Market Intelligence November 2021

AHDB

HORIZON

The impact of a UK-Australia free trade agreement on UK agriculture

HORIZON

CONTENTS

Abbreviations

Cwt = carcase weight
CWE = carcase weight equivalent
FTA – free trade agreement
Kt = thousand tonnes
Mt = million tonnes
SPS = sanitary and phytosanitary
SMP = Skimmed milk power
t = tonne
WMP = whole milk powder

FOREWORD

Earlier this year, the UK and Australian governments reached an agreement on 'broad terms' for a trade deal. While some might view this as simply the latest in a long line of announced trade agreements, at AHDB, we see an Australia trade deal as more significant for agriculture than the deals which have already been announced.

Previous trade deal announcements have all been rollovers of those the UK had access to as part of the EU. Replicating EU deals means that we were, in effect, maintaining the status quo. There was a limited likelihood of either more domestic competition or overseas export opportunities. In this regard, the UK-Australia deal feels different and a worthwhile focus for our latest Horizon report.

There has already been a great deal of speculation about what the deal will mean for the agriculture sector. Trade deals always cause a great deal of debate, with predictions of either untold benefits or devastating impacts depending on the respective viewpoints. At AHDB, our aim for this report is to cut through the speculation and provide evidence-based analysis on the opportunities and risks for our industry.

We have examined the Australian and UK agricultural industries in detail, exploring the differences in production systems between the two countries, including their scale and costs of production. We then go on to examine current trading patterns and the current key trading partners for both parties and consider how this may change over time; we examine agricultural policy mechanisms. We also crucially identify the key offensive and defensive trade interests.

I'm delighted that the report includes the first published results from comprehensive economic modelling to assess the impact of the new trade deal on UK agriculture. Working with our academic partners at Harper Adams University, we have utilised a trade network model to quantify the impact of the new deal. While both the UK and Australian governments have done their own impact modelling, they both regard results as too sensitive to be published. At AHDB, we want our levy payers to have access to the right information to inform their future business planning.

What we discover is that the size and scale of Australian agricultural production mean that the scope for UK producers to compete at a commodity level is limited. We also find that the likelihood of Australian produce flooding UK markets is low in the short term due to more lucrative and rapidly expanding markets closer to home. However, trade deals are by nature long term, and the UK industry will need to adapt to compete in a more global setting. Australia might be the first new trade deal the UK has negotiated, but it certainly won't be the last.

David Swales
Head of Strategic Insight

EXECUTIVE SUMMARY

As we enter a new world of bespoke trade agreements with agricultural powerhouses around the world, it is only right that we take a step back and assess how these trade deals may impact our domestic agricultural market. The first of these new deals is with Australia and it may indicate the shape of future trade deals with other countries.

When analysing trade deals it is important to remember that trade doesn't take place purely on the basis of the cost of production. Standards of production, access to other markets due to political factors, weather impacts on production levels, changes in the relative strength of exchange rates or demand from other exporters/importers due to wider economic changes can all have a significant impact. In addition, geographical proximity is a major factor in determining trade. At present Australian products often trade at higher prices in their established geographically local markets than similar products traded within our domestic marketplace.

Therefore our report finds that:

- The scale of production and trade in agricultural products in Australia is large in comparison to the UK, particularly for beef and lamb
- Australia has cost of production advantages over the UK in many agricultural commodities, particularly in livestock. They are used to producing to different standards to meet different export market specifications
- At present their geographically closer markets are probably more attractive than the UK market and the new quantitative economic model demonstrates that in a stable world the impact of the trade deal will increase imports into the UK from Australia by relatively small amounts
- However, these changes in trade are likely to be amplified when the supply and demand balance shifts between the counterparties. Many Australian agricultural exports are currently going in to markets where there can be significant non-economic trade barriers imposed rapidly e.g. China. If some of these markets were closed off to Australia, or demand fell due to lower economic performance of some of Australia's current customers then it is quite possible the UK would be a very attractive market and trade flows could increase much more significantly in those situations
- With Australian producers enjoying considerable cost of production advantages, the implications of lower priced material coming into the UK at some point (possibly quite soon) is very real and potentially substantial. When we include the change to farm support payments in the years ahead, the opening of trade represents a real risk to domestic farm supply chains. The scale of impact and likelihood of that risk is as yet hard to predict, as it is driven by a number of factors

This initial trade deal indicates that the UK economy is set on a course to become a more globalised market place with greater emphasis on trade. We must be clear that is both an opportunity and a sizable risk for our domestic agricultural market. The balance between opportunity and risk will swing over periods of time based upon our own domestic supply and demand position as well as that of our trading partners.

As the UK industry is increasingly exposed to more potential importers of commodity products, then we will need to further consider how we maximise our advantages to put a strong offer forward to consumers both domestically and overseas. That is likely to be based not on pure cost, but on delivering other values as well such as the relatively sustainability of our products compared to lower cost products from overseas.

INTRODUCTION

With the negotiation of a number of new trade deals well underway, AHDB continues to provide the evidence-based analysis that this changing trade environment will have on UK agriculture. In this Horizon report, we turn our attention to the trade deal that is first in line of a series of new trade deals that the UK will be signing over the course of the next few years.

Similar to the **USA report** we published at the beginning of the year, this report will delve into the detail around the facts and figures about Australian production and trade. We will be assessing questions such as how competitive Australia might be in the UK marketplace? What opportunities might there be in the Australian market? How does Australian agriculture stack up against the UK in terms of size and scale?

Like the debate around the USA and a potential free trade agreement, there has been much debate around various differences in standards between the UK and Australia. However, like the USA, Australia is a large agri-commodity exporter and, as such, is adept at meeting a variety of standards all over the world, and all different to their own domestic standards. In this Horizon publication, we aim to look beyond these issues and focus on the economics of the trading environment, as this is what determines whether trade takes place or not.

In gathering this evidence base, we have teamed up with Harper Adams University as part of an ongoing partnership to quantify the impacts that future trade deals may have on UK agriculture using economic modelling. This has been carried out using a novel application of a trade network model to understand the implications signing a free trade agreement can have to agriculture in both the UK and Australia. The results of this modelling are laid out in the later chapters and are intended to complement the other evidence we have compiled in putting together this report.

PRODUCTION AND TRADE – LIVESTOCK PRODUCTS

Beef and veal

Australia

Beef production in Australia is heavily export-focused. Production totals 2.3 Mt, more than twice that of the UK. With a population of roughly 25 million people, and despite a large domestic appetite for beef, this means Australia have a large exportable surplus of beef targeted to various markets. Production levels in Australia can be heavily influenced by the weather. For instance, in the last few years, widespread drought has hit a number of cattle-producing regions in Australia, which meant that production increased temporarily as producers de-stocked from the land. As the land recovers from the drought, this has the opposite effect as producers re-stock, withholding cattle from the market and thus reducing production.

Table 1. **Annual production and trade, 2017–2019 average**

	Australia	UK
Production (3-year average)	2.3 Mt (cwt)	906 Kt (cwt)
Total exports (3-year average)	1.4 Mt	171 Kt
Total imports (3-year average)	<10 Kt	362 Kt

Source: Australian Bureau of Statistics, HMRC, IHS Maritime & Trade – Global Trade Atlas®

The main destinations for Australian beef are Japan and the USA. Over 70% of Australian beef exports come from beef animals that have been grazed on grass only and fed no grain.[1] Exports to Japan are more evenly split between grain and grass-fed cattle, while exports to Australia's other major trading partners (US, China and South Korea) are overwhelmingly in favour of grass fed. With grass-fed cattle being the predominant production system in Australia, this has multiple benefits from a marketing perspective, especially when competing in mature markets that require a greater point of difference for the consumer.

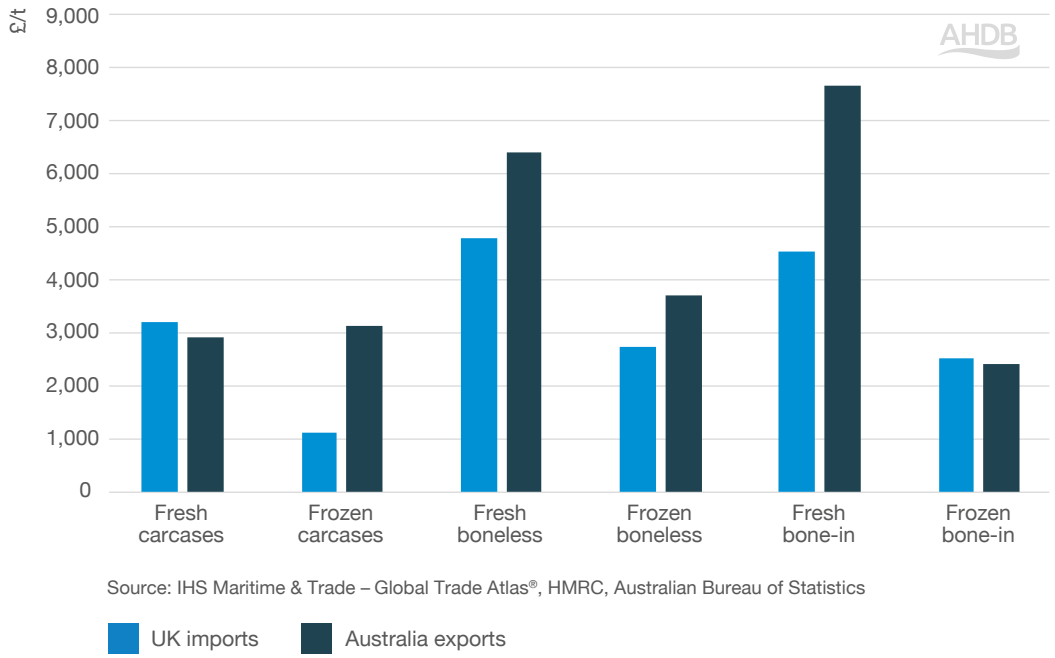
[1] MLA global snapshot: https://www.mla.com.au/globalassets/mla-corporate/prices--markets/documents/os-markets/red-meat-market-snapshots/2020/global-beef-snapshot-jan2020.pdf

Table 2. **Australia annual exports of fresh/frozen beef to key markets, 2017–2019 average**

Country	Volume shipped (t)	Value (£m)	Unit price (£/t)
Japan	298,000	1,242	3,900
USA	238,000	1,058	4,100
China	207,000	888	4,000
South Korea	173,000	735	4,000
Indonesia	68,000	186	2,800

Source: Australian Bureau of Statistics, HMRC, IHS Maritime & Trade – Global Trade Atlas®

Figure 1. **Comparison of UK and Australia traded beef prices, 2017–2019 average**



Source: IHS Maritime & Trade – Global Trade Atlas®, HMRC, Australian Bureau of Statistics

As can be seen from Figure 1, across the product categories, Australian beef tends to be exported at relatively higher prices than the UK currently imports. The majority of UK imports come in the form of boneless cuts, so they are relatively aligned with the product offering Australia has to offer. It should be noted that Australia exports beef to a variety of markets, with some markets being considerably lower value beef (£2,700/t), such as Indonesia.

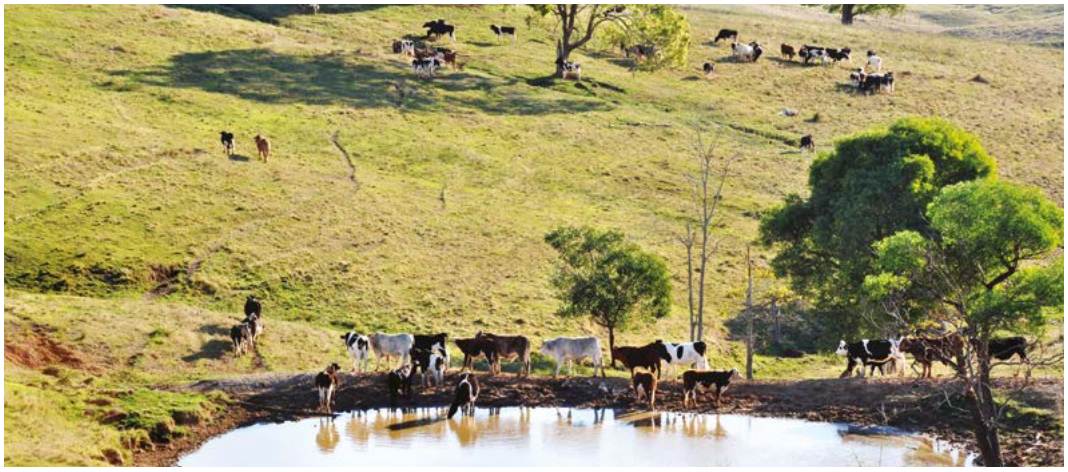
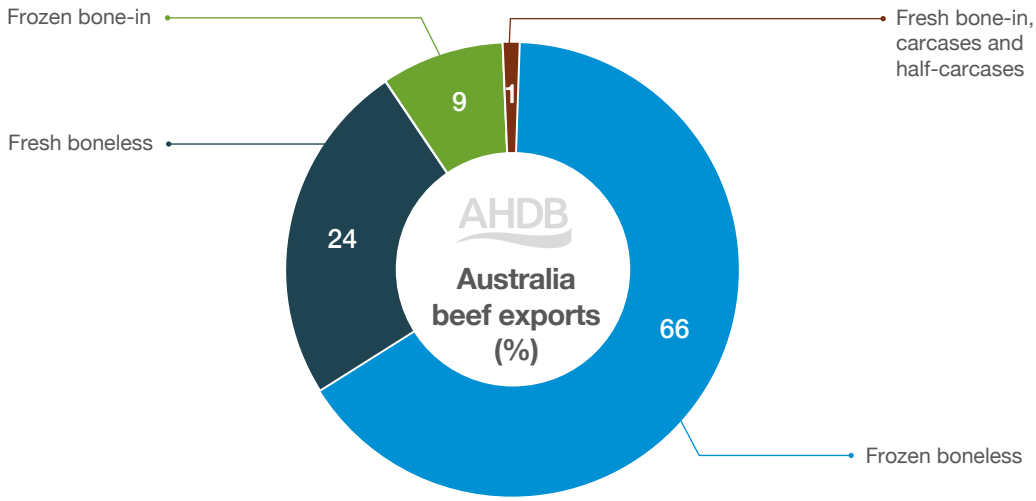


Figure 2. **Australia fresh/frozen beef exports, volume, 2017–2019 average UK**



Source: IHS Maritime & Trade – Global Trade Atlas®

UK

The UK is a net importer of beef, with Ireland being its predominant trading partner. Much of this imported beef will be fresh boneless beef (including mince), for use in manufacturing or the foodservice sector. As well as this, some imported beef does end up in the retail market for retailers who stock both British and Irish beef. In 2019, the average imported price for fresh and frozen beef into the UK was £3,900/t, with Irish beef imports slightly below this figure.

The UK's major retailers are largely supportive of British beef. The share of fresh beef facings that are British remains consistently above 80% (AHDB/ESA Retail, Pork Watch and Beef and Lamb Watch country of origin audits). Aldi, Co-op, Lidl, M&S, Morrisons and Waitrose commit to stocking only British beef (fresh only), together accounting for 43% of fresh primary beef volumes sold in retail (Kantar, 52 weeks ending 12 July 2020). Based on AHDB estimates for 2019 using Kantar data, 83% of beef sold in the UK is sold through the retail market.

Sheep meat

Table 3. **Annual production and trade, 2017–2019 average**

	Australia	UK
Production (3-year average)	722 Kt (cwt)	299 Kt (cwt)
Total exports (3-year average)	464 Kt	95 Kt
Total imports (3-year average)	N/A	83 Kt

Source: Australian Bureau of Statistics, HMRC, IHS Maritime & Trade – Global Trade Atlas®

Australia

Like beef, Australia is also a substantial producer and exporter of sheep meat. Australia has a wide variety of products that it supplies to a range of markets. In recent years, exports to China have increased substantially. In 2017–19 exports to China averaged 140 Kt. However, in 2019, exports totalled 180 Kt. The USA and UAE are also major markets for Australian sheep meat. Again, much of Australia's sheep flock are finished on pasture only diets[2] and, as such, are subject to a cyclical nature of production following

[2] MLA grassfed and grainfed: mlahealthymeals.com.au/faqs/grassfed-and-grainfed/#

weather patterns. In recent years the sheep flock has shrunk and is currently entering a rebuilding phase, which is a contributing factor to high global sheep meat prices in the past 12–18 months. Unit prices between UK imported products (predominately NZ lamb) and Australian exports are relatively similar across the product categories, with Australian lamb generally being slightly higher in cost.

Figure 3. **Comparison of selected sheep meat cuts unit price, 2017–2019 average**

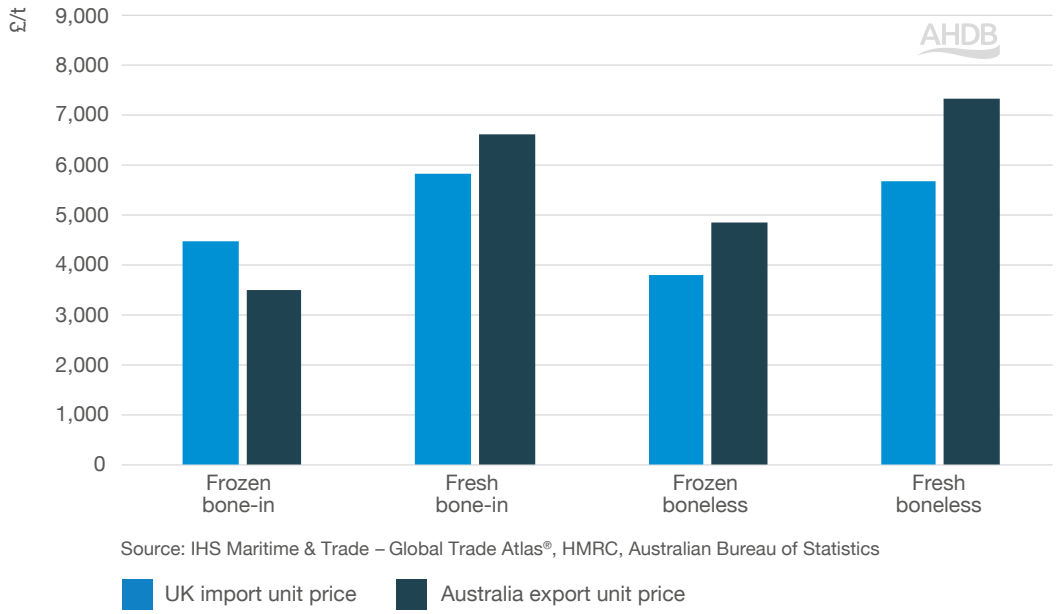
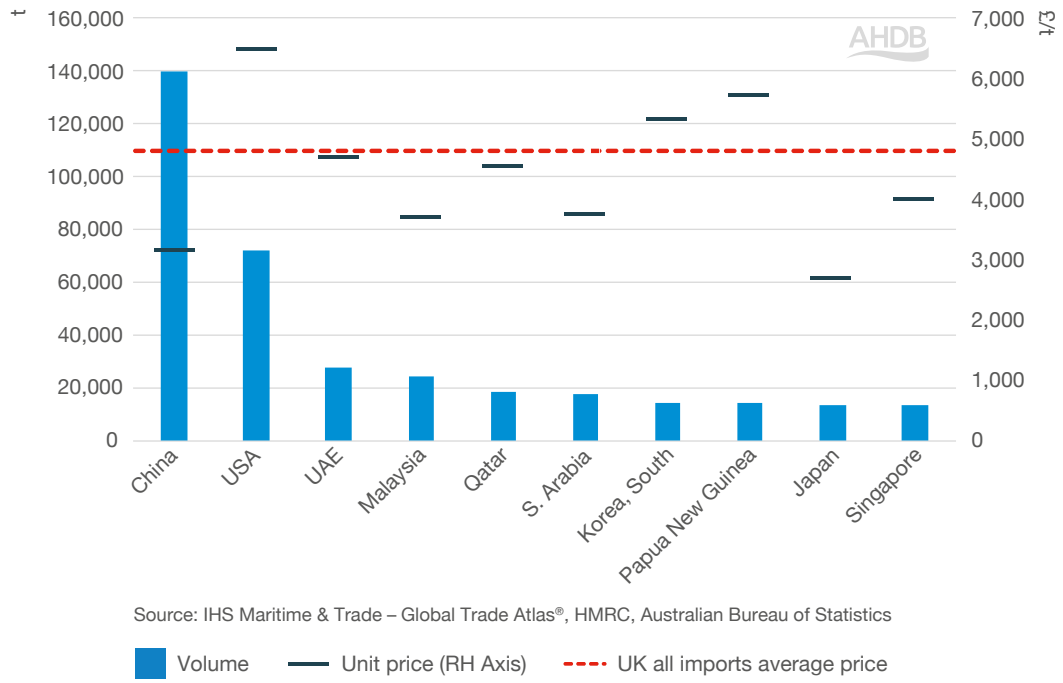


Figure 4 shows the top 10 export markets for Australian lamb, which shows the variation in unit price more clearly. It also shows how reliant Australian lamb exports have become on China. It is forecast that sheep meat production in China will increase in the short term to try and satisfy domestic demand. On top of this, it is likely that pork production in China will also recover after having been devastated by African swine fever (ASF). This will likely contribute to declining per capita consumption of sheep meat as Chinese consumers pivot back to pork as prices become more affordable. This will potentially mean that Australian lamb and other suppliers to the Chinese market may switch to other destinations in the not too distant future.

Figure 4. **Top 10 export market for Australia fresh/frozen sheep meat, 2017–2019 average**



UK

The UK produces about 300 Kt of sheep meat annually. Lamb consumption in the UK has been steadily declining over the past few decades, with consumers seeing meat as relatively expensive and difficult to incorporate into meals cooked at home. Lamb over-indexes in the out-of-home eating and takeaway markets.

The UK is the third-largest exporter of sheep meat globally, but global trade in sheep meat is dominated by NZ and Australia. The EU is the largest destination for UK sheep meat, with France and Germany being the major markets. The UK exports a large number of carcases and half carcases to the European market. In recent years, there has been a small growth in exports to Middle Eastern countries, but volumes are comparably small compared with the European market.

The UK is also a large importer of sheep meat, importing predominately legs of lamb from NZ and Australia to satisfy domestic demand when domestic lamb is in shorter supply in the first half of the year. Recently, however, imports have been declining due to an increase in demand from Asia for NZ and Australian lamb and a tighter global supply situation, which have resulted in global sheep prices increasing over the past couple of years.

Pig meat

Table 4. **Annual production and trade, 2017–2019 average**

	Australia	UK
Production (3-year average)	410 Kt (cwt)	930 Kt (cwt)
Total exports (3-year average)	41 Kt	353 Kt
Total imports (3-year average)	182 Kt	966 Kt

Source: Australian Bureau of Statistics, HMRC, IHS Maritime & Trade – Global Trade Atlas®

Australia

At 410 Kt, pig meat production in Australia is comparatively small compared to the other red meat sectors. Also, in contrast to beef and lamb, Australia is a net importer of pork products, importing around 182 Kt per annum (2017–19 average). Australian pork imports, like many agri-food products imported to Australia, are subject to rigorous Sanitary and Phytosanitary (SPS) measures, with virtually all pork required to be imported off the bone as well as being required to go straight to a processing plant once in Australia to be cooked at a specified temperature and length. However, import tariffs for fresh frozen boneless pork to Australia are 0%, and the UK does have permission to export cooked pork to Australia as well.

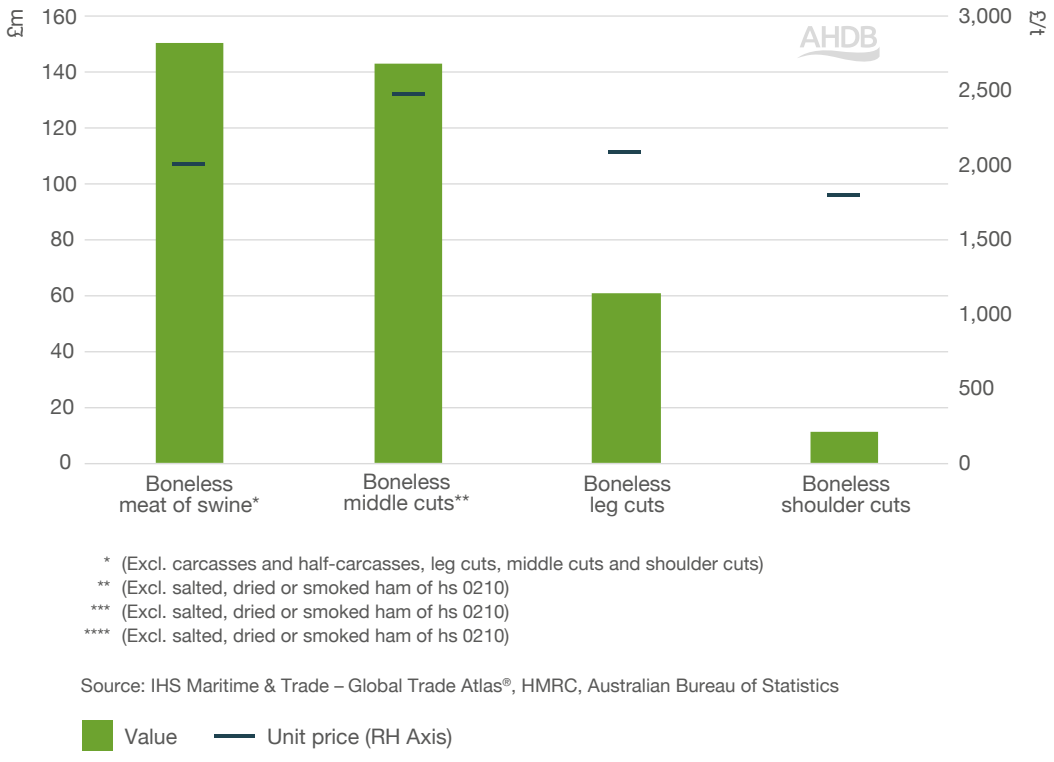
Currently, major exporters to the Australian market include the USA, Denmark and the Netherlands. Denmark and the Netherlands predominantly send frozen boneless middle cuts of pork at around £2,400/t – £2,600/t (2017–19 average). The total Australian market is worth £368m/year, and only a select few countries currently have access to the Australian market:

Uncooked pig meat:
Canada, Denmark, Finland, Great Britain (England, Scotland and Wales), Republic of Ireland, Netherlands, New Zealand, Northern Ireland, Sweden and the USA.

Cooked pig meat:
Canada, Denmark, Great Britain (England, Scotland and Wales), New Zealand, Sweden and the USA.

Cured pig meat:
Italy and Spain.

Figure 5. **Australia frozen pig meat imports, by tariff line, 2017–2019 average**



UK

The UK is a significant importer of pork, importing high-value products from predominately EU countries. Importers are used to satisfy domestic demand, especially for bacon/loin products, for which there is a consumer preference. The major suppliers are Denmark, Germany and the Netherlands. Relative to global trade, the UK exports a small amount of fresh/frozen pig meat, with the top destination being China, for which pork offal exports are also significant. Although small in global terms, these exports are a significant proportion of total UK production and, as such, are important for the UK industry, both in terms of adding value and balancing the carcase.

Dairy products

Table 5. **Annual production and trade, 2017–2019 average**

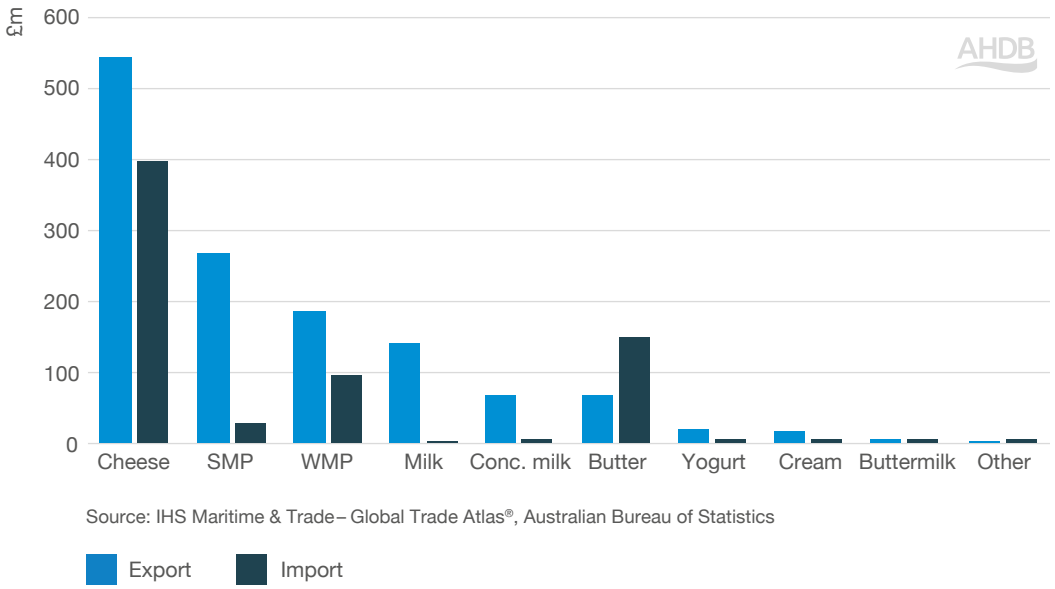
	Australia	UK
Production (3-year average)	Liquid milk: 9.2 Mt Butter: 89 Kt Cheese: 359 Kt	Liquid milk: 6.7 Mt Butter: 167 Kt Cheese: 461 Kt
Total exports (3-year average)	£1.35bn Top exports: 1. Cheese – £543m 2. SMP – £267m 3. WMP – £184m	£1.66bn Top exports: 1. Cheese – £666m 2. Milk – £266m 3. Butter – £252m
Total imports (3-year average)	£735m Top imports: 1. Cheese – £396m 2. Butter – £149m 3. WMP – £95m	£2.86bn Top imports: 1. Cheese – £1.7bn 2. Butter – £338m 3. Yogurt – £222m

Source: Defra, HMRC, IHS Maritime & Trade – Global Trade Atlas®, USDA Foreign Agricultural Service, Australian Bureau of Statistics

Australia

Australian dairy production is sizeable, averaging 9.2 Mt (2017–19). However, production has been steadily declining over the past decade as farmers struggle with climate and profitability issues. Again, the weather is a major contributing factor to the cost of production, and Australian dairy farmers are heavily reliant on water availability, which was lacking between 2018 and 2020. Forecasted production for 2021 is up on 2020 slightly. Recently, for manufactured dairy goods, cheese production has been increasing while milk powders and butter production have decreased. Whey powder production is flat.

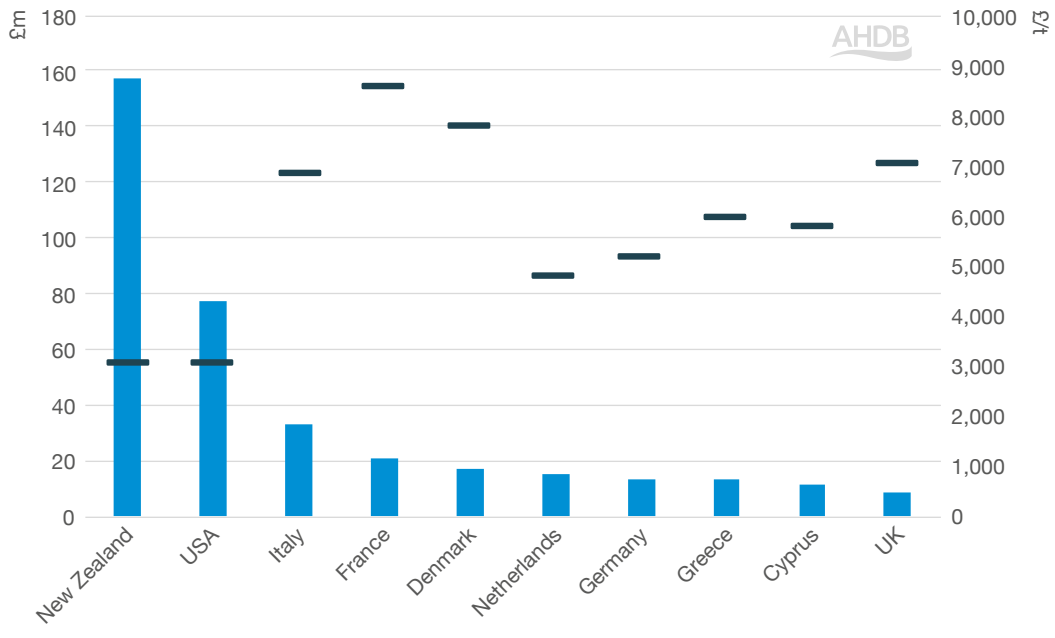
Figure 6. **Australia dairy trade, by value, 2017–2019 average**



Source: IHS Maritime & Trade– Global Trade Atlas®, Australian Bureau of Statistics

Asian markets are the largest destination for Australian exports, with cheese being the predominant export in value terms, followed by skim milk powders and milk, which tend to be in the form of added-value UHT milk. Cheese exports are relatively low in value due to the high proportion of unprocessed fresh cheese, much of which enters the Japanese market. China, again, is a key trading partner for Australia, which takes a mixture of products.

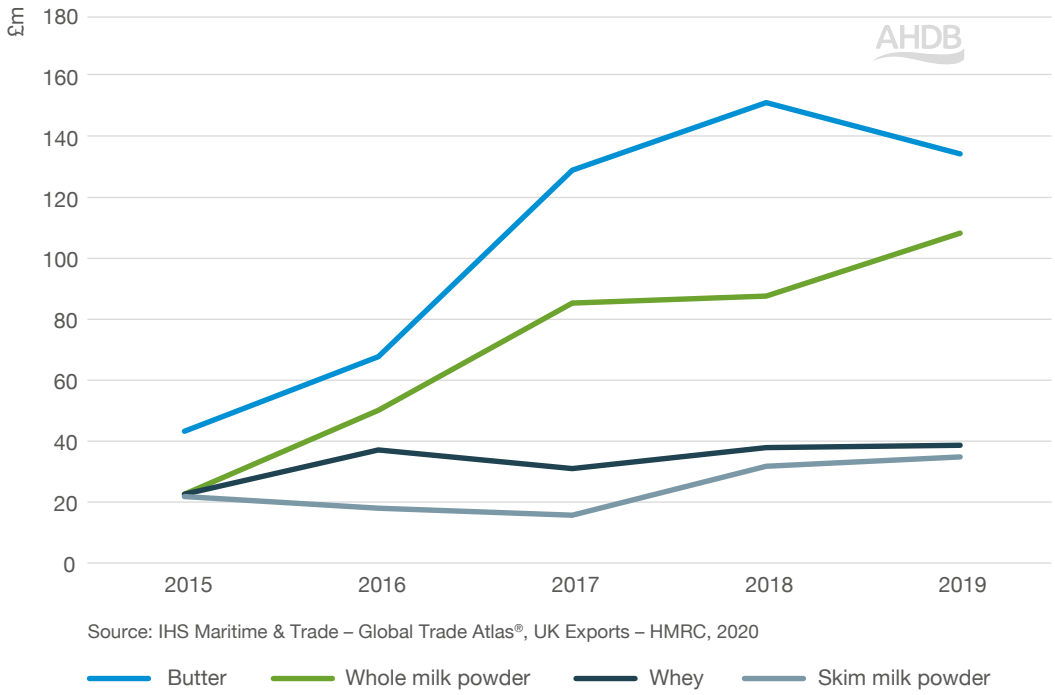
Figure 7. **Australia cheese imports, top 10 suppliers, 2017–2019 average**



Source: IHS Maritime & Trade – Global Trade Atlas®, HMRC, Australian Bureau of Statistics

In terms of imports, the Australian dairy market is worth around £725m per annum. New Zealand is a major supplier of dairy products and is almost the sole supplier of butter, whole and skim milk powders to the Australian market. The USA and a number of key EU suppliers also supply significant amounts of products; USA (cheese and whey), Italy (cheese) and Austria (whey, whole and skim milk powder). Austrian exports are quite sporadic in value terms; however, other EU suppliers are recording strong growth in export value to Australia. The UK currently supplies a small amount of cheese (£8m), butter (£2m) as well as some skim milk powder and whey.

Figure 8. **Australian imports of seleceted dairy products (excl. cheese), 2017–2019 average**



UK

Historically, UK dairy trade flows have resulted in the UK being a net importer, though, in 2019, the UK recorded a trade surplus in dairy products for the first time since records began (1997). Much of the UK exports consist of milk and cream, with Ireland being the main destination, where product crosses the border from Northern Ireland to be processed into cheese. Small amounts of cheese are exported to Europe. The UK exports about 7.4 Kt of cheese annually to the USA (3-year average), most of which is Cheddar, though a small amount of artisan cheese is exported each year.

The UK imports about $2.9bn worth of dairy products each year. Unsurprisingly, the largest category by both volume and value is cheese. Significant amounts of Cheddar are imported from Ireland, quite often made with NI milk. France and Germany also export significant amounts of cheese to the UK.

PRODUCTION AND TRADE – CEREALS AND OILSEEDS

Wheat

Table 6. **Annual production and trade, 2017–2019 average (crop years)**

	Australia	UK
Production (3-year average)	17.9 Mt	14.9 Mt
Total exports (3-year average)	11.8 Mt	747 Kt
Total imports (3-year average)	245 Kt	1.8 Mt

Source: ABARES, Defra, HMRC, IHS Maritime & Trade – Global Trade Atlas®

Australia

While Australia's wheat output is relatively modest compared to countries such as the USA, Russia and the EU, it is an important player in the global wheat market as it exports a considerable proportion of its production. Australia is regarded as a top-up supplier of wheat in the Northern Hemisphere due to the timing of its wheat harvest.

The main types of wheat grown in Australia are:

Australian Premium White (APW) – comprises 30–40% of total production, has good milling properties and is used to produce a wide variety of bread (including Middle Eastern flatbreads) and noodles.

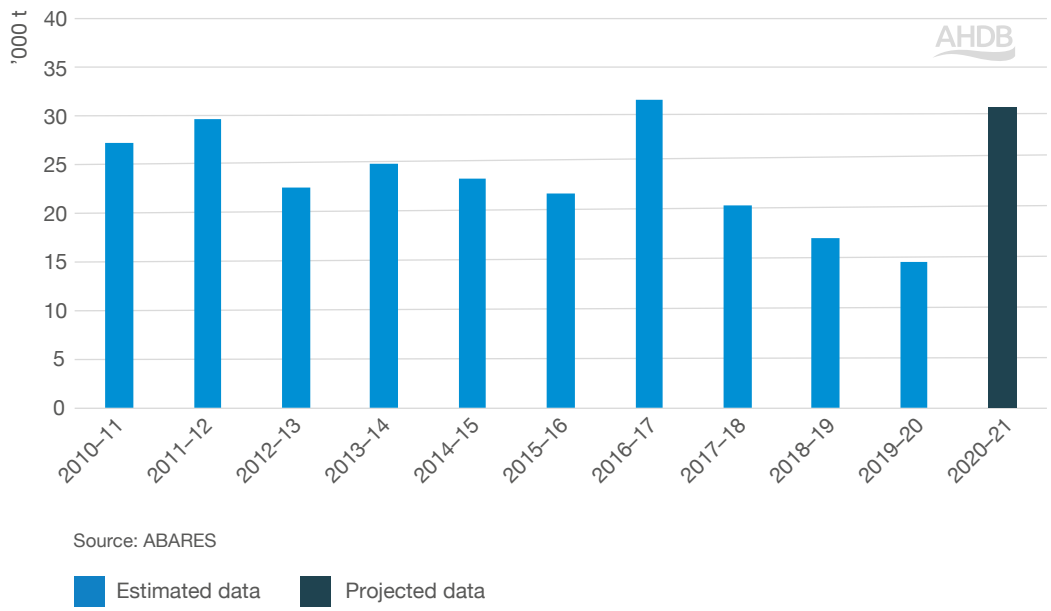
Australian Standard White (ASW) – forms around 20–25% of the total wheat crop. It has good milling properties and can be used in a range of baked products as well as steamed breads and noodles.

Australian Hard (AH) – comprises 15–20% of total wheat output. It has superior milling and dough properties. Suitable for a range of products, including flatbreads, noodles and steamed bread.

Australian Prime Hard (APH) – 5–10% of the Australian wheat crop. A high protein and high milling quality wheat. Most suitable for high volume European bread and certain noodles but can also be blended with lower protein wheat to make high-quality flours which can be used in a variety of products.

In typical years, Australia usually exports around 70% of the wheat it produces. However, due to smaller crops in the past few crop years (caused by severe drought), the proportion exported has fallen to around 50–60%. Nevertheless, a bumper crop (31.2 Mt) is expected in 2020/21 (ABARES).

Figure 9. **Australian wheat production**



Over the past three crop years, Indonesia has been the top export destination for Australian wheat.

Table 7. **Top five export destinations for Australian wheat (2017/18–2019/20 average)**

	Quantity (Mt)	Value (£m)	Unit price (£/t)
Indonesia	1.8	318.7	179
Philippines	1.4	244.3	180
South Korea	1.1	210.9	194
Vietnam	1.0	194.4	193
Japan	0.91	192.0	212

Source: IHS Maritime & Trade – Global Trade Atlas®, Australian Bureau of Statistics

The small amount of wheat Australia imports is primarily from Canada.

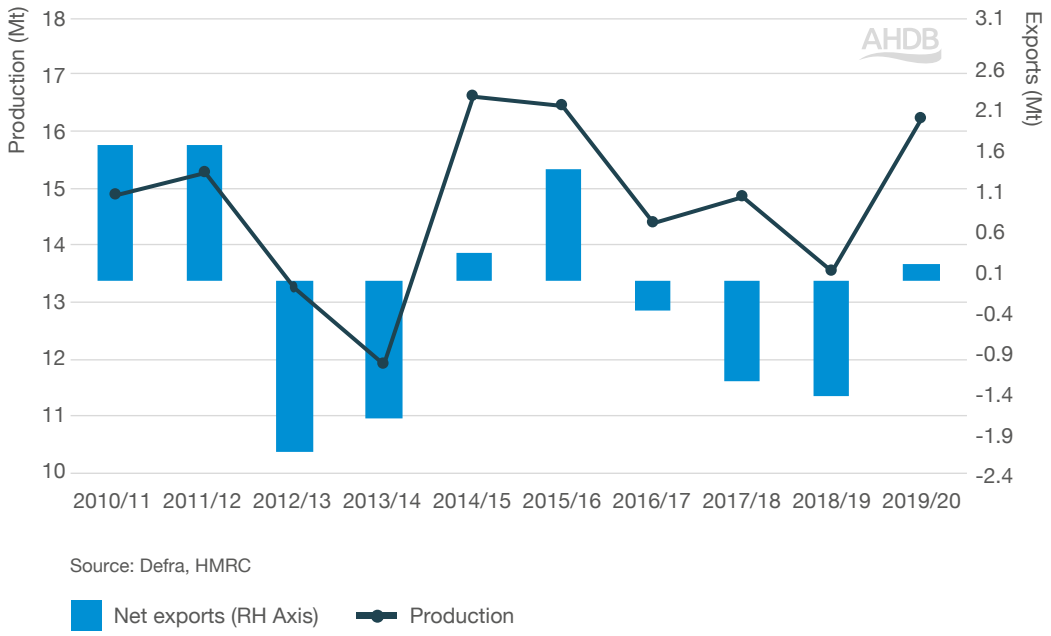
UK

The UK's net trade position varies from year to year, depending on domestic demand requirements and the size of the crop. Typically, the UK is a net importer of milling wheat, while any surplus feed wheat is exported.

While the UK wheat crop has averaged around 15 Mt (2017/18–2019/20), the 2020 harvest was much smaller (9.7 Mt).

As Figure 10 shows, the UK is usually a net importer of wheat if the domestic crop size is below 15 Mt.

Figure 10. **UK wheat production vs UK net exports**



UK feed wheat faces competition from maize imports, which can be partially substituted into animal feed rations. Two major bioethanol plants in the UK can dictate UK feed wheat consumption, and one of these can also use maize as feedstock. Currently (2021), only one bioethanol plant in the UK is operational, albeit at reduced capacity.

UK wheat imports predominately come from the EU, but the share of non-EU imports has been increasing in recent years. Imports of milling grade wheat come from North America as well as Germany and France. Rules of Origin (RoO) limits apply to UK-made flour. Under the EU-UK Trade and Cooperation Agreement, EU materials and processing count as UK materials and processing for products exported to the EU and vice versa. However, if non-UK and EU materials, for example, are used in UK product exports, then they may incur tariffs if the amount or value exceeds the agreed level. As mentioned previously, Canadian wheat is imported for milling purposes, so if flour is exported from the UK to Ireland, for example, a tariff will apply if it contains more 15% Canadian wheat.

Table 8. **UK wheat import origins (2017/18–2019/20 average)**

	Quantity (t)	Value (£m)	Unit value (£/t)
Canada	384,000	86.6	225
France	262,000	48.6	186
Germany	222,000	39.0	175
Bulgaria	181,000	30.2	167
Romania	132,000	22.1	167

Source: UK HMRC

Most of the UK's wheat exports are primarily feed wheat destined for the EU, with additional shipments to North Africa.

Table 9. **UK wheat export destinations (2017/18–2019/20 average)**

	Quantity (t)	Value (£m)	Unit value (£/t)
Ireland	195,000	32.8	168
Netherlands	172,000	27.2	158
Spain	144,000	24.3	169
Portugal	52,000	8.6	164
Algeria	32,000	5.0	157

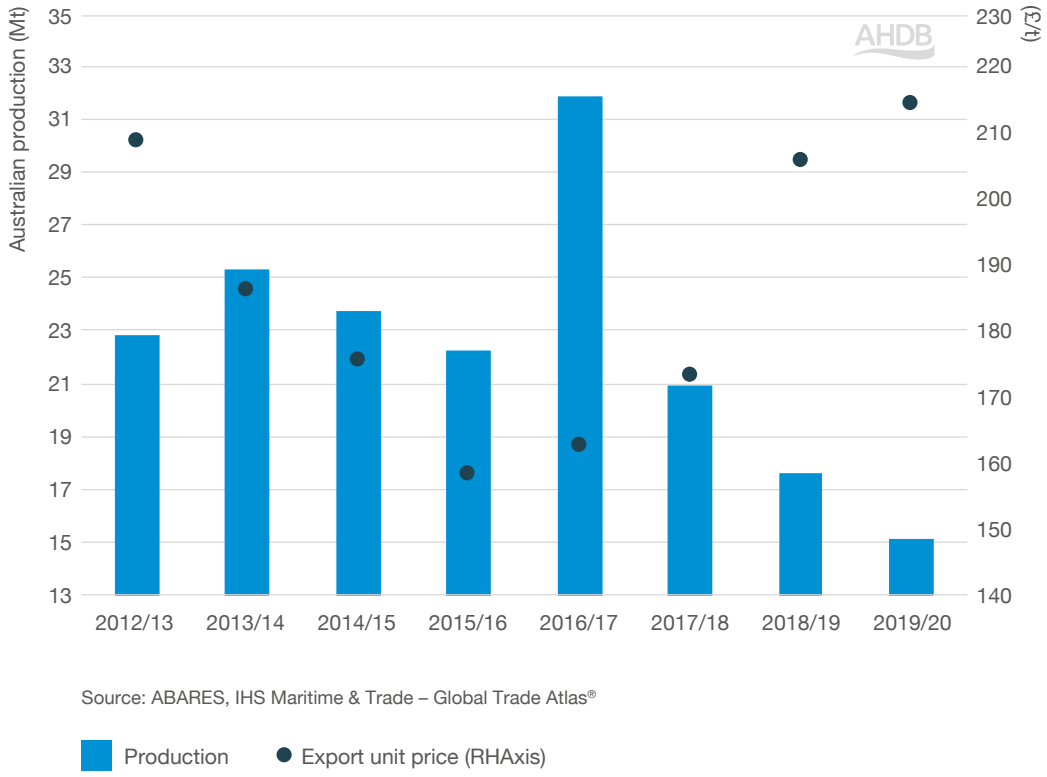
Source: UK HMRC

UK/Australia wheat trade

UK wheat imports from Australia have averaged 4.7 Kt (2017/18–2019/20), whereas UK exports have averaged just 8 t over the same time period. UK imports of Australian wheat is for the milling wheat market rather than the feed wheat market. Canadian wheat is preferred by UK millers as it complements UK wheat well as part of a blend.

The average unit price for UK wheat imports between 2017/18 and 2019/20 was £192/t, whereas the average unit price for Australian wheat exports during this period was £198/t. As expected, the price will reflect, to some extent, local supply and demand dynamics, but global prices will also have a bearing. Due to severe drought in the past few crop years, Australian wheat export prices have been higher.

Figure 11. **Australian wheat production verses export unit price**



Source: ABARES, IHS Maritime & Trade – Global Trade Atlas®

For wheat, there isn't a substantial amount of trade between the UK and Australia. As mentioned earlier, Canadian wheat is the main non-EU wheat used by millers, and it is unlikely that UK millers would want to shift away from this as it is a tried and tested component of UK millers' grists.

Barley

Table 10. **Annual production and trade, 2017–2019 average (crop years)**

	Australia	UK
Production (3-year average)	9.0 Mt	7.3 Mt
Total exports (3-year average)	4.7 Mt	997 Kt
Total imports (3-year average)	96 t	94 Kt

Source: ABARES, Defra, HMRC, IHS Maritime & Trade – Global Trade Atlas®

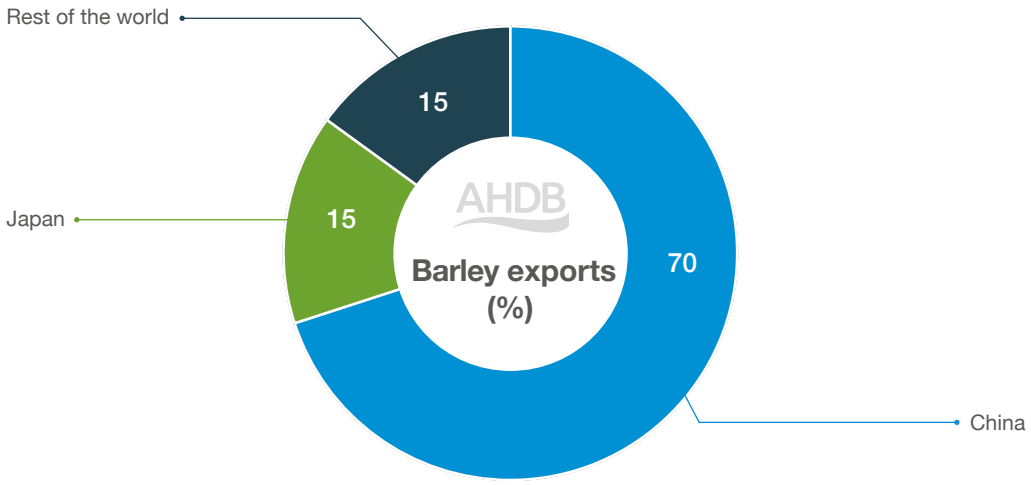
Australia

Australia is a net exporter of barley and typically exports around 60% of its production (although this figure dropped to around 40% in recent years due to lower production caused by drought).

The main export destination for Australian barley is China (around 70% of total Australian barley exports were shipped to China between 2017/18 and 2019/20). However, a dispute between these two nations has led China to place an 80.5% tariff (May 2020) on Australian barley imports, making them uncompetitive.

China is a premium market for Australian barley exports.

Figure 12. **Australian barley exports (2017/18–2019/20 average)**



Source: IHS Maritime & Trade – Global Trade Atlas®

Table 11. **Top five export destinations for Australian barley (2017/18–2019/20 average)**

	Quantity (Mt)	Value (£m)	Unit price (£/t)
China	3.28	558.8	170
Japan	0.72	129.2	179
Thailand	0.33	54.7	168
Vietnam	0.13	25.0	195
United Arab Emirates	0.06	11.1	181

Source: IHS Maritime & Trade – Global Trade Atlas®, Australian Bureau of Statistics

As a result, Australian barley is being redirected to lower value markets such as Saudi Arabia and African markets for use in animal feed. This could potentially cause competition for UK feed barley exports.

Table 12. **Australian malt* exports (2017/18–2019/20 average)**

	Quantity (Kt)	Value (£m)	Unit price (£/t)
Vietnam	197.8	68.6	347
South Korea	106.5	37.6	353
Japan	82.0	30.3	370
Thailand	77.9	24.6	316
Philippines	61.2	18.0	294

Source: IHS Maritime & Trade – Global Trade Atlas®, Australian Bureau of Statistics

*HS code 110710

Japan accounts for 15% of the Australian export market and Thailand around 7% (2017/18–2019/20 average).

According to the **Australian Export Grains Innovation Centre (AEGIC)**, Australian barley exports account for more than 40% of global malting barley trade and 20% of feed barley trade.

As Table 12 shows, Australian barley imports pale in comparison to the level of exports.

Australian malt (unroasted) exports averaged 646.8 Kt (2017/18–2019/20), with over 30% destined for Vietnam.

Australia's domestic and export malt markets have different brewing processes, so the quality of malt required for these markets differs. Approximately 190 Kt of Australian malt is used domestically (Barley Australia).

UK

UK barley production is predominately focused on the malting and livestock feed sectors. The UK is typically a net exporter of barley. A significant amount of barley is shipped, predominately to EU markets but also to valuable markets in Northern Africa, though these markets have steadied a little in the past few seasons.

Table 13. **UK barley exports (2017/18–2019/20 average)**

	Quantity (Kt)	Value (£m)	Unit price (£/t)
Spain	273.7	40.3	147
Netherlands	248.0	39.0	157
Ireland	172.7	27.7	160
Portugal	151.1	22.9	151
Belgium	89.7	15.9	177

Source: UK HMRC

UK malt exports averaged 190.7 Kt between 2017/18 and 2019/20, with most destined for Japan. However, in terms of value, the USA was the biggest market for UK malt exports during this period.

Table 14. **UK malt* exports (2017/18–2019/20 average)**

	Quantity (Kt)	Value (£m)	Unit price (£/t)
Japan	77.2	31.9	413
USA	26.7	15.8	593
Ireland	17.7	6.1	344
Vietnam	13.1	4.6	348
Thailand	10.0	3.7	371

Source: UK HMRC

*HS code 110710

Looking at the trade relationship between the UK and Australia, there is negligible trade in barley between the two countries. This is understandable given that they are on opposite sides of the world, and both nations have more proximal markets to tap into.

While there is more activity in malt trade between the UK and Australia, it is nothing to get excited about. Between 2017/18 and 2019/20, the UK did not import any malt from Australia but exported an average of 947 t. However, the latter only accounted for less than 0.1% of total UK malt exports.

Canola/rapeseed

Table 15. **Annual production and trade, 2017–2019 average (crop years)**

	Australia	UK
Production (3-year average)	2.86 Mt	1.98 Mt
Total exports (3-year average)	Rapeseed: 1.85 Mt Meal: n/a Oil: 168.3 Kt	Rapeseed: 97.9 Kt Meal: 211.4 Kt Oil: 196.1 Kt
Total imports (3-year average)	Rapeseed: 1.29 Kt Meal: n/a Oil: 20.3 Kt	Rapeseed: 273.1 Kt Meal: 196.7 Kt Oil: 76.6 Kt

Source: USDA FAS PSD database, Defra, HMRC, IHS Maritime & Trade – Global Trade Atlas®

Australia

Rapeseed is referred to as 'canola' in Australia (and Canada). Australia is usually the second largest global rapeseed exporter, after Canada (small crops in 2018/19 and 2019/20 meant that Ukraine overtook Australia in these years). This is despite the fact that Australia accounts for only 4% of global rapeseed/canola production. Australia typically exports around 70% of its rapeseed production.

EU countries are an important destination for Australian canola, as well as China and Japan.

Table 16. **Top five export destinations for Australian canola (2017/18–2019/20 average)**

	Quantity (Kt)	Value (£m)	Unit price (£/t)
Germany	630.8	208.4	330
Belgium	491.9	166.8	339
China	195.0	69.5	357
Netherlands	147.6	51.2	346
Japan	123.3	41.5	337

Source: IHS Maritime & Trade – Global Trade Atlas®, Australian Bureau of Statistics

Australian canola/rapeseed is favoured in the EU as it is non-GM (genetically modified). The EU biodiesel industry is a key source of demand for rapeseed, which is crushed to produce oil. Around 6–7 Mt of rapeseed oil are used in EU biodiesel production. However, policy changes are moving towards lower consumption of virgin oils for this end market. Furthermore, the shift towards phasing out diesel vehicles this decade will also affect demand. EU rapeseed oil consumption in food is fairly stable at around 3 Mt, and there is unlikely to be any further substantial growth in this area given that the market is fairly mature.

China is the world's largest consumer of rapeseed oil in food use (accounting for around 40%). Although growth in this market has levelled off, China remains a key export destination. Due to its processing capabilities, China mainly imports rapeseed and produces rapeseed oil itself.

The substitutable nature of vegetable oils also means that there is competition from imported palm and soybean oils, with price usually being the determining factor for many applications.

There is negligible trade for Australian rapeseed meal as the country consumes all that it produces in its domestic animal feed market.

UK

UK rapeseed production has been falling in recent years due to increased technical difficulties with growing the crop. Most UK rapeseed exports are destined for the EU for biodiesel production, although, as mentioned earlier, policy changes are likely to see a fall in demand over the coming decade.

Table 17. **Top five export destinations for UK rapeseed 2017/18–2019/20 average**

Country	Quantity ('000 t)
Germany	57.0
Sweden	14.4
Denmark	9.0
Czech Republic	8.6
Netherlands	6.4

Source: UK HMRC

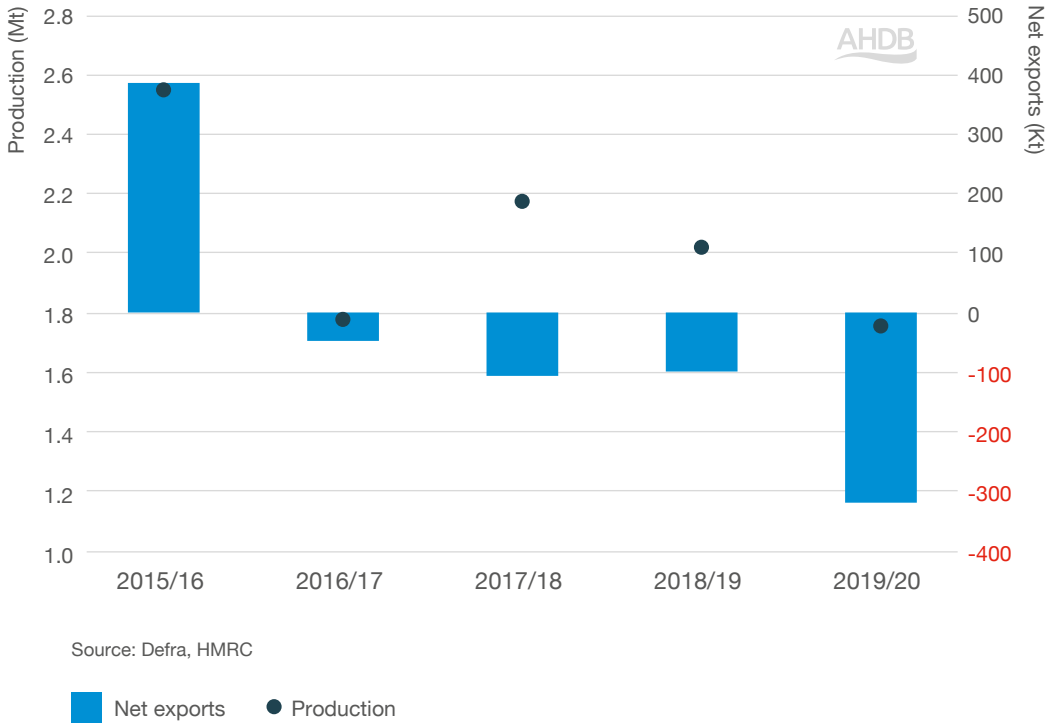
Table 18. **Top five import origins for UK rapeseed 2017/18–2019/20 average**

Country	Quantity ('000 t)
France	82.0
Netherlands	66.6
Ukraine	40.4
Lithuania	26.1
Latvia	22.0

Source: UK HMRC

Nowadays, the UK is usually a net importer of rapeseed due to lower production levels. The UK rapeseed harvest in 2020 is the lowest in at least a decade, meaning that domestic supplies will be tight in the coming crop year, so higher imports are to be expected.

Figure 13. **UK rapeseed production verses net exports**



Source: Defra, HMRC

The UK is usually a net exporter of rapeseed oil, with the EU as the main destination. However, the latest trade data for the current crop year (2020/21) shows UK rapeseed oil imports outstripping exports for July to the end of November. This is due to much tighter rapeseed supplies, as mentioned earlier.

Table 19. **UK rapeseed oil exports 2017/18–2019/20 average**

Country	Quantity ('000 t)
Netherlands	56
Germany	44
Belgium	40.5
Norway	11.9
Sweden	11.1

Source: UK HMRC

The UK also exported an average of 4.3 Kt of rapeseed oil to China between 2017/19 and 2019/20.

In the past five crop years, the UK has been a net-exporter of rapemeal twice (2017/18 and 2018/19), with the EU as the main destination. Soybean meal, imported from South America is the main rival of rapemeal in the animal feed market.

Table 20. **UK rapeseed meal exports 2017/18–2019/20 average**

Country	Quantity ('000 t)
Netherlands	65
France	47.1
Spain	44.3
Germany	29.8
Ireland	21.9

Source: UK HMRC

The EU is also the main origin for UK rapeseed meal imports. It is worth noting that the main UK rapeseed crushing companies have operations in the EU, and so shipping material between locations will be reflected in trade data.

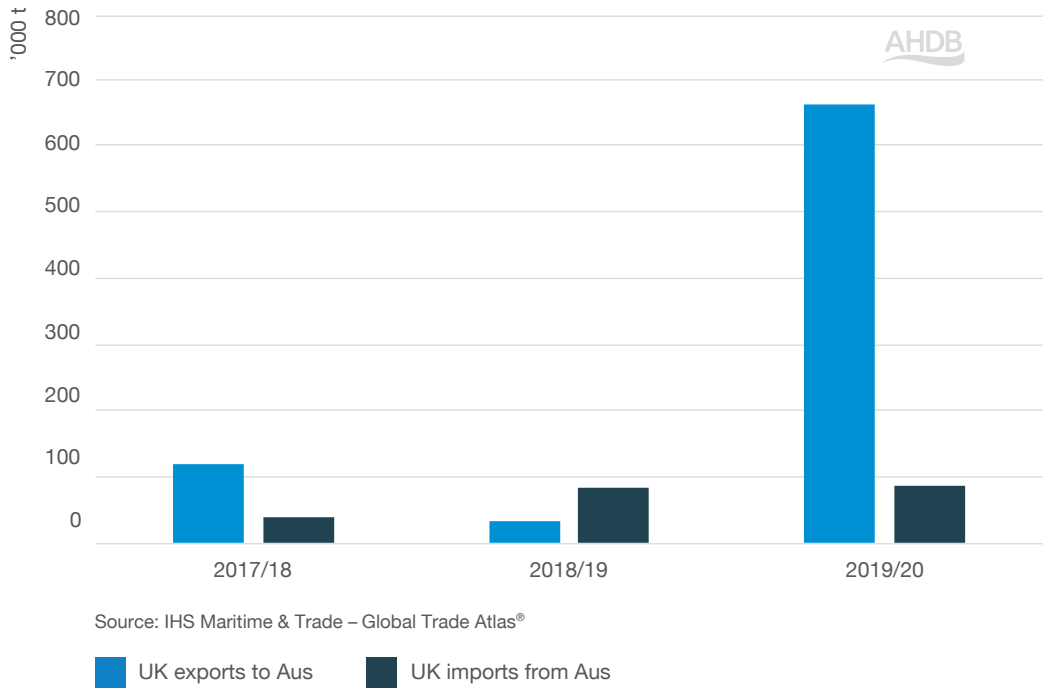
Table 21. **UK rapeseed meal imports 2017/18–2019/20 average**

Country	Quantity ('000 t)
Belgium	53.7
Germany	38.9
France	35.8
Ireland	12.3
Lithuania	11.2

Source: UK HMRC

Rapeseed and rapeseed oil trade between the UK and Australia is fairly minimal. The last notable UK rapeseed imports from Australia were in 2016/17 (121.5 Kt). Trade in rapeseed oil is also fairly subdued, although over 650 Kt of UK rapeseed oil was exported to Australia in 2019/20.

Figure 14. **UK/Australia rapeseed oil trade**



PRODUCTION SYSTEMS

Introduction

For livestock systems, particularly those involved in meat and wool production, large climatic variations can have a significant effect on how they are managed and stocked. For sheep and beef, a large proportion of Australian farms will be extensively pasture-based. Effects of prolonged periods of drought and seasonal bush fires can impact stocking levels, leading to an increased cost of production, including the associated costs of destocking and restocking.

For beef and lamb comparisons, AHDB is a member of the international agri benchmark beef and sheep network, a global, non-profit network of agricultural economists, advisors, producers and specialists in key sectors of agriculture.

The network uses internationally standardised methods to analyse farms, production systems and their profitability. There are over 30 countries in the network, and each country has typical farms that illustrate the types of beef and sheep farms found in those countries. Depending on the size and variation of production systems, a country may have a number of typical farms.

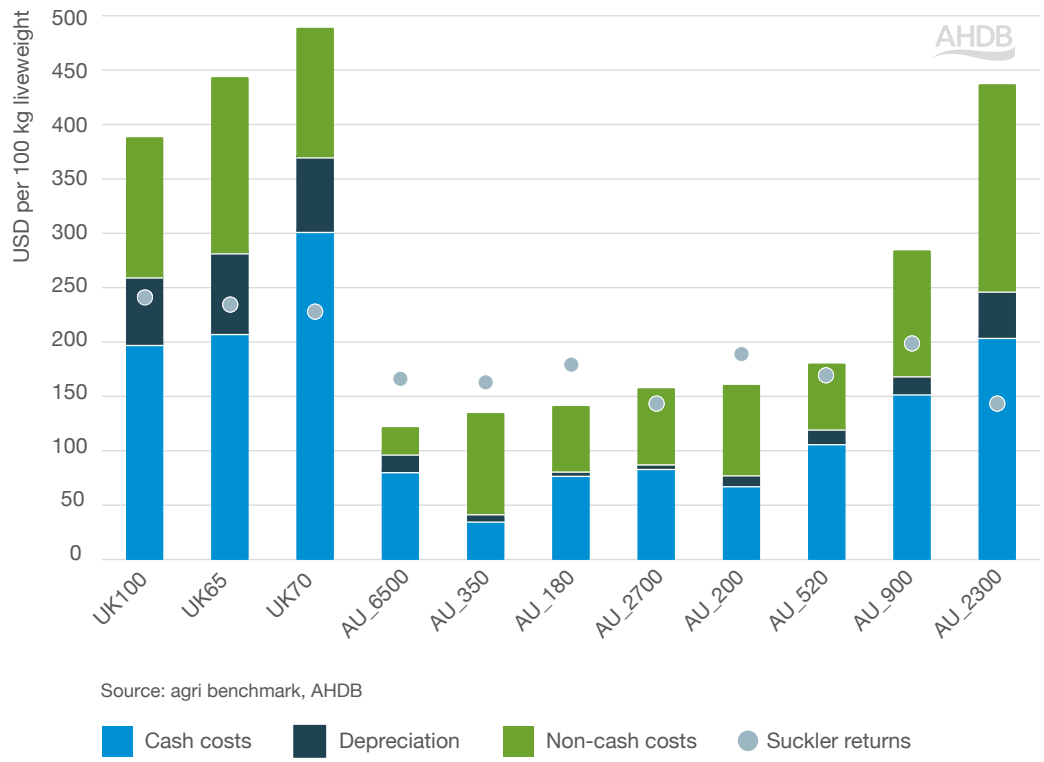
Typical farms are established in consultation with a focus group of farmers in the main areas of relevant production. Local farmers and advisors identify the typical size, enterprises, resources, inputs, outputs and operation of beef and sheep farms in a particular area.

Beef

Suckler cow systems are predominately pasture-based (sometimes plus silage) around the world – including Australia and the UK. In the UK, it would be typical for suckler cows to be housed during the winter. In Australia, housing cattle over winter isn't practised, and as a result, there are lower costs associated with housing cattle in Australia.

As you can see from Figure 15, all three UK farms have returns from their beef enterprises that are below their costs. These returns in will not include subsidy payments such as BPS income, which is being phased out in England. This will present significant challenges to the viability of these farms going forward.

Figure 15. **Typical farm suckler herd production costs and output 2019**



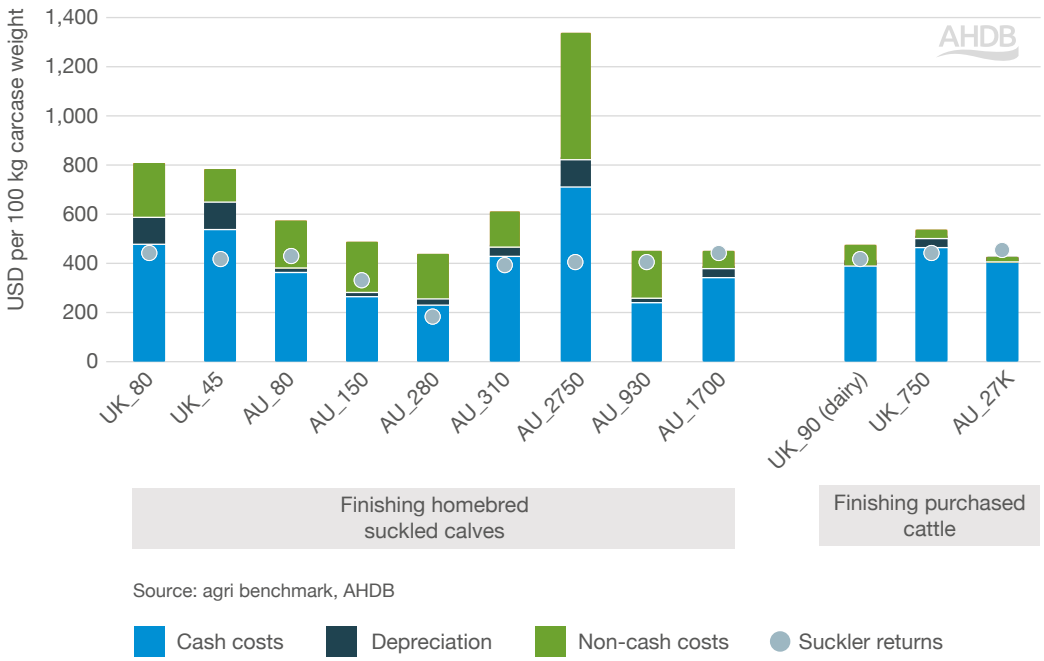
A variety of beef suckler systems exist in Australia due to the variation of the country's environment. Farms utilise Bos Indicus (zebu or humped cattle), Bos Taurus (more conventional type cattle from a UK perspective) as well as Brahman cattle, a breed which is a hybrid between the two cattle species and is popular in Australia due to its high tolerance of heat, sunlight and humidity, with good resistance to parasites. Northern producers tend to favour Bos Indicus cattle for these reasons as well, although the beef quality of these animals is generally lower than Bos Taurus cattle, which are predominately farmed in the more southern areas of the country.

Australian suckler herds vary in size and management type. Herds with European type breeds tend to be smaller in herd size (180–500 head) with a lower age at first calving, calving around 24–26 months. On these types of herds, calves weaned per 100 cows is around 80–90.

Larger scale herds, in the region of 1,000 head up to and above 6,500 breeding females, tend to be more extensively managed and of Bos Indicus or Brahamn type cattle (agri benchmark). The average age of calving is generally, but not exclusively, older than European type breeds at around 36–42 months at first calving. Calves weaned per 100 cows tend to be lower, around 60–80 on average, but can go down to nearer 50 in the larger scale herds.

Most breeding herds will finish at least a portion of youngstock on farm. However, a mix of finishing and selling as weanlings/stores is commonplace. On suckler farms that finish cattle, cattle are almost exclusively finished at pasture, along with some form of supplementation of hay, silage, concentrates or cottonseed, etc.

Figure 16. **Typical farm beef finishing production costs and output 2019**



Australia also operates large-scale finishing units. A typical unit would be finishing somewhere in the region of 27,000 head of cattle per annum, purchasing predominately British breeds and located near the grain-producing regions of Australia. The forage-based diet of the finishing cattle is supplemented with grains and cottonseed. However, diets will vary depending on what market the cattle are intended for.

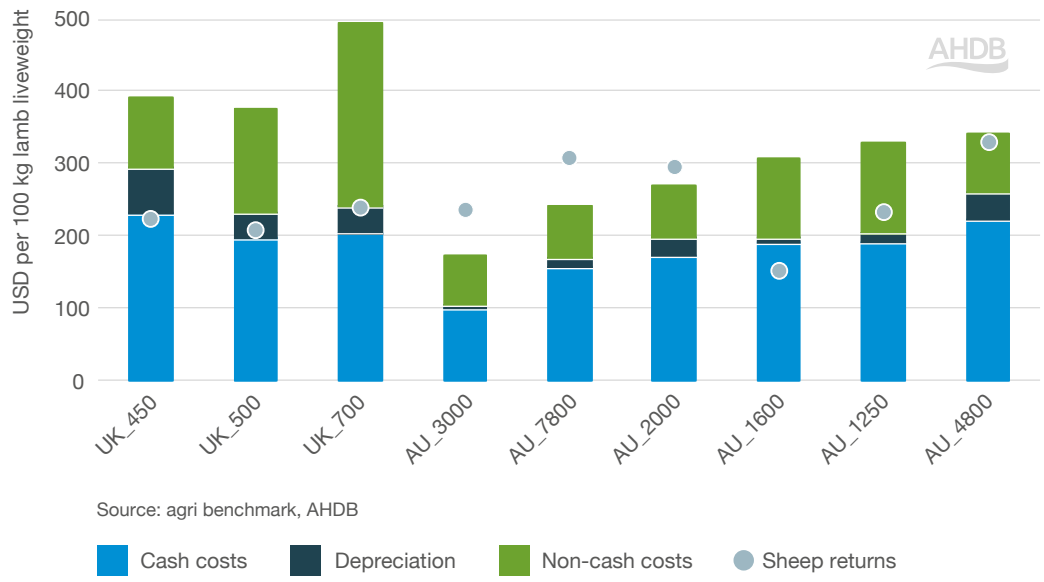
The use of growth promotors is permitted in Australia for use in cattle destined for both the domestic market as well as other markets around the world. However, Australian cattle producers have various integrated assurance and traceability schemes to ensure that cattle destined for markets that prohibit growth promoters, such as the European market, are free from them, and it enables Australia to meet specific market requirements. For instance, assurance schemes are also set up for the Chinese as well as other Asian markets.

Sheep

Australia is the world's largest exporter of sheep products and, as such, has a large domestic industry. However, changes in demand for wool, which was a primary output for the Australian sheep industry pre-1990s, has resulted in a reduction of the domestic flock. Based on data from the Australia Bureau of Statistics, in 1990, the Australian flock numbered around 170 million head. By 2010, just 20 years later, the flock was around 68 million head, a 61% decline. Since then, the flock has stabilised but still fluctuates between 65–75 million, which will largely be influenced by weather patterns and prolonged drought.

Sheep farms and lambs for slaughter production In Australia are heavily concentrated in New South Wales and Victoria. A mix of farm types exists in the Australian sheep system, with some farms focusing solely on sheep production, producing finished lamb for slaughter or wool. Other farms integrate sheep businesses, typically Merino X ewes, within arable rotations producing meat and some wool output. Sheep farms are pasture focused, with farms tending to be relatively extensive, especially in areas like Western Australia (WA), where flocks tend to be larger, and sheep are run alongside other cash crops. Flock sizes in Australia tend to be larger than the typical UK farm (450–700 head), with a typical Australian farm having anywhere from 1,200 ewes in New South Wales up to around 8,000 on some of the larger stations in WA. Wool is an important output to a number of farms, and so many farms will keep lambs in order to get a wool crop from the sheep first before heading for meat production.

Figure 17. **Typical farm lamb production costs and output 2019**

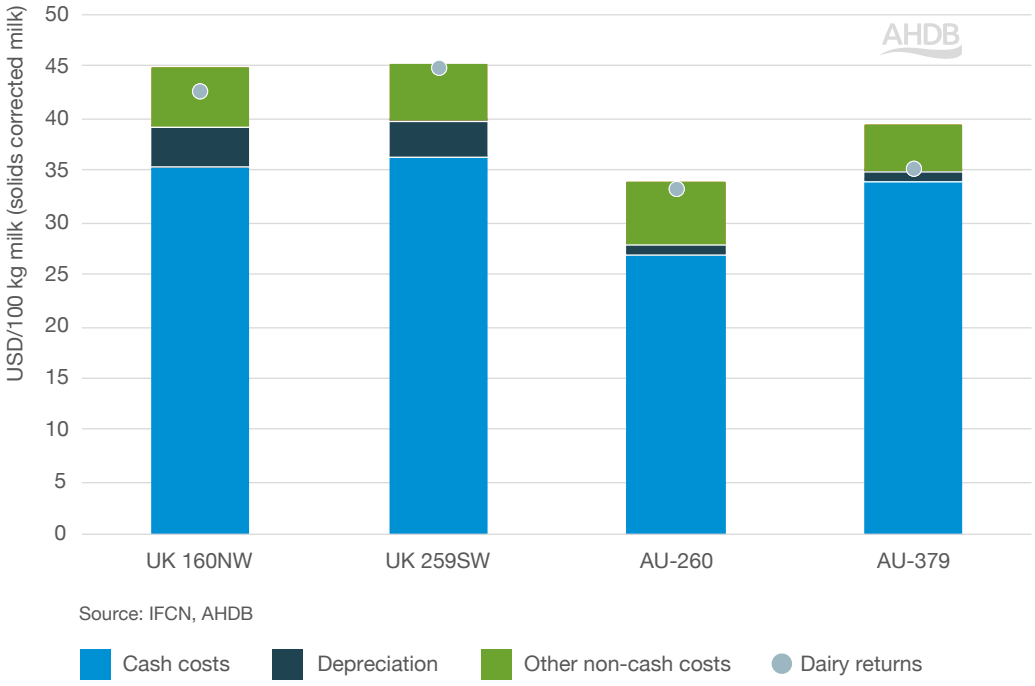


Australian farms typically have low machinery and building investment; ewes lamb outside, with the unpaid labour costs (often a family couple) spread across a large number of ewes. Production systems are more extensive, and the lamb rearing percentage is lower than those typically achieved on many European farms. Australian sheep producers typically practice rotational paddock grazing, even on an extensive basis.

Dairy

Over the past 30 years, the Australian dairy industry, like many other sectors in Australian agriculture, have been subject to major policy reforms. This has been aimed at deregulation and reducing producer price support mechanisms, which will be discussed in more detail in a future article. However, this has resulted in a major structural change in the ways farms operate and produce milk. These structural changes mean that the number of farms has reduced while the size of individual farms increased. Similar to the UK, the number of dairy farmers in Australia have been on the decline as increased economies of scale and more exposure to the global market occurs. The number of dairy farmers in Australia was 5,055 in 2019/20 (Dairy Australia), down from around 8,055 in 2006/7.

Figure 18. **Typical farm milk production costs and returns 2019**



Dairy farming occurs in all Australian states. However, production is predominately confined to the South East of the country, which has a climate more suited to growing grass. Typical farms in Australia are herds with between 260–380 milking cows. Diets are predominately grass based (either fresh or silage or hay), supplemented with cereal-based concentrates. In a normal year, around 60–65% of a dairy cow's diet will come from grazing, and dairy farms in Australia are typically dairy specialists (only dairy as an enterprise). Due to the drier climate, some inland farms choose to irrigate pasture land to ensure a reliable growing season, but in periods of extreme drought, the use of irrigators is not guaranteed, so production even on irrigated farms is still impacted. Like the UK, Holstein Friesians are a typical breed in the Australian dairy system with yields of around 6,200–7,300 kg milk.

Pork

The pork industry in Australia is quite small when compared to Australia's other red meat sectors. However, it is the second most consumed meat in Australia and consumption is growing. Like the UK, Australia runs three distinct types of pig farming systems:

1. **Indoor systems** – these make up around 90% of Australia's pigs. Both sows and rearing pigs are housed for their entire life. Around 80% of the sows housed indoors are in loose housed systems.
2. **Outdoor bred system** – these make up around 5% of Australia's pigs. Pigs are born and raised up until weaning in an outdoor system, at which point they are transferred to large indoor, deep littered straw barns. This system has a recognised accreditation scheme. Outdoor systems are rotated in conjunction with cereal or forage-based crops.
3. **Free-range system** – these make up around 5% of Australia's pigs. Sows and reared pigs are kept outdoors for their entire life, with access to sufficient shelter with the paddock. Like outdoor systems, paddocks are rotated in conjunction with other crops. Free-range systems are relatively uncommon in Australia due to predators and climatic factors, resulting in indoor systems, where the environment and predation from animals can be better controlled, potentially being better from a welfare perspective in Australia.

Cereals farm structure

Grain farms in Australia have been reducing in number but increasing in size through consolidation. A report from the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) showed that between 2010 and 2015, the average size of farms predominantly growing grain increased from 2,510 ha to 2,607 ha. Most grain farms are family owned and operated.

In Australia, the dry climate means that direct drilling is mainly employed. While there is some direct drilling in the UK, a combination of ploughing, power harrowing and combi-drilling is more commonly used (although there is increasing uptake of minimum cultivations such as direct drilling).

A key difference in terms of farm incomes in the UK and Australia is the level of government support or subsidy. An OECD report showed that government support comprised just over 2% of Australian farm revenues between 2016 and 2018. Most of this support is in the form of government-funded R&D, with the remainder allocated to risk management tools. In 2019/20 direct payments accounted for over 60% of total farm business income for English cereals farms, although the new English agricultural policy will gradually remove direct payments by 2028. This means that cereal farmers will need to examine their business operations carefully in order to remain profitable.

For analysis into costs of production and international benchmarking, AHDB has access to the agri benchmark network, which comprises 'typical' farms in different countries. For this analysis, Australian farms growing cereals and oilseeds are compared with their UK counterparts. The UK farms shown are situated in the Wash area of Eastern England, Cambridgeshire, Suffolk and Scotland, with sizes ranging from 270ha to 800ha. In 2019, these farms received decoupled support between $262/ha and $293/ha. The Australian farms shown are situated in Western Australia and South Australia, with sizes ranging from 2,800 ha to 5,500 ha. The Australian farms do not receive any subsidy payments and generally have a higher proportion of family labour than hired labour compared with the English and Scottish typical farms. (2019 data is not available due to the collection of data hindered by the coronavirus pandemic.)

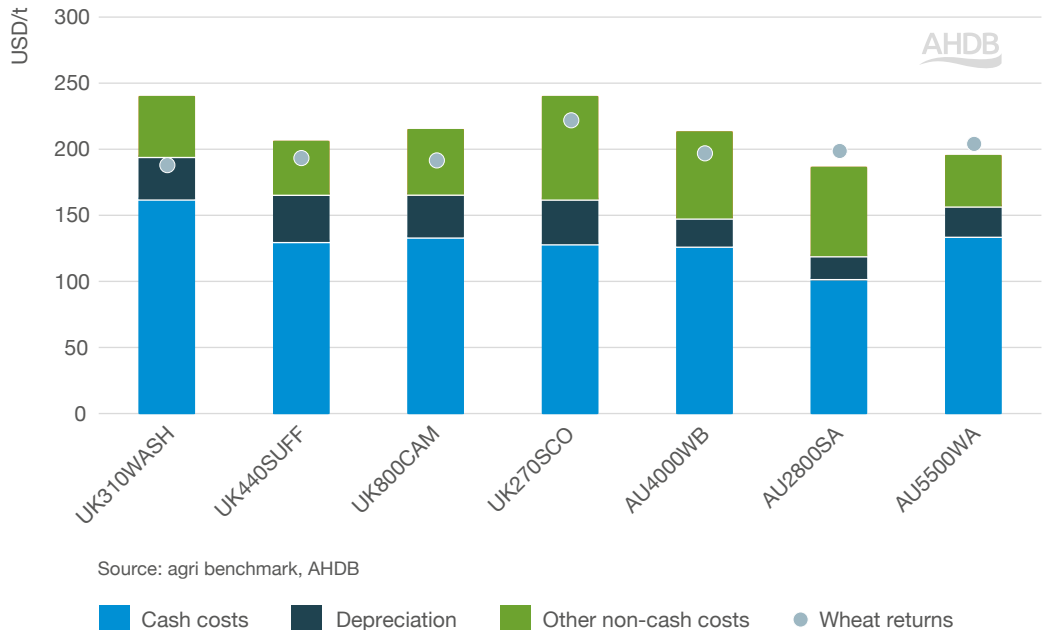
Wheat

Wheat is produced in most of Australia's six states, but Western Australia and New South Wales are the largest wheat producers. Western Australia contributes to around half of Australia's total wheat output, with production taking place on over 4,000 farms between 1,000 and 15,000 ha. For comparison, the average English farm size in 2019 was 87 ha. Wheat is grown in rain-fed conditions, with good winter rainfall particularly favourable for yields. Soil fertility is relatively poor in Western Australia. New South Wales, on average, comprises around a quarter of the Australian wheat crop.

Over the crop years (2015/16–2019/20), UK wheat yields averaged 8.4 t/ha, whereas Australian wheat yields averaged 1.9 t/ha. In the past few years, prolonged drought has led to a substantial reduction in the Australian wheat crop, and cash revenues have been lower as a result.

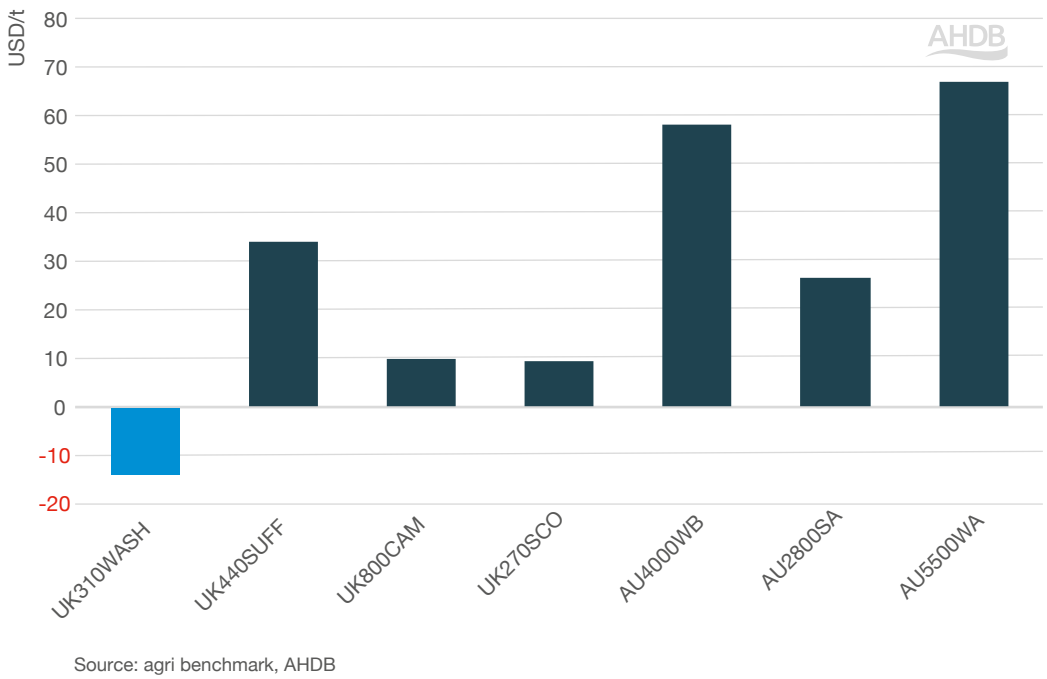
Figure 19 shows a comparison of typical UK and Australian wheat production costs and returns (2014–18 average). For the typical farms shown, the cost of producing wheat in Australia is generally lower than in the UK, with depreciation costs tending to be higher on the UK farms. To some extent, the Australian farmers likely benefit from economies of scale, given that they are much larger in size. Nevertheless, there are high costs involved in getting crops to port. A report by the Australian Export Grains Innovation Centre (AEGIC) in 2018 stated that Australia's supply chain costs were higher than those of its key competitors, with the exception of Canada.

Figure 19. **Typical farm wheat production costs and returns 2014–2018**



In terms of profitability on a full economic basis, all of the UK farms shown in Figure 19 made a loss over the five years 2014 to 2018, whereas most of the Australian wheat farms made a profit. This is despite the fact that drought has resulted in low Australian crop yields in the past few years, which will have had an adverse impact on revenues generated.

Figure 20. **Typical wheat farm profits (returns minus costs) 2018**



Barley

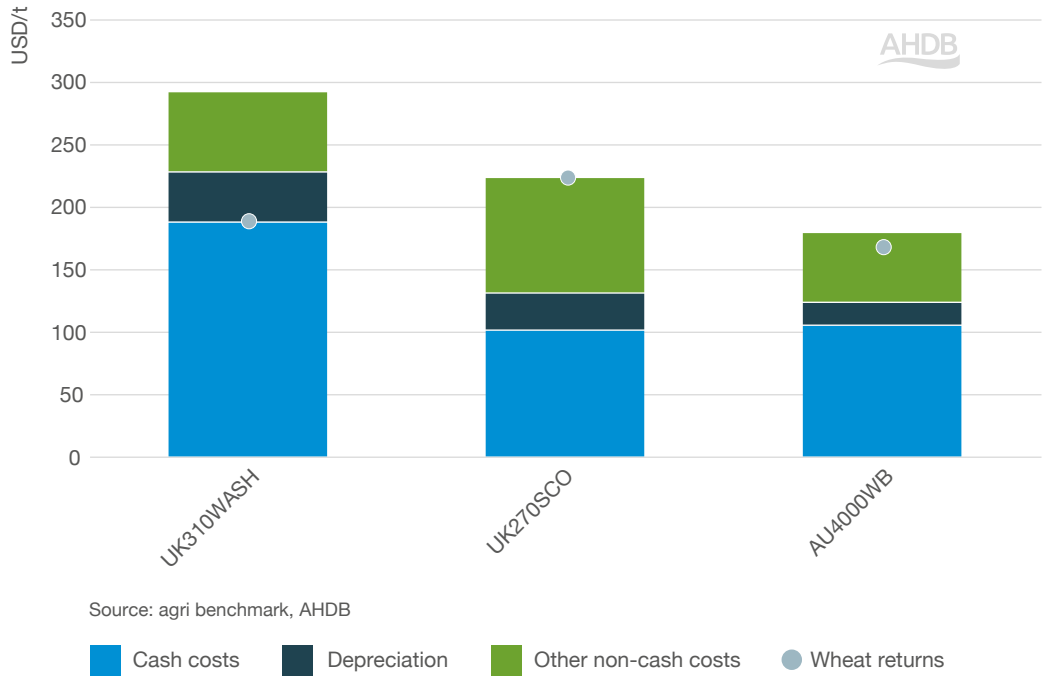
Barley is often the second most important grain crop grown in Australia after wheat. From an agronomic perspective, barley is more tolerant of drought, frost and disease and can be grown in a wider range of conditions. The majority of barley grown in Australia is two-row cultivars which are mostly spring barley but grown as winter crops.

Western Australia is the top barley producing state in Australia, accounting for around 40% of the country's production.

Australian barley yields averaged 2.3 t/ha from 2015/16 to 2019/20, while UK barley yields averaged 6.3 t/ha. Spring barley accounts for just over 60% of the UK barley crop (previous five-year average).

Figure 21 shows that the typical Australian farm has lower barley production costs than those in the UK due to lower depreciation and non-cash costs. The relative size of the Australian farm, which is over 10 times larger than the UK farms shown, will be a key factor in the lower costs involved. However, it is difficult to extract further insight as data for only one Australian typical farm is available.

Figure 21. **Typical farm barley production costs and returns 2014–2018**



The type of barley grown will also influence costs and revenue, with malting barley commanding a premium over feed barley and requiring higher nitrogen applications.

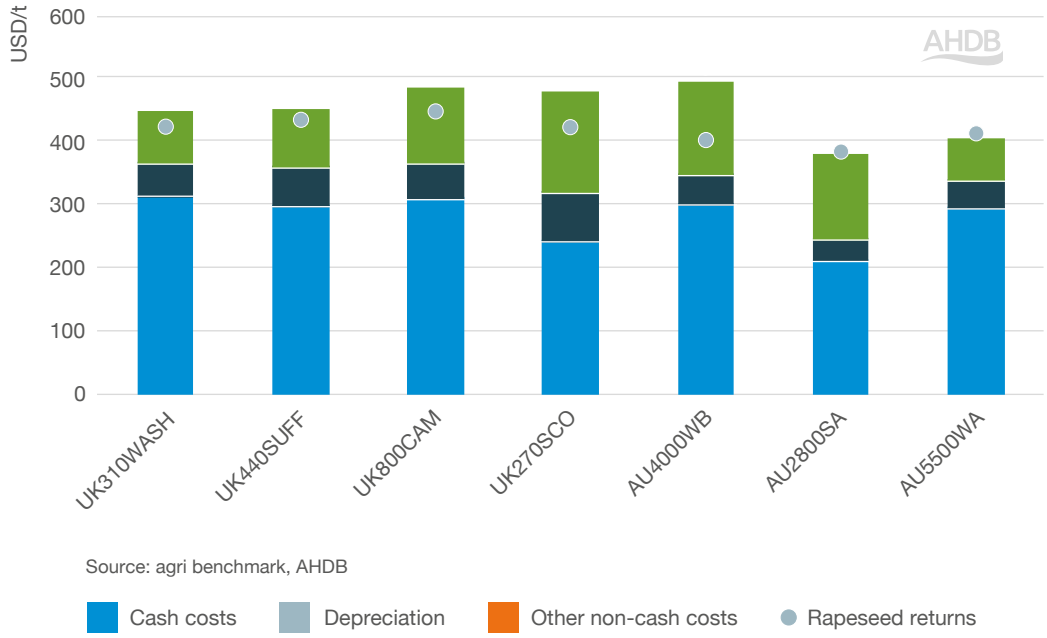
Rapeseed

Rapeseed (or canola as it is called in Australia) is a fairly risky crop to grow in both the UK and Australia. The area planted to rapeseed in the UK has declined steadily since the peak in 2012 (756K ha) to a low of 380K ha in 2020. Much of this decline in planting area has arisen due to increasing challenges presented with growing rapeseed in the UK. A recent ban on neonicotinoids has reduced the ability for UK farmers to combat cabbage stem flea beetle, and as such, yields in recent years have been drastically reduced. This has made growing the crop at a profit more difficult. However, rapeseed prices across the UK and Europe have been surging in the current marketing year, and therefore we could see an increase in the planted area of OSR in the UK in the coming year. In Australia, canola plantings have remained steady, at around 2–3m Mha, over the past 10 years (with the exception of 2019/20). Farmers in Australia are able to use neonicotinoids.

As for wheat and barley, Western Australia is the largest canola producing state in Australia, accounting for around 48% of the country's total output (previous five-year average).

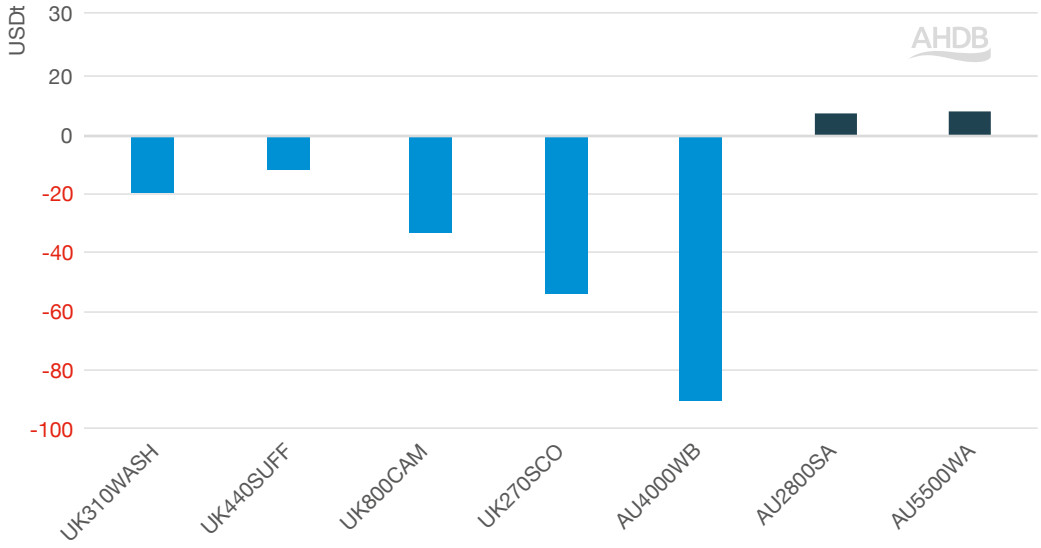
Australian canola yields averaged 1.3 t/ha (2015/16–2019/20) compared with 3.5 t/ha in the UK. Approximately 20% of the Australian canola crop is genetically modified (GM), but growing GM canola in South Australia, the Australian Capital Territory (ACT) and Tasmania is banned.

Figure 22. **Typical farm rapeseed production costs and returns 2014–2018**



As for wheat and barley, rapeseed cost of production in Australia is lower than in the UK, as shown in Figure 22. Rapeseed returns for the typical farms shown are at similar levels, and so, with the exception of AU4000WB, the Australian farms growing rapeseed are more profitable than their UK counterparts (Figure 23).

Figure 23. **Typical farm rapeseed profits (returns minus costs) 2014–2018**



Source: agri benchmark, AHDB

AGRICULTURE POLICY IN AUSTRALIA

Over the past three or so decades, Australian agricultural policy has undergone significant changes. While different in nature to the policy changes currently ongoing in the UK, specifically England, where we have the most details at the moment, these sweeping changes had a significant effect on the Australian agricultural industry. In this section, we take a look at what these policy changes were and what current agricultural policy looks like in Australia.

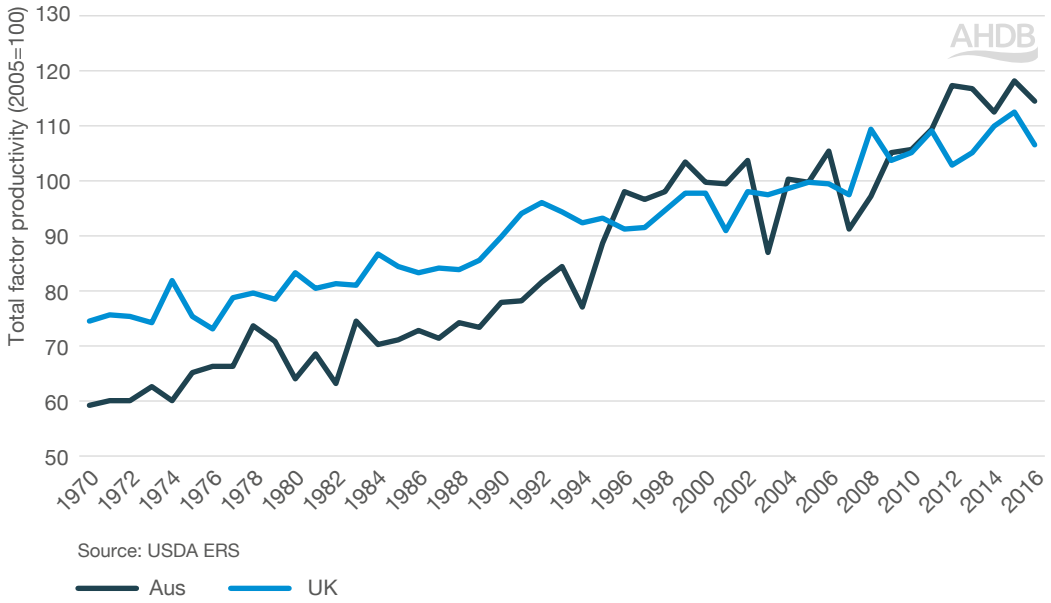
History of Australian agricultural reform

Back in the 1990s, Australian agricultural policy was structured in order to provide protection to domestic farmers, with statutory marketing boards giving farmers monopolistic power over domestic markets, while the Australian Government used to offer support for products that were exposed to the global market. This was done to promote a higher domestic price, reduce price volatility of products exposed to the global marketplace and try and offset the perceived disadvantages of remoteness. While protection for extensive agriculture sectors was much lower than the likes of Europe and North America, support for more intensive sectors (such as eggs, tobacco and dairy) was much higher.

Back in 1980, Australia had 65 statutory marketing boards. Competition policy reforms took place through the 1980s and 1990s, which followed on from the 1987 Uruguay Round of trade negotiations. Various trade liberalisation agreements that came out of these trade negotiations reduced price volatility in agricultural commodities, while lower tariffs on farm inputs diminished the case for providing farmers with monopoly power through statutory marketing boards. The result of this was the almost total reduction in statutory marketing boards in Australia and reduced direct government intervention in agricultural marketing. Currently, the only statutory marketing board that remains out of the 65 operating in 1980 is the Rice Marketing Board of New South Wales.

In Australia, statutory marketing was seen to distort the efficient allocation of resources in the agricultural sector and reduce productivity growth. Marketing reforms that took place in the 1990s in part contributed to productivity growth seen in Australia between 1990 and 2020, particularly in the cropping and dairy industries. However, it is worth noting that productivity growth, particularly in the cropping sectors, is heavily influenced by the climate in Australia. Previous assistance measures provided by the government were seen to reduce farmers' incentives to find better ways to manage risks and improve productivity. The cost of which was borne by domestic consumers (in the form of increased prices) and taxpayers (for government expenditure for support). It was also seen to stifle incentives for innovation and the contribution of agriculture to the economy.

Figure 24. **Agricultural total factor productivity, 1970–2016**



Overall, Australian reforms have been driven by an acknowledgement that increasing efficiency and productivity is the best way to compete. While the initial reform process was difficult, the period of structural adjustment has had a significant, positive impact on the sector's productivity.

Figure 25a. **Australia beef total factor productivity**

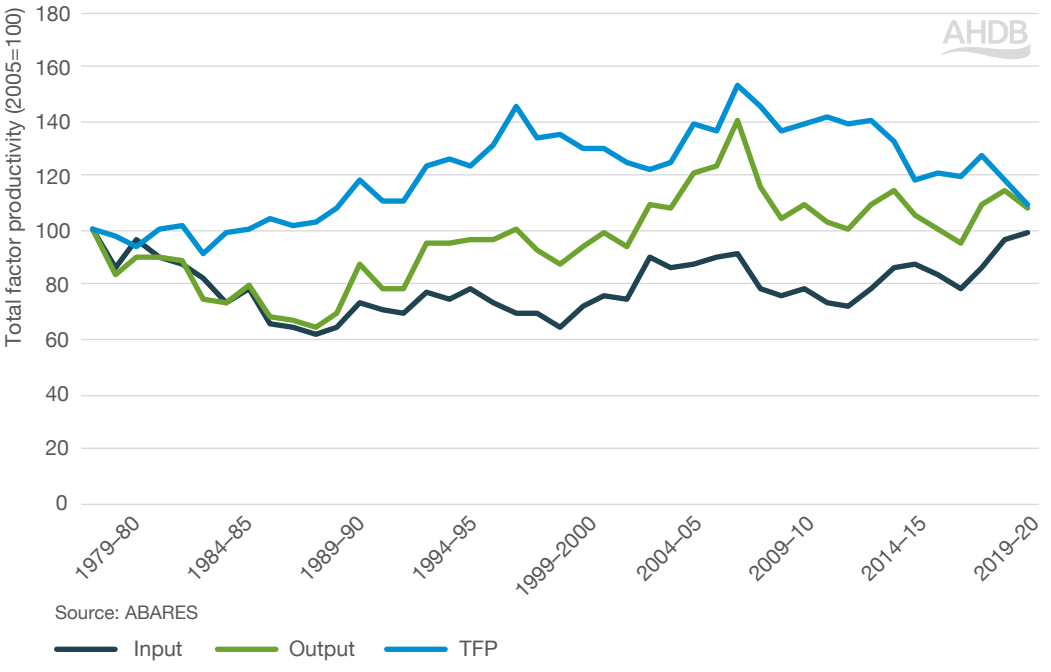


Figure 25b. **Australia cropping total factor productivity**

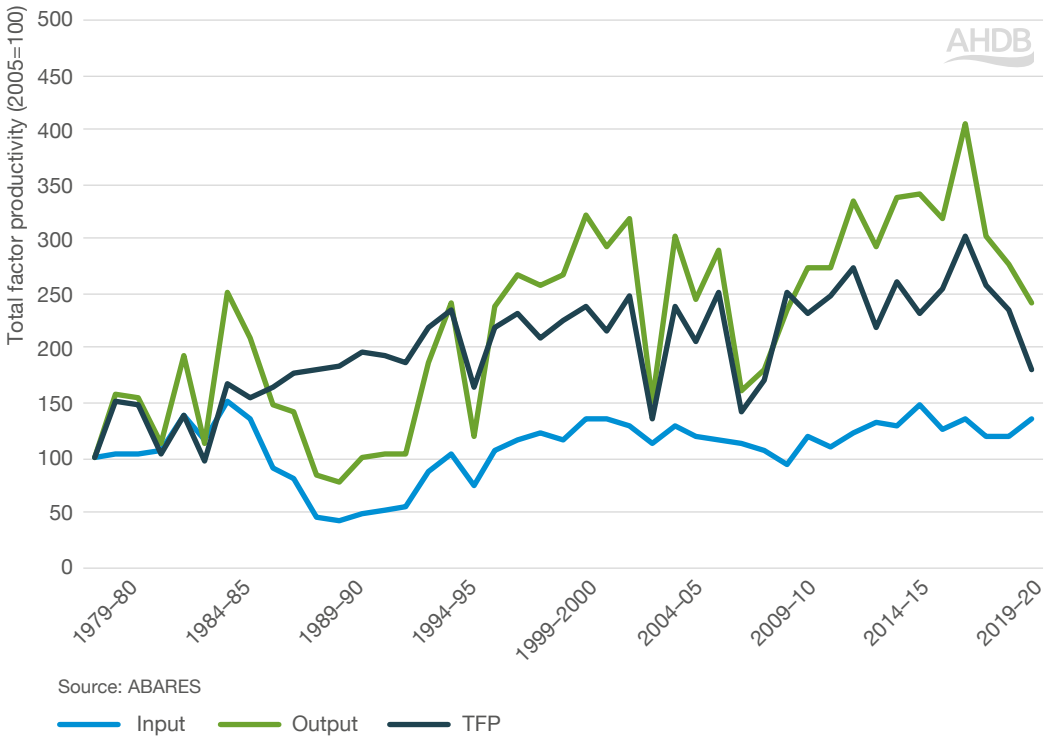
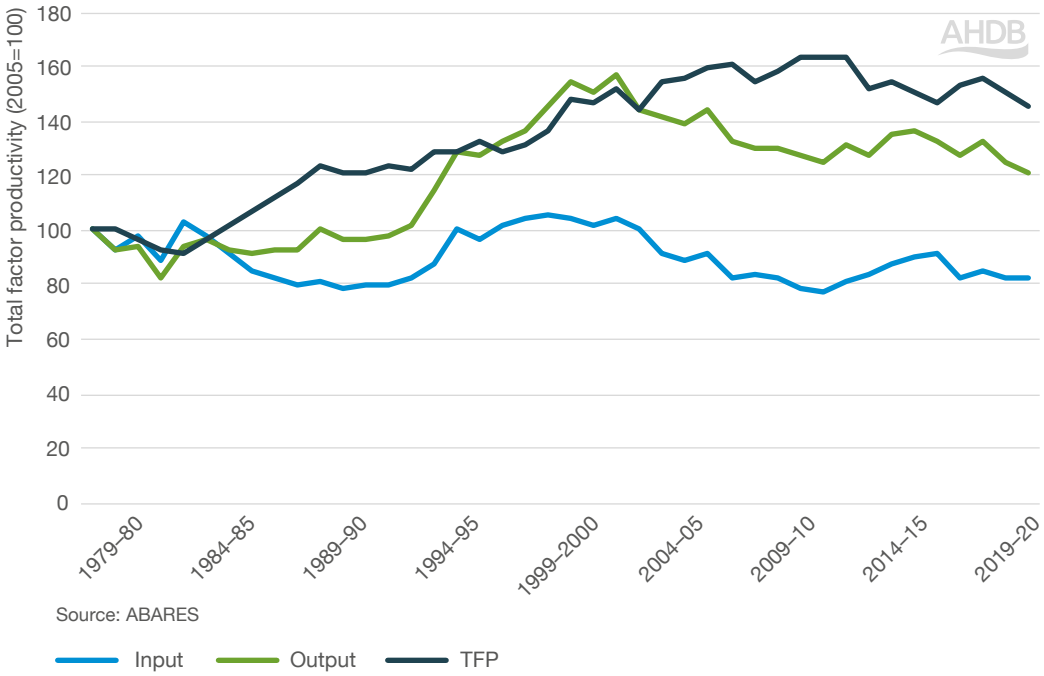


Figure 25c. **Australia sheep total factor productivity**

Figure 25d. **Australia dairy total factor productivity**



Current policy

Currently, Australia is recognised by the OECD as having one of the lowest producer support estimates in the world, averaging around 2% of gross farm receipts in 2020. This compares to around 19% for the European Union, of which the UK was still a member in 2019. The **2015 Agricultural Competitiveness White Paper** set out a number of reforms, primarily aimed at reducing unnecessary regulatory burdens on farmers in order to promote productivity. Agricultural policy in Australia currently has five priority areas:

1. A fairer go for farm business. Helping farmers get better farmgate returns. Fairer competition, better regulation and an improved tax system.
2. Building the infrastructure of the 21st century. Planning ahead and thinking innovatively about infrastructure. This includes securing water supplies.
3. Strengthening the approach to drought and risk management. Practical measures to help manage drought and other risks facing farmers.
4. Access to advanced technologies and practices. This includes better research and development (R&D) and skilled workers.
5. Accessing premium markets. Improving international trade to grow farm businesses.

The Australian Government no longer offers any market price support to producers. Instead, funds are targeted towards supporting producers to manage risk, developing domestic and export markets for Australian products and research programs. Most of these are aimed at helping producers improve productivity and efficiency, facilitate structural adjustment, adapt and adjust to climatic change, and improve the environmental management of natural resources.

A good example of Australia's move from producer specific support to general services support is the rural research and development (R&D) system. Australia has 15 Rural Research Development Corporations (RDCs) that cover almost all agricultural industries, as well as the fisheries and forestry industries. Five are Commonwealth statutory organisations and 10 are industry-owned companies. The RDCs facilitate programs by directing research funds and fostering R&D coordination, cooperation and co-investment between industry and government.

The RDCs are funded primarily by statutory R&D levies on various commodities, with matching funding from the Australian Government. To expand Australia's rural R&D efforts, the Government matches expenditure on eligible R&D, generally up to 0.5% of the determined industry gross value of production. RDCs are accountable to both industry and government, and importantly, levies for R&D must be initiated at the request of industry.

Managing agricultural risk in Australia

Managing agricultural risk from one year to another and over longer cycles is a significant challenge that all farmers face. In Australia, government policy encourages farmer preparedness to manage risks while providing the necessary assistance in extreme events. Australia has a highly variable climate, with drought being a key and recurrent risk farmers have to manage. As mentioned previously, drought can be a key driver for agricultural productivity. Prior to 1989, drought was treated as a natural disaster and farmers were supported by emergency farm input subsidies. These measures were often seen as poorly targeted and created disincentives for effective risk management. Furthermore, it was considered that these measures tended to impede normal structural adjustment and reduced incentives for farming businesses to respond to market signals or exit the industry. In 1992, policy was reformed to view drought as a recurrent feature of the Australian landscape and not a natural disaster. A number of reforms were introduced to help improve farmers' ability to adapt and manage risk in order to be more self-reliant in managing drought.

Australia's current agricultural risk management policy and assistance measures enable farmers to prepare for, manage through and recover from drought and other hardships. These include the Farm Management Deposits Scheme (FMDs), the Farm Household Allowance, Rural Financial Counselling, Drought assistance concessional loans, the Managing Farm Risk Programme and availability of seasonal forecasting tools for improved decision making. FMDs are run through the Australian Taxation Office and allow primary producers to set aside tax-deductible deposits of up to $A800 000 during prosperous years, which they can draw upon when times are tough. Further information about these assistance measures can be found at agriculture.gov.au/ag-farm-food/drought/assistance

The Agricultural Competitiveness White Paper also contains a number of additional measures to strengthen approaches to risk management in the agricultural sector and assist farmers in preparing for and managing drought and other risks they face.

Overall, this transition has induced major structural change in the Agricultural industry, and while various developments have provided relatively less volatility in farm outputs and inputs, it has meant that Australian farmers now have to be much more self-reliant in terms of managing risks that are involved in commodity production. Next, we take a look at how the Australian sheep industry was affected by these major policy changes.

The contraction of the Australian sheep flock

Case study from Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES)

The demise of the Wool Reserve Price Scheme (WRPS) in 1991 was the single most influential policy change to affect Australia's sheep flock. Without a guaranteed high price, the incentives to produce wool were greatly reduced. Prior to the removal of the WRPS, the global demand for wool had been weakening because of high prices, influencing final consumers to move away from woollen garments towards synthetics, spurring the global synthetic fibres industry. Traditional buyers of Australian wool were also driven away, including one of Australia's largest markets, Russia, which used Australian wool in military uniforms.

The accumulation of 4.6m bales of wool under the reserve prices scheme of the 1980s depressed world wool prices from 1991 until the stockpile was sold off in 2001 (Massy 2011). After averaging around 1,100 Australian cents per kilogram in 1987–88 and 1989–90, the eastern market indicator price of wool slumped by around 50% to average 655 cents per kilogram over the decade from 1991–92 to 2000–01 (ABARES 2020). This prolonged period of low wool prices accelerated a much longer-term shift from sheep to crop production across Australia's wheat-sheep belt as productivity improvements increased the profitability of cropping (Figure 26). The number of sheep in Australia fell by more than half—from 170 million in 1989–90 to 63 million in 2019–20, while the area of cropping increased by around 10 Mha.

The collapse of the reserve price scheme also coincided with a growing global demand for sheep meat, facilitated by global trade deregulation following the 1987 Uruguay Round of the General Agreement on Tariffs and Trade (GATT). As a result, the gross value of wool production in Australia fell from over A$12bn in 1989–90 to less than A$2.5bn in 2020–21 (in 2020–21 dollars), and the value of sheep meat production, particularly lambs, increased from around A$0.4bn in 1989–90 to A$1.1bn in 2020–21. The profitability of lamb production reduced the rate of decline in Australia's sheep flock numbers from 2010 onwards (Figure 26, red circle).

Figure 26. **Australia's national sheep flock and crop area, 1950–51 to 2019–20**

The sheep industry began to rebound in the early 2010s, mostly due to the profitability of sheep meat production. Wool prices started to recover as economic growth in China led to stronger domestic demand for fine wool garments. Additionally, demand for sheep meat by the Middle East began to strengthen. These influences had a positive impact on sheep production, effectively slowing the rate of decline in sheep numbers. Most importantly, it had an impact on how Merinos (the breed of sheep used for the production of apparel wool) were being raised, with more attention being paid to what they were being fed to yield a quality of meat closer to what comes from meat breeds. In doing so, the income earned by sheep producers (a combination of wool and meat returns) has roughly evened out between returns from wool and returns from meat. In the distant past, income from sheep production had been derived principally from wool, with income from meat accounting for only a small share of total returns. Merinos were not raised for their meat. That has changed, and the industry now regards Merinos very much as 'dual purpose' animals. There is now a much stronger focus on raising animals for both the wool and the meat markets. Unfortunately, the two droughts this decade have had a negative influence on sheep numbers. Better seasonal conditions for several seasons will be needed to bring numbers up.

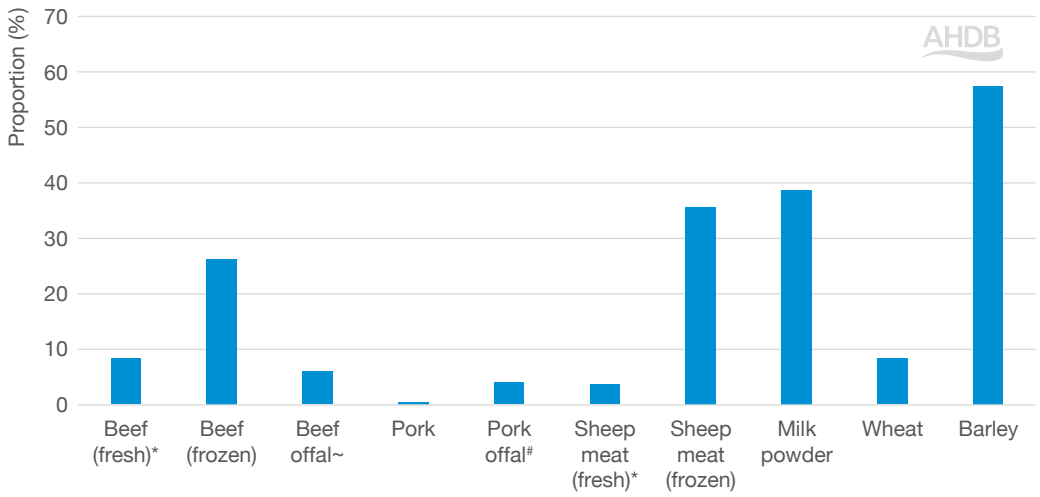
REVIEWING POTENTIAL TRADE POSITIONS

Australia already has access to a number of trade agreements, which are discussed in this section of the report.

China-Australia Free Trade Agreement (ChAFTA)

Australia's free trade agreement (FTA) with China came into force on 20 December 2015. Removal of tariffs on a wide range of food and processed products was a big win for Australia, given the size and potential of the Chinese market and its proximity relative to other major exporters. While some of the tariffs were abolished immediately, others were phased out over a number of years.

Figure 27. **Proportion of total Australian exports to China, in value terms (2018–2020 average)**



*incl. chilled; ~incl. livers and tongues; #incl. livers

Source: IHS Maritime & Trade – Global Trade Atlas®, HMRC, Australian Bureau of Statistics

As Figure 27 shows, barley, milk powder, frozen sheep meat and frozen beef exports to China comprise a considerable proportion of total Australian exports of that commodity.

Tariffs on beef (which ranged from 12–25%) were set to be removed by 1 January 2024 (i.e. eight years after the completion of the FTA). China negotiated a discretionary safeguard for beef imports (excluding offal) from Australia, which would be triggered at volumes of 170 Kt. Average Chinese beef imports from Australia were 241 Kt between 2018 and 2020. Beef consumption in China has been increasing steadily over the past decade. In 2011, China was self-sufficient in beef production. However, since then, domestic consumption has increased steadily to outstrip production. In 2021, Chinese beef and veal production was 70% of total domestic consumption, and imports have increased from 27 Kt (CWE) to 3 Mt (CWE) over the past decade (USDA).

For sheep meat, tariffs ranging from 12–23% will be removed by 1 January 2023 (i.e. seven years after the completion of the FTA), while for milk powder, tariffs of 10% will be removed by the start of 2026. There is a discretionary safeguard in place for whole milk powders, the trigger volume for which, according to Australia's Department of Foreign Affairs and Trade, is 'set well above current trade levels'.

The 3% tariff on Australian barley exports to China was removed following the completion of ChAFTA.

China's rice, wheat, maize, sugar and vegetable oil imports are subject to WTO quotas. For maize and wheat, in-quota tariffs are 1%, while for vegetable oils, they range from 8–10%. China did not provide preferential access to Australia for these products under ChAFTA (or to other countries with which it negotiated an FTA). Nevertheless, there is a review process built into the agreement to consider factors such as market access.

Despite ChAFTA, both China and Australia are currently embroiled in a trade dispute which has seen China impose an 80.5% tariff on Australian barley imports (effectively closing this market for Australian producers). There have also been issues for Australian beef, whereby they have reportedly been refused entry into China on the basis of problems with labelling and health certificates.

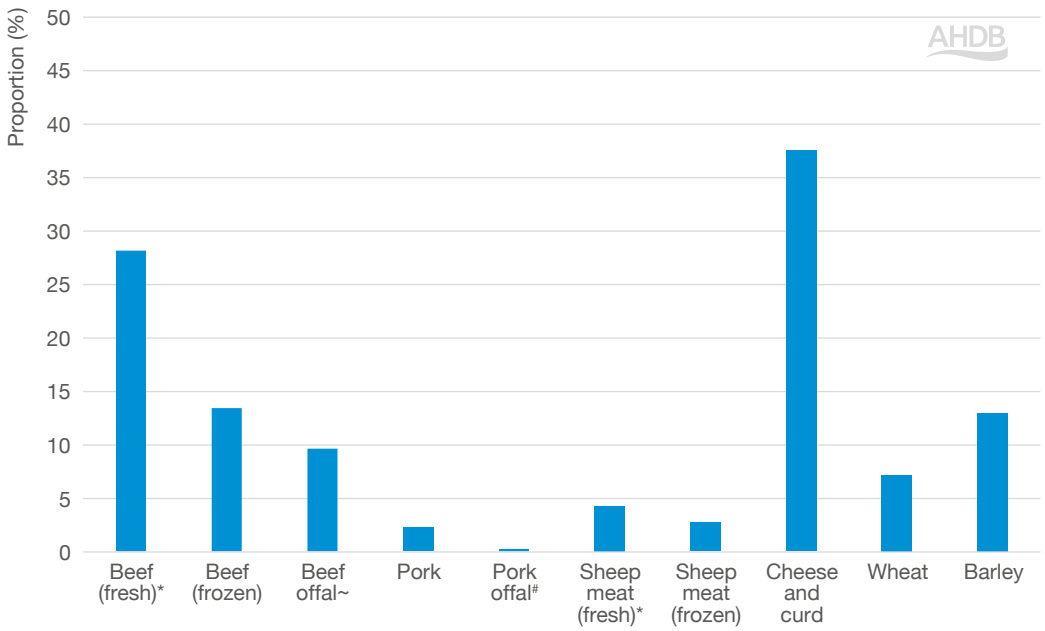
Australia is also filing a complaint to the World Trade Organisation (WTO) due to China imposing tariffs of up to 218% on Australian wine imports (under ChAFTA, previous tariffs of 14–20% were to be eliminated by 2019).

Japan-Australia Economic Partnership Agreement (JAEPA)

The Japan-Australia Economic Partnership Agreement (JAEPA) came into force on 15 January 2015. In terms of trade in goods, approximately 98% of Australia's exports to Japan would be able to have preferential or tariff-free access to the Japanese market.

The main agricultural products Australia exports to Japan are dairy and beef, as can be seen in Figure 28.

Figure 28. **Proportion of Australia exports, by value, destined for Japan (2018-20 average)**



*incl. chilled; ~incl. livers and tongues; #incl. livers

Source: IHS Maritime & Trade – Global Trade Atlas®, HMRC, Australian Bureau of Statistics

Japan's tariffs on beef imports on a WTO basis are 50%. Prior to JAEPA, Australian beef imports into Japan were subject to tariffs of 38.5%. At the start of the agreement, tariffs on frozen beef were reduced to 30.5%, with a gradual reduction to 19.5% out to 2033. Tariffs on fresh beef imports were reduced to 32.5% with immediate effect, falling to 23.5% by 2030.

Japan also negotiated a discretionary safeguard whereby, if Australian beef imports reached a certain amount, the import tariff applied would revert to 38.5%. The trigger volumes for fresh/chilled beef range from 130 Kt in the first year to 145 Kt in the tenth year. For frozen beef, the trigger volume range is 195 Kt in the first year to 210 Kt in the tenth year. After the tenth year, Japan and Australia are expected to negotiated trigger volumes for subsequent years, and until this happens, the trigger volume set at the tenth year would continue.

The average (2018–2020) amount of fresh/chilled exported to Japan from Australia was 122 Kt, while exports of frozen beef averaged under 168 Kt, so there was some opportunity for Australian beef exports to grow but also provide some protection for Japan's domestic producers (even though Japan is a net importer of beef).

Another key feature of the trade deal is that if Japan offers a better deal in terms of tariffs and market access to another country, a review of JAEPA will take place to help Australia benefit from similar concessions.

For dairy products, cheese is the main Australian export to Japan. Australia negotiated Australia only tariff-free quotas (TRQs) for various cheeses, including its main export product, natural cheese, for processing. As well as access to Japan's global cheese quota (through which 30% of Australian cheese entered tariff-free, the Australia specific TRQ allowed 4 Kt of natural cheese to be exported to Japan tariff-free, growing to 20 Kt by 2035.

Preferential Australia specific quotas were also agreed for other cheeses, ice cream and frozen yogurt.

For cereals and oilseeds, Australia was able to negotiate some concessions, such as being the only country able to export feed wheat and feed barley to Japan outside the country's quota system and tariff-free access for some types of rapeseed and vegetable oils by 2024.

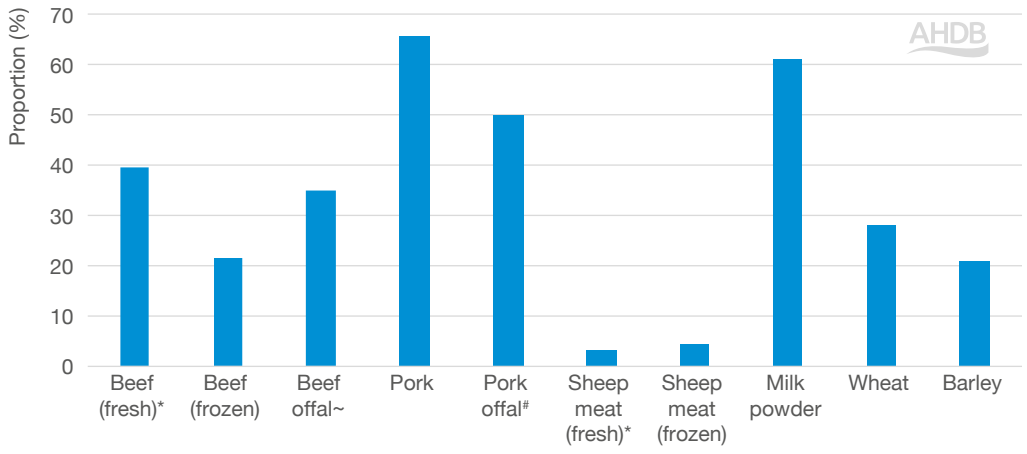
Compared to ChAFTA, the liberalisation of tariffs in JAEPA is relatively modest as there are fewer examples of complete removal of tariffs on raw food goods and where there is tariff reduction, it is over a long time frame. This is not too surprising as Japan's agriculture sector is considerably protected, with beef, dairy, wheat, rice and sugar described as the 'sacred five'.

Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)

The CPTPP came into force on 30 December 2018, and Australia is one of the original members. Prior to the inception of the CPTPP, Australia already had FTAs in place with seven of the other ten members, including Japan.

The CPTPP removes 98% of tariffs in the region, and there are additional Rules of Origin (RoO) benefits. Figure 29 shows that pork and cheese were, on average, the main Australian agrifood exports to the CPTPP between 2018 and 2020.

Figure 29. **Proportion of total Australian exports to CPTPP, in value terms (2018–20 average)**



*incl. chilled; ~incl. livers and tongues; #incl. livers

Source: IHS Maritime & Trade – Global Trade Atlas®

From a UK perspective, it's interesting to note how the trade arrangements Australia has with Japan are influenced by being members of the CPTPP. Under the CPTPP, Japan's tariffs on Australian beef imports will be reduced to 9% by 2034, which is lower than the reduction under JAEPA.

There are other examples where Australia gains further benefits in terms of agrifood trade with Japan under the CPTPP, such as removal of tariffs for certain types of cheese and additional concessions for pork and cereals exports.

This suggests that there is a precedent and, therefore, potential for the UK-Australia trade deal to be modified further under the CPTPP, which the UK has applied to join. However, the agreement in principle states that 'neither side will seek additional access or faster tariff reduction through the UK's accession to the CPTPP'.

There are a number of TRQs within the CPTPP trade bloc that are open to all members. TRQs on mainly dairy products are offered by Canada and Mexico while Japan has a wider list including cereals, dairy, sugar and prepared food products. Australia also has a Country Specific Quota (CSQ) with Japan, which includes products not covered in the general TRQ (rice, wheat, malt, processed cheese and whey).

As a member of the CPTPP, Australia also benefits from RoO criteria whereby if a product is produced from materials originating in other CPTPP countries, it counts as originating in the exporting country. For example, if Australia wants to export a product to another CPTPP member, where RoO state 70% of the product must be made/ produced from materials made in Australia, the 70% proportion can be comprised from materials from other CPTPP members.

Given the geographical proximity of Australia to most of its fellow CPTPP members, this is probably more of an advantage than would be the case for the UK.

UK/Australia agreement in principle 2021

The UK and Australia have been negotiating an FTA following the UK leaving the EU, and an agreement in principle was signed in June 2021. Tariff liberalisation is at the core of the agreement with tariffs on beef and sheep gradually eliminated over ten years and tariffs on dairy products removed over five years. All UK exports will be able to enter Australia tariff-free. Finer details still need to be agreed and will be announced in due course.

When comparing the agreement in principle that has been announced between the UK and Australia with other trade deals that Australia has secured over the past few years, there are a number of key differences. For instance in free trade deals with both China and Japan, the level of access granted to Australia wasn't quite as generous as what appears to be the case with UK and Australia. For instance for beef to both Japan and China, tariffs are phased out over a period of years, and even then are safeguarded by an upper volume limit to which this reduced tariff would apply to. Further to this, in the case of Japan, tariffs, albeit lower, remain in place even after the transition period of tariff reductions has ended, with the lower tariff level set to continue after the phase-in period. Both the Japanese and Chinese market remain protected by safeguard limits after the phase-in period of the trade deals. In contrast, the UK has granted Australia a tariff-free quota for both beef and lamb immediately upon entry into force, with full trade liberalisation after 15 years, which is a reasonably significant difference to other trade deals that Australia has negotiated recently.

What does this show?

Focusing on the recent trade deals Australia has signed with large economies such as China and Japan shows that liberalisation, or preferential access, for Australian agricultural goods has been a key outcome.

China is Australia's largest partner in trade with agricultural goods, resources, energy and manufacturing key exports from Australia to China. In ChATFA, Australia was able to negotiate tariff-free access for exporting goods across all of these sectors.

While Australia was able to negotiate tariff-free access for exports of resources, energy and manufacturing products to Japan (these are the main export goods sent to Japan excluding beef), this was not the case for agricultural goods. Nevertheless, Australia was able to concede lower tariffs from Japan. Through membership of CPTPP, these were reduced further.

From a UK perspective then it is not too surprising that Australia pushed for tariff-free access for agricultural goods. If we put things in context, though, the proportion of total UK imports of beef, pork, wheat, barley and rapeseed oil that come from Australia are less than 1% of total imports of each of these products. UK tariffs for these products have been a significant barrier to trade.

ECONOMIC MODELLING

In addition to the analysis that has been carried out in the other chapters of this report, we felt it necessary to undertake a definitive impact analysis of how a trade deal may impact the various agricultural sectors within the UK. To do this, AHDB has entered into a partnership with Harper Adams University in order to model the possible effects on a number of future trade deals upon agriculture. We have started with Australia but will also be going on to look at other potential trade partners. This will depend on how the priorities in negotiating mandates develop over the next 2–3 years.

In teaming up with Harper Adams University, we have been able to use a different modelling approach. In summary, we have used a trade network model, which has been applied to other sectors previously, but as far as we are aware, this is a new application for agricultural trade. The advantage of using a trade network model, as opposed to the General Equilibrium or Partial Equilibrium models that are more commonly used, is that it allows indirect impacts of other trading partners in a network to be taken into account. Further to this, and one of the key strengths of this model, is that it takes into consideration imperfect market conditions. Whereas other models tend to assume perfect market competition (which are almost non-existent in reality), the trade network model accounts for aspects such as monopsony's and monopoly's between buyers and sellers in a vertically related food chain. This includes the integral role that intermediaries (in agriculture this is usually the processor) play within that supply chain. For a detailed description of the approach taken, please follow this link to the detailed technical report.

The trade network model assesses four key players in any market network, which had to be decided on before the model could be run (UK and Australia having to be two of the four each time). This was done using a combination of evaluating the size of the domestic markets, key trading partners and also expert opinion on which countries where most suitable to be included. The model also assumes complete tariff liberalisation, which in the case of Australia and the published agreement in principle will happen between 10–15 years after entry and varies depending on the sector. There are a number of caveats to each of the sectors.

A key point to consider when interpreting the modelling results is that they are not a prediction of how things will change. Rather they show the effect of a new trade agreement with Australia, with all other factors assumed to remain the same. This means that the modelling results do not build in assumptions around other factors which may change in the future.

For example, commodity market prices used in the model were based on a 2017–19 three year average and are assumed to remain at this level rather than crash or boom. Factors such as labour costs and availability have been topical in recent weeks. This situation could impact on UK competitiveness in the global economy, but here again, the model assumes that the environment of recent years will not worsen or improve.

Table 22 shows the headline results for each sector. Sectors that have been omitted have been done so either because they are not covered by the AHDB levy or, in reality, no significant amount of trade between the two countries is likely. While some of the figures for Australian imports to the UK look at first glance as quite large, it must be noted that for many, the base volumes are low, and volume changes are relatively small. More detailed results, along with some commentary around the interpretation of the results, can be found in the following sections.

Table 22. **Headline results**

Sector	Domestic production	Domestic price	Imports from Australia	Exports to Australia
Lamb	-0.1% (-200 t)	-0.1%	+80.9% (+10,000 t)	N/A
Beef	No change	No change	+260.7% (+12,000 t)	N/A
Dairy (cheese)	-0.3% (-1,500 t)	-0.5%	+254% (+1,100 t)	+199% (+2,600 t)
Oilseeds	-0.1% (-1,500 t)	-2%	28,000 t	N/A

Source: AHDB and Harper Adams University

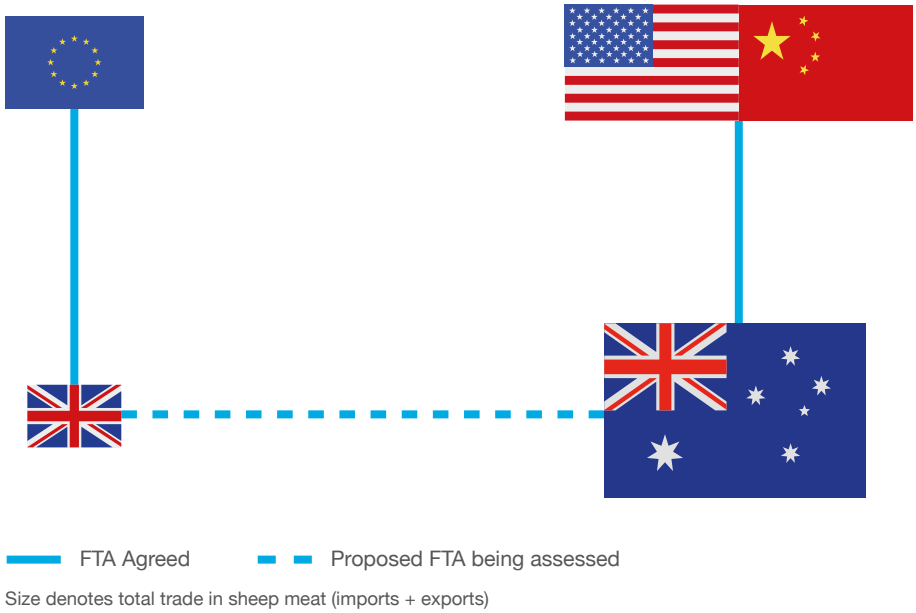
Lamb

Key points for lamb sector:

- **The model suggests there will be a large increase in Australian imports in percentage terms. However, this is from a low base, and volume changes are relatively small**
- **Total UK imports are not expected to increase significantly, with much of the increase from Australia offset by reduced imports from elsewhere in the network**
- **Results show that changes in the UK domestic marketplace (production, price etc.) are relatively small**
- **Key caveat: These results assume that China/Australia trade relations stay the same. If the relationship was to breakdown, that could see much more Australian lamb on the global marketplace looking for a home. Given the level of tariff-free access proposed in the agreement in principle, there is scope for Australia to increase the amount of tariff-free lamb destined for the UK, even after these results are taken into account**

For lamb, the chosen network consists of the UK, Australia, EU and the USA and China as a combined market. In normal circumstances, the model can only accommodate four separate nodes. However, in some instances, where two markets operate in a similar fashion, it is possible to combine them as one node. In the case of China and the USA in respect of the UK and Australia, both markets act as a major importer of sheep meat, while neither export any lamb of considerable value. They are both included, given their importance for Australia sheep meat exports (Australia's two largest markets).

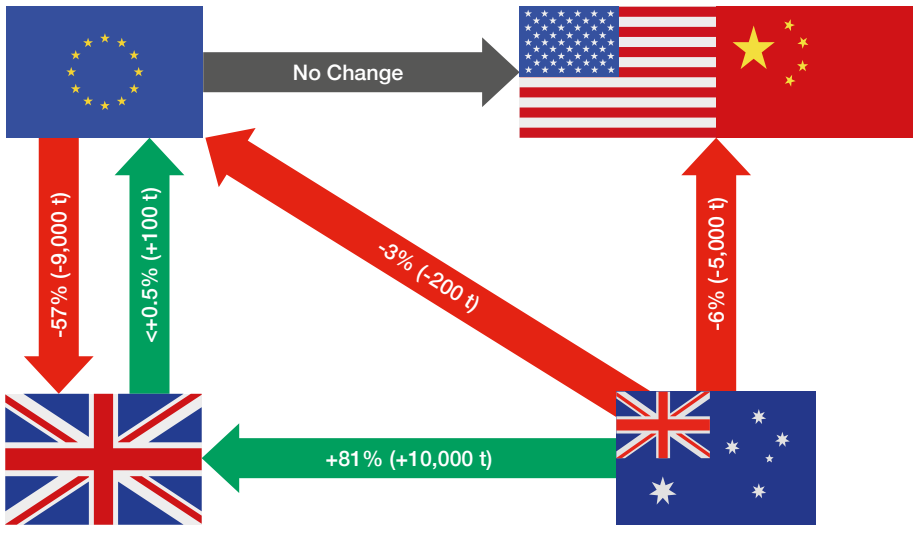
Figure 30. **Trade network model for Lamb**



New Zealand is an obvious omission from the network, given their high level of exports to the UK. However, the EU was prioritised as a network node as this was more relevant, given its importance for UK exports, and the UK also imports a reasonable amount of lamb from the EU each year (around 15,000 t, 20% of total imports), so total trade volumes between the UK and EU were significantly larger than between the UK and NZ. A sensitivity analysis was conducted, including New Zealand, in the network. This showed that the increased Australian imports did displace some of the UK imports from New Zealand. However, there was no significant deviation to the results discussed below. This gave us the confidence to continue using the EU as a node.

Figure 31 expands on the headline results for lamb, detailing the changes in of trade within the network. As can be seen, the major changes, at least in percentage terms, occur within the UK marketplace, primarily in the importing and exporting of sheep meat from within the network. The model shows an increase of imports from Australia to the UK of around 81%. However, despite this large increase in percentage terms, in volume terms, this equates to an increase of around 10 Kt.

Figure 31. **Change in trade volumes for lamb**



In spite of this increase in Australian imports, the amount of total lamb sold in the UK market doesn't alter all that much. This is because much of the increased imports from Australia are offset by a decrease in imports from the European Union (which predominately comes from Ireland). There is also a very small increase in UK exports to the EU. With this in mind, the overall effect on the domestic price is relatively small (<-0.5%). Table 23 details what effect this change in trading patterns has on domestic production, prices and the total amount of lamb available in the domestic marketplace.

Table 23. **Detailed results for lamb**

Lamb	Australia	UK
Domestic production	+1% (+3.5 Kt)	<-0.5% (-200 t)
Total lamb sold in the domestic market (incl imports)	-0.5% (-1.2 Kt)	<+0.5% (+600 t)
Retail price	+0.5%	<+0.5%
Price paid to producers	+2%	<-0.5%

Source: AHDB and Harper Adams University

From an Australian perspective, the increase in exports to the UK is facilitated by a number of aspects. There is a small increase in domestic production. However, there is a 6% decrease in exports of Australian sheep meat to the US/China market, as well as a smaller decrease in exports to the European Union. All these factors combined allow for the increase in Australian sheep meat to the UK market.

It should be noted that based on the output of this model, which assumes complete tariff liberalisation, the increase in volume from Australia in a totally liberalised scenario results in total volumes to Australia actually being lower than year one of the duty-free transition quota that was announced in the agreement in principle.

In terms of the economic explanation for the results, the intermediaries (processors) in Australia face a trade-off. On one hand they benefit from the removal of tariffs. However, in order to fill the new market, the processors will demand a higher level of output from the farming sector, which subsequently raises the domestic price in Australia. This is a result of the market power of the processors. This means that the cost faced by the processors increase and it affects the output sold by them to all of their markets. In order to mitigate the rising cost faced by the processors, and to remain competitive in their existing markets, Australia only exports a relatively small amount of lamb to the UK. However, this small amount does increase the total lamb sold in the UK marketplace, putting downward pressure on the profits of UK processors. As a result demand from the processors for UK lamb reduces slightly which has a knock-on effect of downward pressure on the UK lamb. However, overall the effect is small in percentage terms.

Further considerations

Nevertheless, there are still a number of caveats to these results. Like other economic models, the trade network model is not a prediction or forecast and assumes all other things remain equal.

For example, the model assumes that Australia retains its current preferential trading arrangements with China. If this were to change we would expect the Australian product currently traded with China to be diverted elsewhere in the global marketplace, including the UK. Indeed, China has recently been placing economic sanctions on a number of Australian products, including wine and barley.

Like other economic models, the trade network model treats all products in a category as homogenous. In reality, we know that there are differing levels of demand for different cuts of lamb in different markets. The model treats all cuts as the same and therefore the impact of carcase balance must be considered alongside the results. As such it is important to consider the modelling results within the context of the other analysis and findings of the report.

Similarly, the models starting point is average Australian production 2017–19; as discussed in previous chapters, production volumes can be volatile due to droughts, so more product will be available to export in a high production year.

Beef

Key points for beef sector:

- **Most changes take place in UK trade volumes**
- **In percentage terms, increases in Australian imports are large, but from a small base, so overall volume changes are small when compared to total trade and consumption in the UK**
- **The model suggests that the increase in Australian imports will be offset by changes in trade elsewhere in the network, meaning there is a limited effect on the UK domestic market**
- **Likely Australian beef will compete in the UK foodservice market**
- **Key caveat: The model assumes that supply and demand are constant; however, in reality, this changes. In the UK, these results are actually against a backdrop of declining beef demand. This needs to be taken into account when assessing these results**

For beef, a network of UK, Australia, EU and the USA was chosen. Again the EU was chosen because of its importance for both imports and export of beef from/to the UK. Further to this, with beef, the integrated nature of both UK and EU (particularly Irish) beef supply chains had to be considered. The USA was chosen due to it being the second-largest market for Australian beef after Japan. Additionally, the USA also sends small amounts of beef to both the EU and UK, where Japan does not (apart from very small shipments of highly-priced speciality beef such as Wagyu). Given the model takes into account indirect impacts within other markets, we thought it most appropriate to choose the USA. The South American MERCOSUR trade bloc are also prominent exporters of beef and were considered in the initial formulation of the network. Sensitivity analysis was carried out using MERCOSUR in place of the USA, and this did not fundamentally alter the results.

Figure 32. **Trade network model for beef**

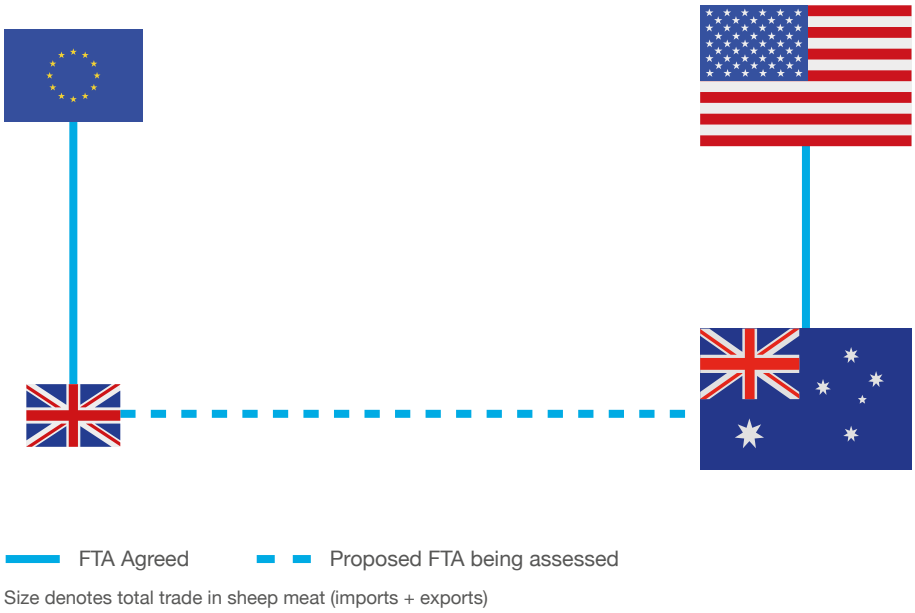
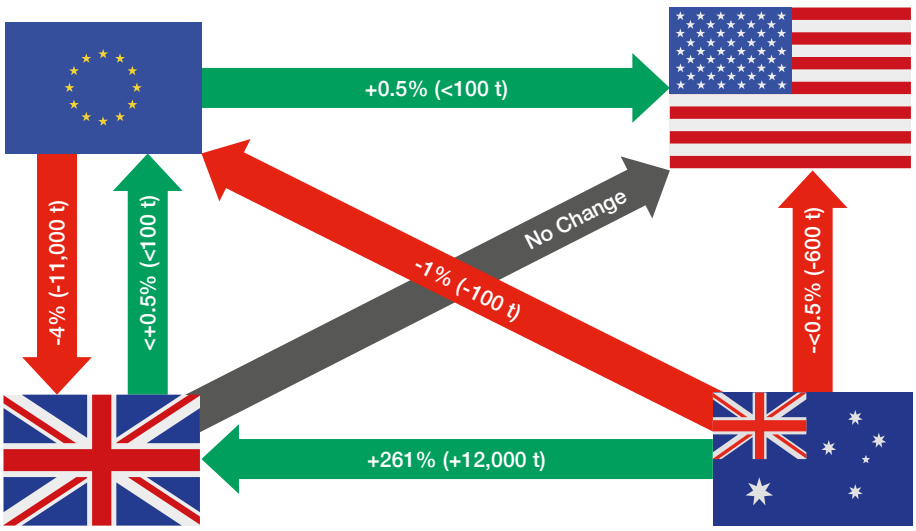


Figure 33 further expands on the headline results for beef detailed at the start of this chapter. In trade volume terms, the largest change in trade is unsurprisingly from Australia to the UK. The model predicts a 261% increase in beef exports to the UK in a fully liberalised trade scenario. In actual volume terms, this is an increase of around 12 Kt. Again, like lamb, this is from a relatively small base. Putting this into context, the UK imports around 360 Kt of fresh/frozen beef each year.

It is likely that Australian beef, like most other imports to the UK, will compete for space in the foodservice market. With that in mind, the model has predicted that imports from the EU will decline by 4% or 11 Kt. There is also a small increase in exports of beef from the UK to the EU. This reiterates the need for trade between the UK and EU to be as frictionless as possible to ensure that any increase in competition to the UK market can, where necessary, be complemented by continued free access to the EU market. Additionally, beef, as well as lamb exports, are currently restricted from being imported to Australia from all countries with the exception of New Zealand, which is why no inward trade is displayed for Australia in the network.

Figure 33. **Changes in trade volumes for beef**



Due to the substitution in suppliers to the UK market, in a similar fashion to lamb, there isn't a great deal of change within the domestic marketplace. There is a small increase in overall supply to the market but not enough to impact the prices or production within the UK.

The economic explanation for beef is similar to lamb. However, in the case of beef the buying power of the Australian intermediaries (processors) is higher, which explains why the impact of increased demand from the farming sector is more dramatic. In order to mitigate this increase in cost faced by these companies, they reduce the level of output sold in the domestic market of Australia. This explains why the increase of exports to the UK is limited.

Further considerations

Similar caveats that were considered for the lamb results, such as trade with China, carcase balance and changes to Australian supply, are also factors that need to be considered when interpreting the results for the beef sector. In addition, the model assumes that demand and supply in the UK remain stable. In reality, there is a backdrop of reducing demand for beef in the UK over the past 10 years. How this develops going forward is uncertain. From a demand side, the beef market is set to remain relatively tight over the next couple of years, based on our most recent Agri-market outlook. However, as we know, trade deals and the consequences of them tend to develop over 5–10 year time frames, and so where supply and demand sit in that time frame is a little more ambiguous. Furthermore, it's worth noting that a significant proportion of the UK beef market is operated by Irish owned processors. These Irish-owned businesses may show a high preference towards EU imports.

Table 24. **Detailed results for beef**

Beef	Australia	UK
Total output sold in the domestic market	<-0.5% (<-100 t)	<+0.5% (+1.5 Kt)
Total output sold by the farming sector	+1% (+11 Kt)	No change
Domestic retail price	<+0.5%	No change
Price paid to producers	+0.1%	No change

Source: AHDB and Harper Adams University

Dairy (cheese)

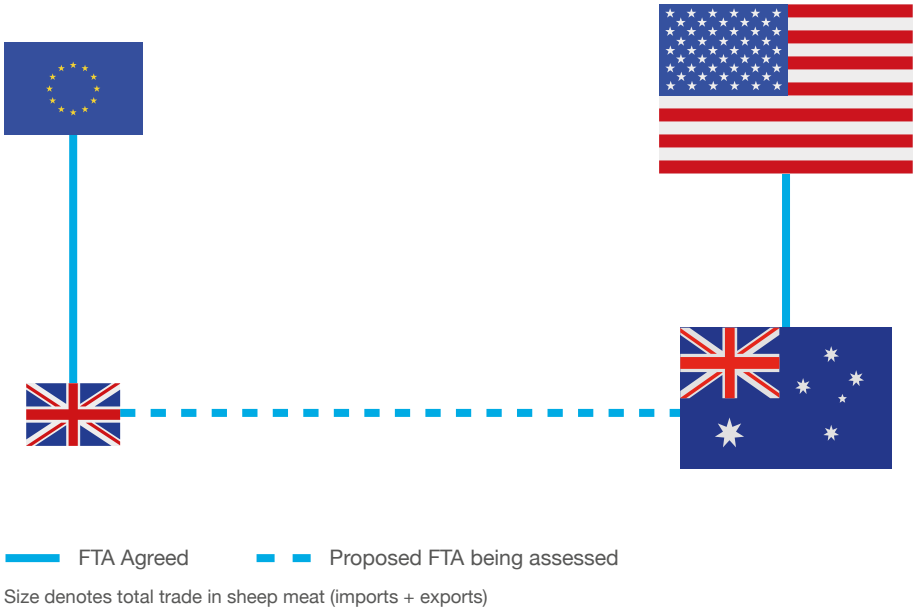
Key points for dairy sector:

- Dairy just considers cheese as a proxy for the sector
- There is more movement across the whole network than for other sectors
- Unlike beef and lamb, Australia actively imports cheese and so is a potential opportunity for the UK
- Large volume changes mask the small base figures, so overall volume changes are small
- Increased trade to Australia may lead to a new challenge for UK farmers. In order to take advantage of the opportunity in Australia, the model suggests the UK market may have to reduce the price paid for cheese in order to be competitive in the Australian marketplace

The dairy sector can be complicated to model, given the range of different products that are derived from primary milk production. For this reason, we chose to focus on a particular product, cheese. This was done as it was viewed as the product best suited for long-distance trading and the most likely product to be impacted by a UK-Australia FTA, considering what the UK and Australia currently import and export.

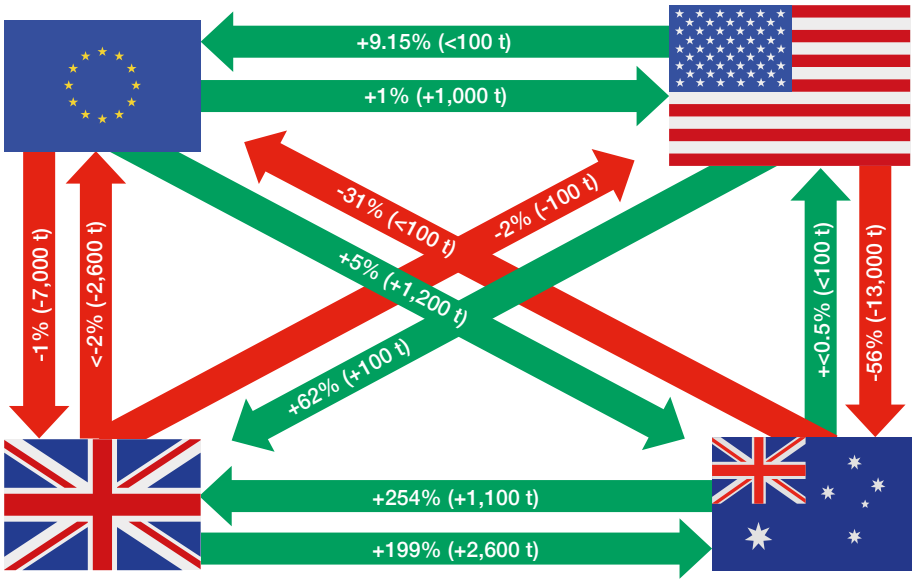
For the network itself, UK, Australia, EU and the USA were chosen as the network nodes, the same as for beef. For similar reasons as beef, the EU is an important trading partner for the UK with regards to both imports and exports. The EU is also an important supplier to the Australian and US markets. The USA was primarily picked due to the increasing importance of that market from a UK cheese export perspective.

Figure 34. **Trade network model for dairy (cheese)**



For dairy, there is observably more movement in the market than for the beef and lamb sectors, with all nodes within the networks displaying a movement in trade volumes. Unlike beef and lamb, Australia actively imports dairy products as well as exporting them, which means that the UK has a potential offensive interest in cheese, unlike the other two sectors. Like beef and lamb, base volumes between the UK and Australia are relatively small. Nevertheless, the increase of 199% in cheese exports equates to an increase of around 2,600 t. This is generally product that has been diverted from the EU market, as opposed to an increase in domestic production. In fact, the model actually predicts a very small decrease in the domestic output of cheese from UK agriculture. An indirect effect of the signing of a trade deal is a decrease in cheese exports from the USA to Australia. This is likely caused by an increase in competition in Australia's domestic market. This leads to an increase of cheese being exported from the USA to the UK, demonstrating how a trade deal not only impacts the trade flows between the two partner countries, but also countries within an existing trade network.

Figure 35. **Changes in trade volumes for dairy**



The economic explanation for these results are explained by the strategic behaviour of the processors in both countries. For the UK, the new market in Australia offers UK companies a good opportunity to make additional profits from exporting product. However, given that Australia is a competitive market, in order to be competitive, UK companies have to reduce the output sold in the UK market which in turn will reduce demand, and therefore the price paid to farmers. This allows the processors to be competitive in the Australian marketplace and take advantage of the new agreement. It should be noted that this is a scenario at commodity level: speciality cheeses, and those that have a unique selling point usually have a different competitive landscape. The drop in output and price in the UK is also cause by increased competition after the agreement is signed.

For the Australian processors, this strategy isn't feasible as they already make more profit in their existing markets than they would in the UK market. Therefore, in order to fill the new market opportunity, they must increase supply from the farming sector by increasing the price paid to produces. However, the price increase is only small which allows Australia to export a similar amount to existing markets, while also being able to take advantage of the new opportunity in the UK. The decrease in total cheese sold in the Australian marketplace is caused by increased competition in the Australian marketplace, which disincentives exports to Australia from third countries. However, it is important to highlight that the overall effects are relatively small, implying that the impact of the agreement will not cause dramatic changes in the Australian or UK dairy industries.

Further considerations

Similar caveats that applied to the other livestock sectors also apply to dairy. Notably, changes in trade with China and cyclical nature of Australian production that is often affected by climatic factors. It should be noted that when calibrating the model for dairy, farmgate prices used to compare the relative competition in the market were done so on a milk for cheese price equivalent. This is a standard metric used for converting farmgate liquid prices to a more comparable price when assessing cheese, taking into account the relative quality of milk in different countries. In both Australia and the UK, the increased competition in the marketplace actually leads to an increase in retail prices, albeit very small, in both countries.

Table 25. **Detailed results for dairy**

Dairy	Australia	UK
Total output sold in the domestic market	-4% (-9 Kt)	-1% (-7 Kt)
Total output sold by the farming sector	+0.5% (+1 Kt)	-<0.5% (-1.5 Kt)
Domestic retail price	+<0.5%	+<0.5%
Price paid to producers	+0.5%	-0.5%

Source: AHDB and Harper Adams University

Oilseed rape (OSR)

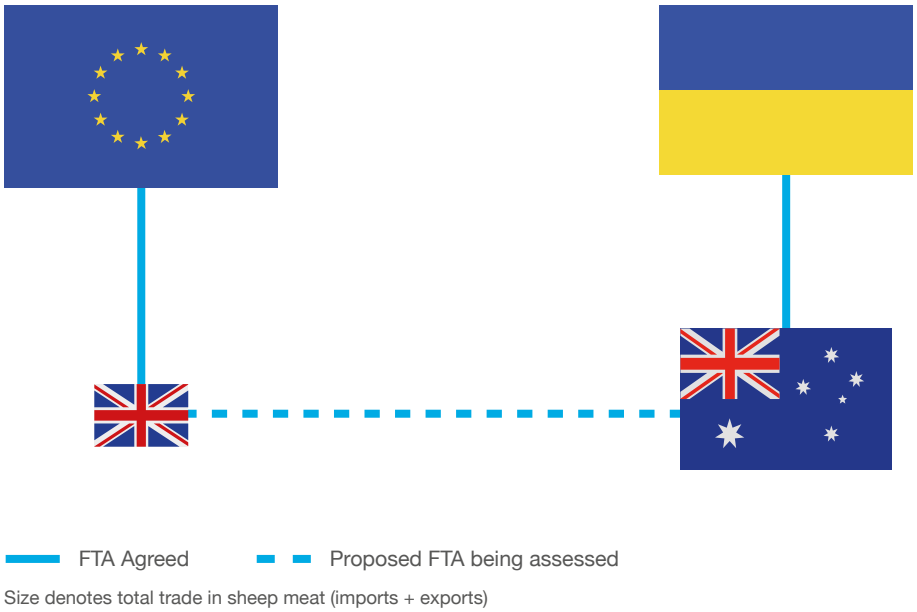
Key points for oilseed rape:

- **The model suggests there will be much less impact of the trade deal on OSR than for other sectors. This is because trade is already more exposed to the global marketplace**
- **An increase in Australian exports to the UK relies on an increase in domestic production in Australia, so other factors such as weather and Australian OSR yield need to be factored in when considering impacts on the UK market**

Like dairy, the oilseed rape market can be a difficult one to model, especially within the parameters of the trade network model. This is due to the variety of different stages that oilseeds can go through in order to reach their final market. For this reason, we decided to model the primary stage of the oilseeds market. That is, the selling of the oilseeds to (most likely) a crushing facility, and so the model considers trade and production in oilseeds only and excludes the rapeseed oil and rapeseed meal by-products of the supply chain.

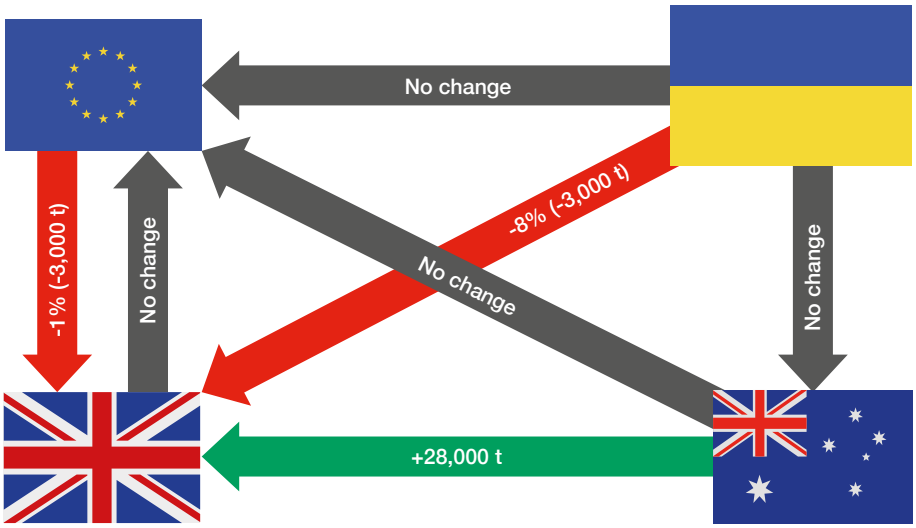
For the network, aside from Australia and UK, we chose the EU and Ukraine as the other two nodes to the network. Trade in oilseeds between the UK and EU is integral to the UK supply chain, with almost all of the UK's total oilseed trade happening with the EU. Ukraine is also a major player in the EU market and exports small amounts to the UK, so felt this was the most appropriate country to include as the fourth node.

Figure 36. **Trade network for OSR**



For oilseeds, the results of a trade deal are much more muted than in other sectors. This is perhaps due to the fact that, to some degree, oilseeds from a UK perspective are already more exposed to the global marketplace than some livestock sectors, which are generally provided with greater tariff protections. However, the free trade agreement does have some impact on oilseeds. This may surprise some people given the UK Global Tariff for oilseeds is 0%. However, the model shows that non-tariff barriers will reduce and so trade will increase due to an overall reduction in trade friction. The major changes within the network occur in the facilitation of trade between Australia and the UK. However, at an extra 28 Kt, this equates to around one extra vessel. While not insignificant to UK imports, which are generally quite small, this increase in exports from Australia is relatively small compared to their total exports of oilseeds (1.9 Mt per annum). Elsewhere in the node, there are also slight decreases in imports to the UK from both the EU and Ukraine.

Figure 37. **Changes in trade volumes for oilseed rape**



The increase in imports to the UK market does put slight downward pressure on the imported and domestic pricing of OSR as the overall supply of OSR increases. However, it should be noted that this increase in trade from Australia is facilitated by additional production, as opposed to pivoting from other markets.

Australia is a net exporter of oilseeds and the agreement offers Australia the opportunity to increase the level of current exports. This will increase the level of competition in the domestic market of the UK. This higher level of competition plus the net increase in imports in the domestic market of the UK will depress both the domestic and imported prices. The decrease in the domestic price, on the other hand, will disincentivise domestic production causing a decrease of UK farmer's share of the market. Australia will increase the production of the farming sector in order to supply the new market. However, this increase is marginal and will not have a large effect on the market.

Further considerations

Again, similar caveats apply to OSR as to the other commodities, in particular this result is that this does rely on the extra capacity for oilseeds exports from an Australian perspective. While this may be feasible in a year with good yields, the effects of weather in Australia can have a significant impact on the countries yield and output. While a free trade agreement may allow for more facilitation of trade between the two countries with the reduction of some trade barriers, the additional factors at play that widely determine the effect of OSR and cereal markets more generally will likely have a more influential effect on the UK domestic market.

Table 26. **Detailed results for OSR**

OSR	Australia	UK
Total output sold in the domestic market	No change	+1% (+20 Kt)
Total output sold by the farming sector	+1% (+28 Kt)	-<0.5% (-1.5 Kt)
Domestic price	No change	-2%
Imported price	N/A	-4%

Source: AHDB and Harper Adams University

Pork

Pork is quite difficult to model due to the supply chains having a very high level of product differentiation in comparison to other commodities and, as such, it requires a higher degree of disaggregation analysis within a complex range of networks and the development of different networks for specific sub-products. Work on this is ongoing and will be reported subsequently.

CONCLUSION

With an agreement in principle between the UK and Australia recently announced, it is now inevitable that a fully-fledged free trade agreement will be signed. This will be the first brand new trade deal that the Government has signed with a country that did not have an existing agreement with the EU. This presents a host of new challenges. Australia is a large agri-commodity exporter, well versed in sending products all over the world, including the EU.

In this report, we have assessed the evidence base available with the aim of informing the debate around Australia, but also about future trade policy in general. Looking at production and trade, Australia is a significant producer of beef and lamb. With domestic production larger than the UK but a smaller population, Australia has a significant surplus of beef and lamb to sell to the international market. Currently, China, the USA and Japan are key markets for Australian beef and lamb, which has been facilitated by the signing of FTAs and is unlikely to change in the short term. However, trade relations with China are turbulent, and this may see some products needing to find a new home should those relationships break down. For pork, Australia has increasing domestic production but still imports a reasonable amount of pork each year, predominately from the USA. Strict SPS measures for exporting pork to Australia mean that trade facilitation can be a challenge. Dairy production in Australia is sizeable, and dairy products are both imported and exported in reasonable amounts, with cheese being the major product traded. Australia is also a significant player in the global cereals trade, given it exports a large portion of its production.

We also analysed the various differences in the cost of production. As a whole, particularly in the livestock sectors, we discovered that cost of production in Australia tends to be lower than in the UK, predominately from the more extensive and larger scale nature and of the farming systems and the climate in which they operate.

This allows large herds/flocks to be farmed with lower labour and/or housing cost. We understand this may cause concern for farmers here in the UK as Australia could potentially have the ability to send products into a market cheaper than the UK and still remain profitable. Many UK farmers are currently able to remain profitable due to financial support from government in the form of BPS and other financial incentives. Whilst we have not analysed the impacts of changes to policy in this report, the phasing out of these payments (in England) over the next few years will present significant challenges to the farming industry.

It's worth noting that while the climate in Australia can bring certain benefits, it also presents a major challenge to Australian agriculture. Seasonal and often persistent periods of drought mean that farm profitability is fairly volatile; as such, Australian farmers are required to undertake significant risk management, which is explained further in the policy section of this report.

Nevertheless, trade doesn't take place purely on the basis of the cost of production. Demand and geographical proximity are major factors, and Australian products will go to the market that returns the most, not the one where it can undercut the domestic counterpart. Australian products are often traded at higher prices in their established markets than what products are traded at within the domestic marketplace. Despite this, that doesn't mean that Australian products won't come to the UK. Our economic modelling of the various sectors shows that an increase in Australian beef and lamb is likely in a liberalised scenario. Precisely how much product comes will depend on a number of factors, including the global market conditions for beef and lamb, Australia's trading relationships with other partners and supply and demand both here in the UK and Australia.

Results from our economic modelling show that we expect to see an increase of Australian imports for all of the commodities we have reviewed. However, the model expects the volume of this increased trade to be modest, when compared to UK total imports. Nevertheless, there are a number of caveats to this finding and it is fair to say that under certain scenarios the result could be more significant. For instance, in a specific year where Australian production peaked, and they experienced difficulties accessing the Chinese market, we would expect higher levels of exports to the UK.

It is clear from this report that countries like Australia are geared up to compete in the global marketplace. Structural policy change within various sectors over the past few decades, which largely removed government support, has led Australian farmers to improve productivity and become self-reliant in protecting themselves against the whims of the global marketplace. On top of this, Australia has built up a diverse portfolio of markets for their agricultural products. This is significant as it demonstrates Australia's ability to meet a variety of standards across the world, all different to their domestic legislation. This is pertinent to the UK as, while the debate around trade and food standards continues, it is important to recognise that countries like Australia, with differing foods standards than our own, can still meet the requirements of our food safety laws. This is likely to bring increased competition to the UK marketplace. Farmers and producers need to prepare for this period of change, which is occurring against the backdrop of our own structural change in farm policy. AHDB is currently running a farm business review in conjunction with third party consultants to help prepare farmers for the future challenges being presented to them. You can find more details of that following **this link**.

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