Two agricultural heavyweights: the European Union and United States in comparative perspective

Two agricultural heavyweights: **the European Union and United States** in comparative perspective

The United States (U.S.) and European Union (EU) are both major agri-food producers and exporters on the global stage. They also have a close trading relationship with each other. Farmers in both regions are early adopters of new technologies and operate at a high level of technical efficiency. Farmers in both regions also share similar challenges: volatile markets, the never-ending battle with pests and diseases, the need to minimise environmental impacts and to cope with weather shocks.

Despite these many similarities, there are also important differences in farm structures, production and scale.

This brief compares and contrasts U.S. and EU farming and trade along a number of dimensions.

It describes the key similarities and differences in agriculture on bothsides of the Atlantic with a view to a better understanding of the farming context in both regions.

Comparing **Agricultural Characteristics**

The U.S. has considerably more agricultural land than the EU, although the EU has a higher value of agricultural production. Roughly equal shares of the value of agricultural production are contributed by crops and by livestock production in both regions.

However, there are differences in what farmers produce. U.S. crop farmers are more specialised in the production of cereals and oilseeds, while EU farmers are more specialised in the production of fruits and vegetables.

EU livestock farmers are more focused on milk production whereas beef production is relatively more important in the U.S. Also, in the U.S., poultry/ eggs production is more important whereas pig production plays a greater role in the EU (Table One).

SOURCES:
USDA, Eurostat. (1) 2015-2016 average.

TABLE ONE

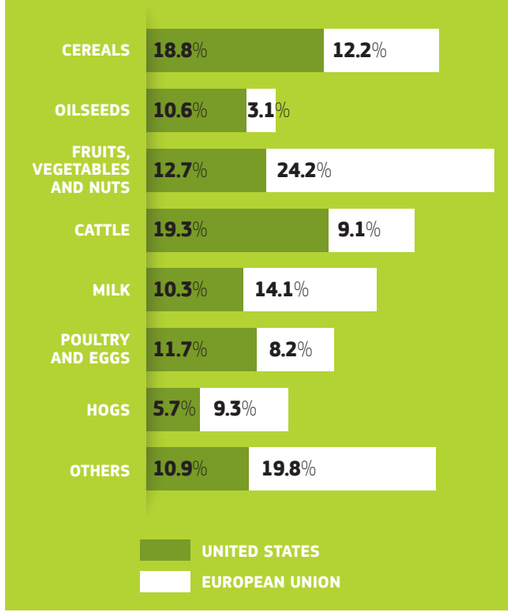
EU and **U.S.**
agricultural sectors compared
average 2015-2017

TOTAL VALUE of agricultural commodity production

386.2 Billion USD

424.7 Billion USD

Of which:



Digging behind these numbers highlights some important contrasts. The U.S. has a larger area under crops than the EU, in line with its larger agricultural area (Table Two).

The U.S. cropland area is dominated by corn and soybeans, with a further significant area used for alfalfa and other hay, followed by wheat. In the EU, wheat and other cereals (mainly barley) are the dominant crops, followed by maize and temporary grassland. However, the use of maize for silage is relatively more widespread in the EU. While soybean is by far the most important oilseed in the U.S., the EU is a minor producer of soybeans, but in contrast has a much greater acreage under rapeseed and sunflower.

Among the minor crops, the EU has a larger area under sugar beet, grapes and almonds, while the U.S. has a larger area under rice and cotton. In the case of almonds, despite the smaller area, the U.S. is a vastly more significant producer.

SOURCES:
USDA, Eurostat. Note: (1) 2016 (2) Other cereals include barley, oats, rye, sorghum and mixed grains.

TABLE TWO

Comparison of **EU** and **U.S.** crop production, area (million acres) and quantities (million tonnes)
2017

	UNITED STATES		EUROPEAN UNION	
PRODUCT	AREA	PRODUCTION	AREA	PRODUCTION
CROPLAND	334.0		260.7[1]	
WHEAT	37.5	47.4	64.4	151.3
CORN FOR GRAIN	82.7	371.0	20.7	62.1
OTHER CEREALS[2]	8.1	13.3	51.3	90.4
RICE (MILLED)	2.4	5.7	1.1	2.0
SOYBEANS	89.5	120.0	2.3	2.7
RAPESEED/CANOLA	2.0	1.4	16.9	21.1
SUNFLOWER	1.3	1.0	10.6	9.7
SUGAR (REFINED)	1.2	8.1	4.3	18.3
COTTON	11.1	20.9	0.7	1.5
GRAPES	1.0	7.4	7.8	N.A.
ALMONDS (SHELLED)	1.0	1.0	1.8	0.1
HAY/TEMPORARY GRASSLAND	53.8		23.2	

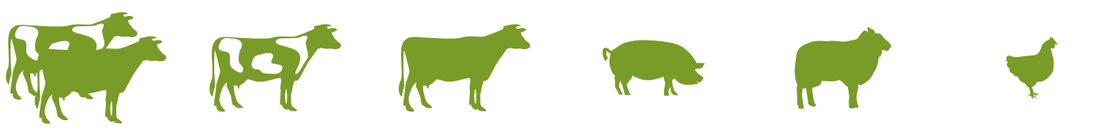
There are also differences in livestock inventories (Table Three). Although the total number of cattle is roughly similar in both regions, the U.S. herd is strongly skewed in favour of beef cows while the EU herd is strongly skewed towards dairy cows. The EU has a much larger inventory of breeding pigs and particularly breeding sheep, while the U.S. has a somewhat greater throughput of chicken broilers annually.

TABLE THREE

Comparison of livestock inventories in the **EU** and **U.S.**, '000 head
2016

UNITED STATES
EUROPEAN UNION

ALL CATTLE	DAIRY COWS	BEEF COWS	BREEDING PIGS	BREEDING SHEEP	BROILERS PRODUCED
93,705	9,346	31,213	6,179	3,875	8,913,000
89,134	23,525	12,342	12,208	62,167	7,418,459



SOURCES: USDA, Eurostat and FAOSTAT.

These differences in primary commodity outputs and livestock inventories are reflected in the production of processed agricultural commodities. Table Four shows the production of agricultural and processed agri-food products and also the share of that production that is exported.

Despite the much larger EU wheat production, U.S. wheat exports are marginally ahead of EU wheat exports. Similarly, much larger shares of U.S. corn and rice production are exported compared to the EU. The U.S. is a larger producer of oilseeds and oilseed meals than is the EU, but the EU produces and exports a larger volume of vegetable oils. The EU also has much larger production and exports of olive oil , sugar and wine.

The EU is also a more important producer of milk than the U.S. and is a more important producer and exporter of processed dairy products, including butter, milk powders and cheese. The U.S. is a larger producer and exporter of beef and poultry meat, reflecting its larger inventories of these livestock. However, the EU is a larger producer and exporter of pig meat and sheep meat.

SOURCES:
USDA, PSD Online. Wine and sheep figures from FAOSTAT and refer to 2016.

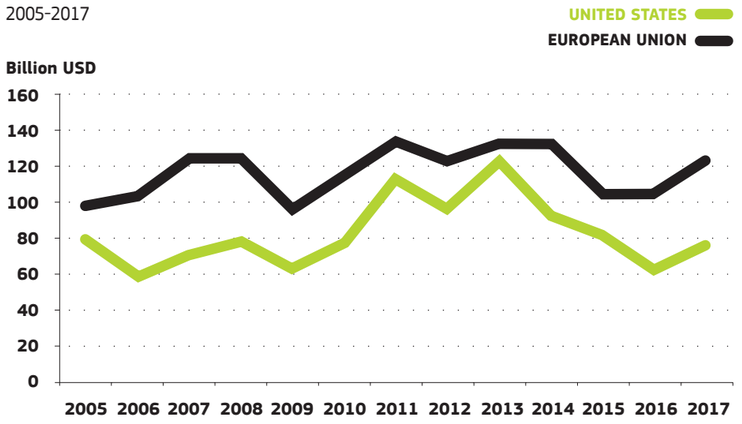
TABLE FOUR

EU and **U.S.**, output of agricultural and processed agri-food products, '000 tonnes
2017

	UNITED STATES		EUROPEAN UNION	
PRODUCT	PRODUCTION	EXPORTS	PRODUCTION	EXPORTS
WHEAT	47,345	24,524	151,264	23,290
CORN	370,960	61,935	62,104	1,700
RICE (MILLED)	5,659	2,763	2,000	347
OLIVE OIL	16	11	2,200	630
VEGETABLE OILS	12,886	1,338	16,698	1,831
OILSEEDS	131,495	59,188	34,984	1,067
OILSEED MEALS	47,020	13,754	31,050	1,475
SUGAR (REFINED)	8,136	86	18,313	1,513
WINE	3,300	405	16,714	7,029
RAW MILK (MILLION TONNES)	97.8	N.A.	153.4	N.A.
BUTTER	838	29	2,340	174
CHEESE	5,742	344	10,050	830
SKIM MILK PRODUCTS	1,073	606	1,725	781
WHOLE MILK PRODUCTS	55	17	760	394
MEAT, CATTLE	11,943	1,297	7,863	369
MEAT, CHICKEN	18,938	3,140	12,060	1,335
MEAT, PIG	11,611	2,556	23,663	2,860
MEAT, SHEEP	70	3	814	230

FIGURE ONE

EU and **U.S.**, net farm income
2005-2017



The different composition of farm production is one explanation for the different evolution of farm income in the two regions over the past decade, although differences in farm policy also play a role. Farm income in the EU is higher than in the U.S., and peaked at $140 billion in 2017 (the exact figures depend on the exchange rate that is used to convert EUR amounts to USD). U.S. farm income averaged between $60-80 billion in the years 2005-2010, grew significantly to over $120 billion in 2013, but has since fallen back to $75 billion in 2017 (Figure One) due to price decreases for major crops such as corn, wheat, dairy, beef and other products.

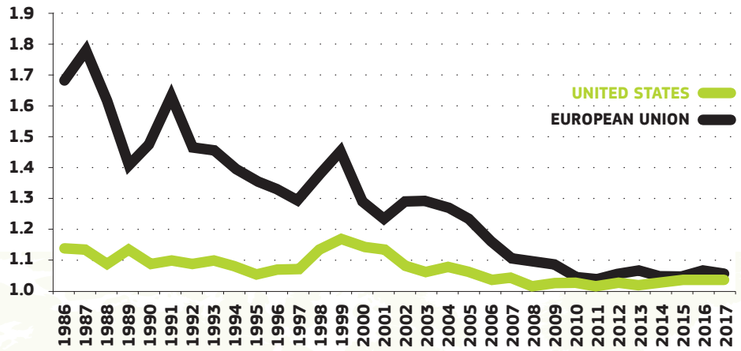
SOURCES: USDA and Eurostat.
NOTE: EU figures converted to USD using average EUR/USD exchange rate in each year. U.S. figure is net farm income. EU figure is agricultural entrepreneurial income.

EU producer prices, as is also the case in the U.S., are now broadly in line with world market prices. The measure of price distortion used by the OECD is the nominal protection coefficient, which is defined as the ratio of producer prices (including payments per tonne of output) to border prices (measured at the farm gate). A producer NPC of 1.2 for a country indicates that domestic producer prices are on average 20% above border prices for the same commodities. The difference between the mid-1980s, when EU producer prices were 70-80% above world market prices and today, when the difference is around 5%, is striking and a measure of the shift of EU agricultural policy in a more market-oriented direction over this period (Figure Two).

FIGURE TWO

The producer's Nominal Protection Coefficient: **EU** and **U.S.**

1986-2017



SOURCE: OECD

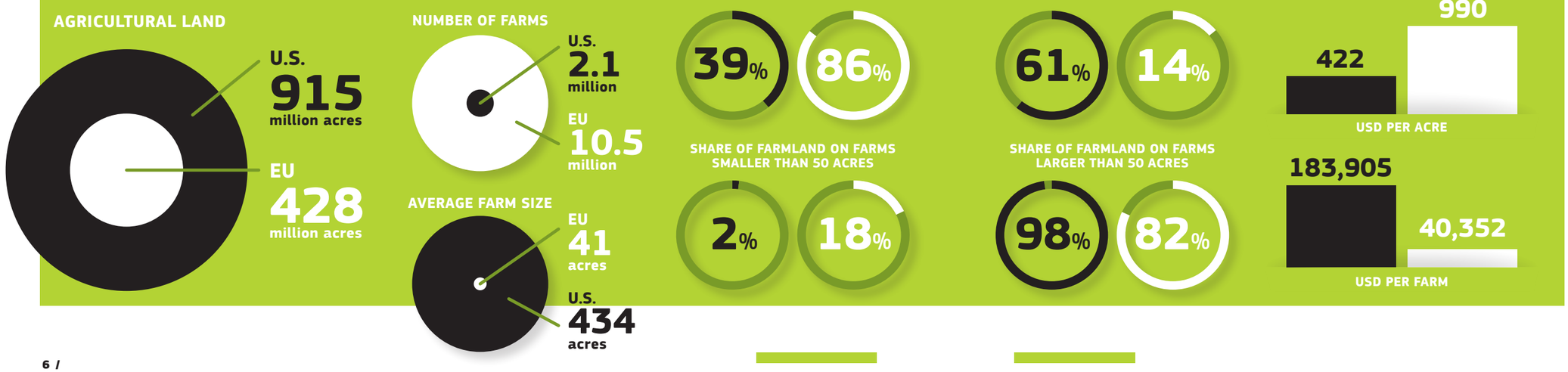
NOTE: The nominal protection coefficient shows how much protection domestic policies provide above world prices. A ratio of 1.0 implies no support, whereas a ratio greater than 1.0 signifies domestic market protection provided to agricultural producers.

EU farm income is divided among a much larger number of farms (Table Five). There are almost 10.5 million farm holdings in the EU, compared to 2.1 million farms in the U.S. Given that the U.S. agricultural area is over twice the EU area, this means that U.S. farms are on average more than 10 times larger than EU farms. The vast majority of EU farms (86%) are under 50 acres in size, though they manage only 18% of EU farmland. In the U.S., just 39% of farms are under 50 acres in size, and their share of farmland is only 2%. In the U.S., the 4% of farms over 2,000 acres manage 55% of farmland. In the EU, the top 3% of farms over 250 acres manage 53% of farmland. A similar share of land in both the U.S. and EU is rented (39% in the U.S., 43% in the EU).

One consequence of these differences is that EU agriculture is more intensive than U.S. farming, producing on average USD 990 per acre compared to USD 422 per acre in the U.S. However, because of the much larger farm sizes in the U.S. the ranking is reversed in terms of the value of output per farm, where the U.S. figure is USD 184,000 compared to the EU figure of USD 40,000.

TABLE FIVE

Comparison of **EU** (2016) and **U.S.** (2012) farm structures

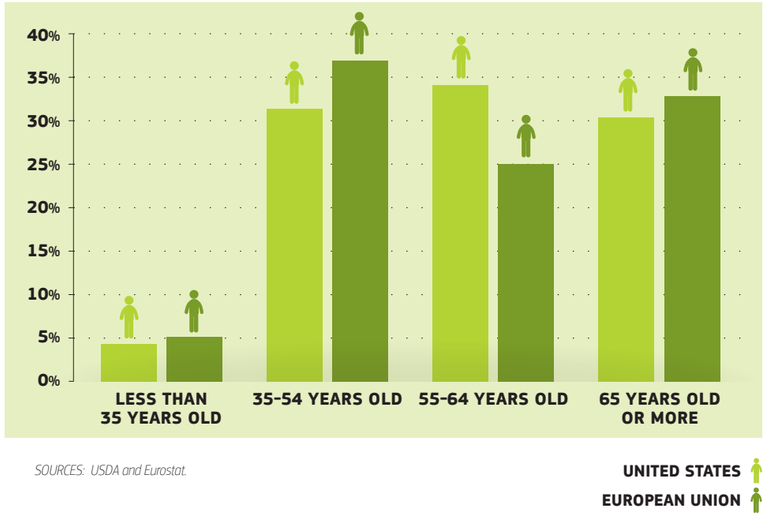


SOURCES:
USDA and Eurostat. Average output per acre and per farm derived by dividing the value of output figures in Table One by the number of acres/farms in this table.

Despite these differences in farm size and the larger farm structure in U.S. agriculture, farming in both regions faces the challenge of encouraging a sufficient number of new and younger entrants to offset the gradual ageing of farm owners. In both regions, the proportion of farmers less than 34 years of age is less than 5%, while the share of farmers aged 65 and over is above 30% (Figure Three).

FIGURE THREE

Age structure of farmers in **EU** (2016) and **U.S.** (2012)



SOURCES: USDA and Eurostat.

EU-U.S. **Agri-Food Trade**

GLOBAL PLAYERS

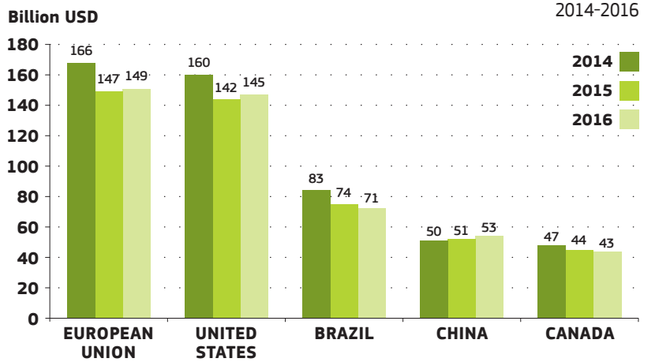
The EU and the U.S. are the major players in global agri-food trade. The EU is both the world's largest agri-food exporter but also its largest agri-food importer, though the differences with the U.S. are small (Figure Four).

Looking at agricultural products alone, both regions have their particular strengths. The U.S. dominates the world market for corn and oilseeds and has a major share of global exports of poultry meat and, to a lesser extent, beef.

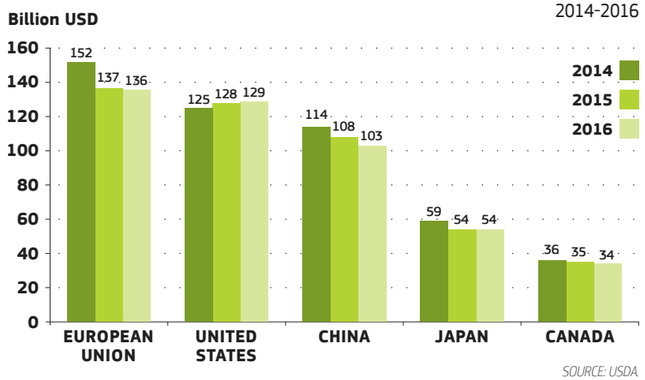
The EU is the major exporter of dairy products (butter, cheese and whole milk powder). For other agricultural commodities (wheat, skim milk powder, pork), world market export shares are roughly similar (Figure Five).

FIGURE FOUR

Top world exporters of agri-food
2014-2016



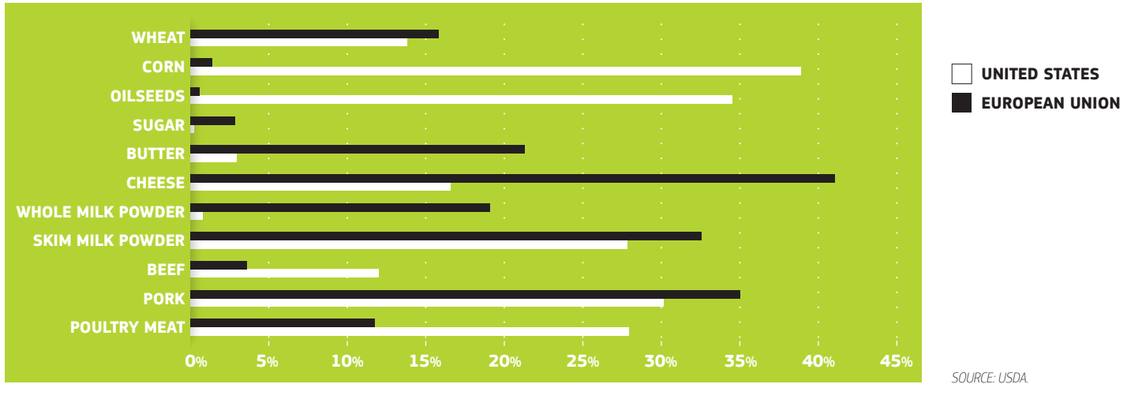
Top world importers of agri-food
2014-2016



SOURCE: USDA

FIGURE FIVE

EU and **U.S.** world market export shares for agricultural products
Average 2014-2016



SOURCE: USDA

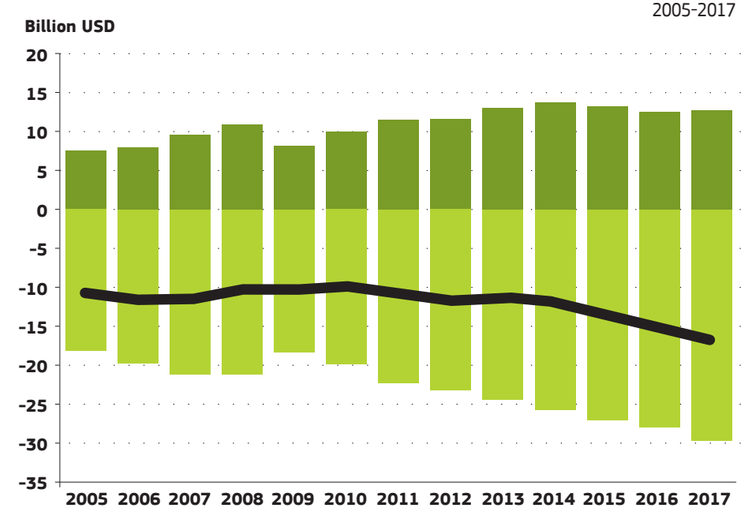
EU-U.S. BILATERAL TRADE FLOWS

The EU and U.S. are also major trading partners with each other. The U.S. is by far the largest export market for EU agri-food exports, accounting for 17% of its total agri-food exports in the period 2015-2017. It is also the second largest source of imports for the EU, just behind Brazil, and supplied 11% of total EU agri-food imports in that period. From the U.S. perspective, the EU supplied 21% of its agri-food imports in 2015-2017 while it was the destination for 9% of U.S. agri-food exports. During the 2005-2017 period, the U.S. has imported more from the EU than it has exported, and the EU trade surplus on agri-food trade has grown over time (Figure Six).

SOURCE: USDA.
Agri-food products defined as those covered by the WTO Agreement on Agriculture.

FIGURE SIX

EU-U.S. agri-food trade flows
2005-2017



Based on 2017 trade figures, the EU's main export to the U.S., accounting for 42% of the total, is alcoholic beverages (wines, spirits and beer). Processed food products and soft drinks make up a further 13%, followed by coffee and teas (11%), dairy products (mainly cheeses) (5%) and olives and olive oil (5%). The most important U.S. export to the EU is tree nuts (21%), followed by soybeans (14%), alcoholic beverages (12%), processed food products (7%) and coffee and teas (6%) (Figure Seven).

FIGURE SEVEN

Main **U.S.** agri-food exports and imports from the **EU**
2017

SOURCE: USDA.
Agri-food products defined as those covered by the WTO Agreement on Agriculture.

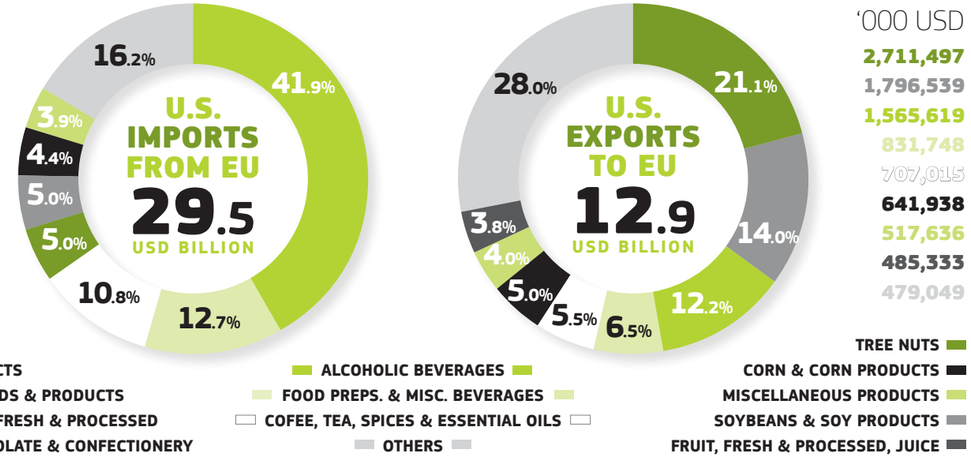
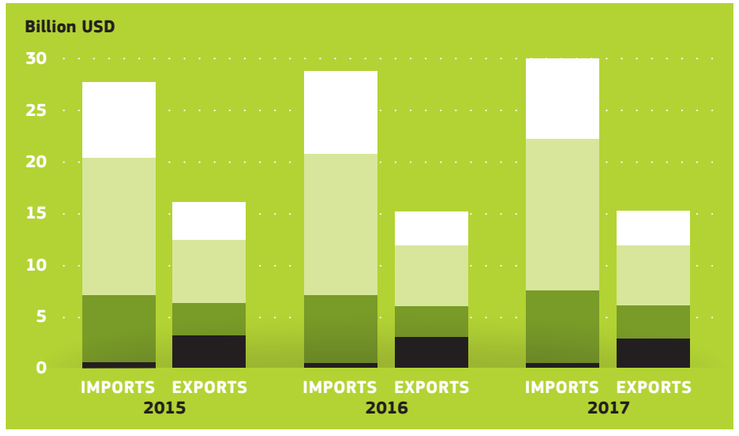


FIGURE EIGHT

U.S. agri-food exports and imports with the **EU** by processing class

2015-2017



SOURCE: USDA.
NOTE: The product coverage for the BICO classification is different to the products covered by the WTO Agreement on Agriculture used in earlier figures so there are small differences in the total values of trade.

A final insight into the nature of agri-food trade between the two regions is highlighted by examining trade flows by class of processing. The USDA Foreign Agricultural Service breaks U.S. agricultural trade into three large categories—bulk, intermediate, and consumer-oriented (BICO) products, plus a fourth category of agriculture-related products (this covers distilled spirits, forest products, fish products, biodiesel and ethanol). This classification shows that the U.S. is a net exporter of bulk commodities to the EU, but a net importer in the other three categories. The U.S. net export balance in bulk commodities has been rather stable in recent years, while its net import deficit in the other three categories has been growing, and particularly in consumer-oriented products.

Conclusion

The U.S. and the EU are two agricultural powerhouses with close trading links with each other. This brief has highlighted some of the important similarities and contrasts between farm production and structures in the U.S. and the EU. It has also described the patterns of trans-Atlantic trade in agri-food products.

The U.S. has a larger land area but the EU has a slightly larger value of agricultural output due to its higher intensity of production per unit area. Average farm size in the U.S. is much bigger than in the EU, and so is the average value of output per farm. U.S. cropland production is dominated by corn and soybeans, and its livestock output by beef and poultry meat. The most important EU crop is wheat followed by corn, while oilseeds production is mainly rapeseed and sunflower. Fruits and vegetables, wine and olive oil also play a more important role in EU agriculture. In terms of livestock products, the EU is more specialised in dairy and pig production compared to the U.S.

The EU and the U.S. are by far the most important global exporters and importers of agri-food products. They are also major trading partners with each other. The U.S. is the EU's most important export partner for agri-food products, and is the EU's most important source of imports just after Brazil. The U.S. is a net importer of agri-food products from the EU, and particularly of consumer-oriented food products which make up almost half of total U.S. agri-food imports from the EU. The U.S. is a net exporter of bulk commodities, mainly soybeans but also some pulses, tobacco, wheat, corn and peanuts. These trade flows make an important contribution to farm export earnings in both regions.

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FIGURE TWO. OECD, PSE database, available at http://stats.oecd.org/wbos/fileview2.aspx?IDFile=b19a487e-0c57-4e5d-8d37-911afad77ba5.

FIGURE THREE. USDA, Characteristics of principal farm operator households, by age of principal operator, 2012, available at https://www.ers.usda.gov/webdocs/DataFiles/48870/table07.xls?v=0. Eurostat, Farm indicators by agricultural area, type of farm, standard output, legal form and NUTS 2 regions [ef_m_farmleg, available at https://ec.europa.eu/eurostat/data/database.].

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FIGURE FIVE. USDA, Production, Supply and Distribution (PSD) database, available at https://apps.fas.usda.gov/psdonline/app/index.html#/app/home.

FIGURE SIX. USDA, Global Agricultural Trade System, available at https://www.fas.usda.gov/databases/global-agricultural-trade-system-gats.

FIGURE SEVEN. USDA, Global Agricultural Trade System, available at https://www.fas.usda.gov/databases/global-agricultural-trade-system-gats.

FIGURE EIGHT. USDA, Global Agricultural Trade System, available at https://www.fas.usda.gov/databases/global-agricultural-trade-system-gats.

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European Union

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