit across the EU'.** Available at: <<https://www.esri.ie/publications/the-product-and-sector-level-impact-of-a-hard-brexit-across-the-eu/>>
- **Lawless, M. and Z. Studnicka. 2016. 'Potential impact of WTO tariffs on cross-border trade'.** Available at: <<http://www.intertradeireland.com/media/InterTradeIrelandPotentialImpactofWTOtariffsResearchReportFINAL.pdf>>
- **Matthews, A. 2017a. 'WTO dimensions of a UK 'Brexit' and agricultural trade'.** Available at: <<http://capreform.eu/wto-dimensions-of-a-uk-brexit-and-agricultural-trade/>>
- **Matthews, A. 2017b. 'Which EU countries will bear the brunt of a hard Brexit?'** Available at: <<http://capreform.eu/which-eu-countries-will-bear-the-brunt-of-a-hard-brexit/>>
- **Open Britain. 2017. 'The Case for Continued Customs Union Membership'.** Available at: <[http://www.open-britain.co.uk/the\\_case\\_for\\_continued\\_customs\\_union\\_membership](http://www.open-britain.co.uk/the_case_for_continued_customs_union_membership)>
- **Oxera. 2017. 'Brexit: the implications for UK ports'.** Available at: <<https://www.oxera.com/Latest-Thinking/Publications/Reports/2017/Brexit-ports.aspx>>
- **Packer, R. 'Brexit, agriculture and agricultural policy'.** Available at: <<https://www.cps.org.uk/files/reports/original/170104093344-PostBrexitAgriculturalPolicy.pdf>>
- **Prots, J. 2017. 'Potential post-Brexit tariff costs for EU-UK trade'.** Available at: <<http://www.civitas.org.uk/content/files/potentialpostbrexittariffcostsforeuuktrade.pdf>>
- **Ungphakorn, P. 2017. 'UK, EU & WTO'.** Available at: <<https://tradebetablog.files.wordpress.com/2017/05/uk-eu-wto-handout-adpated.pdf>>