PANORAMA

Global outlook for the agri-food sector within a protectionist environment

The agri-food sector (alongside the ICT sector), has been at the heart of the global trade war[1], aggravated by the fact that China's retaliation measures have often targeted US soybean imports. As a consequence, the US agri-food sector, notably American soybean exporters are negatively impacted by this situation. Coface's sector risk assessment for the agri-food sector in the United States in on high risk. China is a world-leading importer of soybeans and soybean is a key commodity in the global agri-food sector, as it is widely used both as food for livestock (including pigs) and for human consumption.

A significant knock-on effect of the protectionist environment – and particularly the trade war between the US and China – on the global agri-food sector has been on commodities prices. The latter have recorded high volatility and the dynamic of the ones analysed in this study (corn, soybean, and wheat) have experienced downward trends. Coface has developed a statistical model, using the LASSO technique (Least Absolute Selection Shrinkage Operator - **Insert 2**) which aims at forecasting commodities prices, notably soybean ones. According to Coface's model, soybean prices are expected to decrease by 9% in 2019 compared to the previous year.

This outcome is consistent with the analysis that the downward trend of soybean prices is explained by trade tensions and weaker demand from China, notably due to the severe African Swine Fever (ASF) epidemic that led Chinese pork producers to sizeably slaughter their livestock to prevent ASF from spreading. This situation has had an impact on global pork production as Chinese producers used to represent nearly 50% of it. Hence, Chinese consumers will have to turn to other animal protein such as poultry and beef; and as a result, large global exporters of the latter such as Argentina and Brazil are likely to benefit from it.

Another consequence of the trade tensions between the US and China on the global agri-food sector is the transformation of "export routes" for certain commodities, particularly soybean (it has also impacted US production of corn, sorghum and pork). Although some of the major soybean producers and exporters worldwide such as Brazil and Argentina could somewhat benefit from the situation in the medium term, the risks for the agri-food sector as a whole remain on the upside.

1 Coface (2019), Trade Tensions Return To The Forefront Of The Global Economy - Country And Sectors Risks Barometer, available at: https://www.coface.com/News-Publications/Publications/Trade-tensions-return-to-the-forefront-of-the-global-economy-Country-and-Sectors-risks-Barometer

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FOR TRADE

In addition to the aforementioned protectionist tensions in the global economy, other potential risks for agri-food companies remain biological factors like diseases such as the above-mentioned ASF epidemic, as well as the fall armyworm caterpillar that threatens the global corn market. Another structural risk for this sector is interlinked with climatic conditions that can affect crops such as severe droughts or El Niño phenomenon.

Finally, while agri-food is significantly impacted by a protectionist environment, it is also often a key component of free trade agreements, as

demonstrated by the recently agreed European Union (EU) – MERCOSUR one. Governments often negotiate on these agreements with the objective to facilitate the trade of products that would particularly benefit their domestic agri-food sector (**Insert 1**). However, local farmers do not necessarily support them and they are perceived with increasing scepticism by a part of public opinion, notably on the back of distrust toward global free-trade benefits. This situation sometimes leads to delays in the ratification of these free trade agreements by public authorities.

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1 TRADE WAR IMPACT ON THE GLOBAL AGRI-FOOD SECTOR OUTLOOK

Direct impacts on Chinese and US agricultural markets

Agri-food is (along with ICT) one of the sectors at the heart of the trade war. This is partially due to the strategic role that agri-food has always played, before the escalation of the current trade war, particularly between the US and China.

An emblematic example of it was the threat voiced by the Chinese authorities to ban all agri-food imports from the US, as a response to the announcement in August 2019 by President Trump's administration that it would apply 10% tariffs on the remaining USD 300 billion worth of imports from China (**Table 1**).

Table 1: US-China trade war timeline (as of October 7, 2019), source: Reuters[2,3]

Date	US announcement	China announcement
January 2018	President Trump imposes tariffs on all imported washing machines and solar panels - not just those from China.	
March 2018	President Trump orders 25% tariffs on steel imports and 10% on aluminum from all suppliers - not just China.	
April 2018		China imposes tariffs of up to 25% on 128 U.S. products.
	Trump unveils plans for 25% tariffs on about USD 50 billion of Chinese imports.	**China responds with plans for retaliatory tariffs on about USD 50 billion of U.S. imports, including soybeans.**
June 2018	The United States sets the effective date of July 6 for 25% levies on USD 34 billion of Chinese imports.	China responds with tariffs on USD 34 billion of U.S. goods.
July 2018	The United States unveils plans for 10% tariffs on USD 200 billion of Chinese imports.	

2 Reuters (September 5, 2019), Timeline: Key dates in the U.S.-China trade war [online], available at: https://www.reuters.com/article/us-usa-trade-china-timeline/timeline-key-dates-in-the-u-s-china-trade-war-idUSKCN1VQ24Y

3 Reuters (October 7, 2019), U.S. expands blacklist to include China's top AI startups ahead of trade talks [Online], available at: https://uk.reuters.com/article/us-usa-trade-china-exclusive/u-s-puts-hikvision-chinese-security-bureaus-on-economic-blacklist-idUKKBN1WM25M

■ ■ ■

Date	US announcement	China announcement
August 2018	President Trump increases the tariffs on USD 200 billion of Chinese imports to 25% from the originally proposed 10%.	
	The United States releases the list of USD 16 billion of Chinese goods to be subject to 25% tariffs. The tariffs came into force on August 23rd.	China retaliates with 25% duties on USD 16 billion of U.S. The tariffs came into force on August 23rd.
September 2018	Trump threatens tariffs on USD 267 billion more of Chinese imports.	
	The United States implements 10% tariffs on USD 200 billion of Chinese imports. The administration said the rate would increase to 25% on Jan. 1, 2019.	China answers with duties of its own on USD 60 billion of U.S. goods.
December 2018	The United States and China agree on a 90-day halt to new tariffs. President Trump agrees to put off the Jan. 1 scheduled increase on tariffs on USD 200 billion of Chinese goods until early March while talks between the two countries take place.	China agrees to buy a "very substantial" amount of U.S. products.
February 2019	Trump extends the March 1 deadline, leaving the tariffs on USD 200 billion of Chinese goods at 10% on an open-ended basis.	
May 2019	Trump tweets that he intends to raise the tariffs rate on USD 200 billion of Chinese goods to 25% on May 10.	
	The Trump administration gives formal notice of its intent to raise tariffs on USD 200 billion of Chinese imports to 25% from 10%, effective May 10.	In retaliation, China announces that it will increase tariffs on USD 60 billion worth of US goods from June 1, 2019.
June 2019	At the G20 meeting in Osaka, the United States and China formally agree to restart trade talks after concessions from both sides. President Trump meets with Chinese President Xi Jinping and agrees to no new tariffs and an easing of restrictions on Chinese telecom powerhouse Huawei Technologies Co Ltd. China agrees to unspecified new purchases of U.S. farm products.	Increased tariffs announced on May 13, 2019 are now in effect on USD 60 billion worth of American goods exported to China.
August 2019	Trump announces 10% tariffs on USD 300 billion worth of Chinese imports, in addition to the 25% already levied on USD 200 billion worth of Chinese goods. Trump says the talks between Washington and Beijing will continue despite the new tariffs, and that the rate could be increased above 25% in stages.	**China's Commerce Ministry responds to the latest U.S. tariffs by halting purchases of U.S. agricultural products; to be effective by December 2019.**
	The Trump administration delays tariffs on about half of the Chinese products on the USD 300 billion list announced on Aug. 1, including laptops and cell phones, scheduled to start in September. These tariffs will instead be introduced on Dec. 15 in the hopes of blunting their impact on U.S. holiday sales.	China announces it will impose additional retaliatory tariffs against about USD 75 billion worth of U.S. goods, putting as much as an extra 10% on top of existing rates in response to the U.S. tariffs announced earlier in August.
	Trump announces Washington would raise all current tariffs from 25% to 30%, and the tariffs scheduled for September and December to 15% instead of 10%.	
September 2019	The United States begins imposing 15% tariffs on USD 125 billion list of Chinese goods, including footwear, Bluetooth headphones, smart watches and flat-panel televisions.	**China begins imposing a 5% duty on U.S. crude oil. U.S. soybeans, already subject to a 25% Chinese tariff, and subjected to an extra 5% tariff, while U.S. beef and pork get an extra 10% tariff.**
October 2019	The U.S. government decided on October 7 to widen its trade blacklist to include some of China's top artificial intelligence startups.	
	After a two day meeting between US and Chinese officials, US delayed the tariff increase on USD 250 bn of Chinese goods. This tariff increase was initially scheduled on October 15.	China promised to buy between USD 40 and USD 50 bn of US agricultural goods

China is a key player on the global agri-food market, due to its demographics (nearly 1.4 billion inhabitants) and its fast growing middle class. For most agricultural commodities, China is one of the largest global importers and consumers (**Table 2**). It is important to note that, while China is the largest producer of many of the agricultural commodities listed on Table 2, it consumes rather than exports most of these products. The US, on the other hand, has the opposite profile, as it is a major exporter of most the aforementioned agricultural commodities. China's announcement to halt imports of US agricultural goods from December 2019 is thus likely to have an impact on global markets, particularly on the soybean market, which is the most-traded commodity between the two countries.

Table 2:
China and the US, two essential players on the agricultural commodities market (Source: USDA[4,5])

Commodities	Share of Global import (%)		Share of Global production (%)		Share of global consumption (%)		Share of global export (%)	
Country	China	US	China	US	China	US	China	US
Wheat (2016/2017)	2%	2%	18%	8%	16%	4%	0%	16%
Corn (2016/2017)	2%	1%	23%	36%	24%	30%	0%	36%
Rice (2016/2017)	13%	2%	30%	1%	29%	1%	2%	8%
Soybean (2016/2017)	65%	0%	4%	34%	31%	17%	0%	40%
Beef and veal (2017)	19%	17%	10%	20%	12%	21%	0%	13%
Pork (2017)	21%	6%	49%	10%	50%	9%	3%	31%
Chicken meat (2017)	3%	0%	12%	20%	12%	17%	4%	28%

Soybean is a core commodity of the global agricultural market, as it is used as food for livestock (mainly pigs) and for human consumption, particularly in the form of soybean oil.

The soybean market is very concentrated: Chinese soybean imports account for 65% of global soybean imports, while two countries (the United States and Brazil) exported 80% of global soybean exports in 2016/2017 (**Map 1**). China's purchase of soybeans is therefore a major economic concern for both Brazil and the US:
• In 2017, soybeans accounted for 12% of Brazil's exports and 79% of these soybean exports were destined to China, with a value of USD 20.3 billion.
• In 2017, soybeans were the most important agricultural commodity exported by the US, accounting for 1.8% (USD 22 billion) of its exports. 57% (USD 12.4 billion) of these soybean exports were purchased by China.
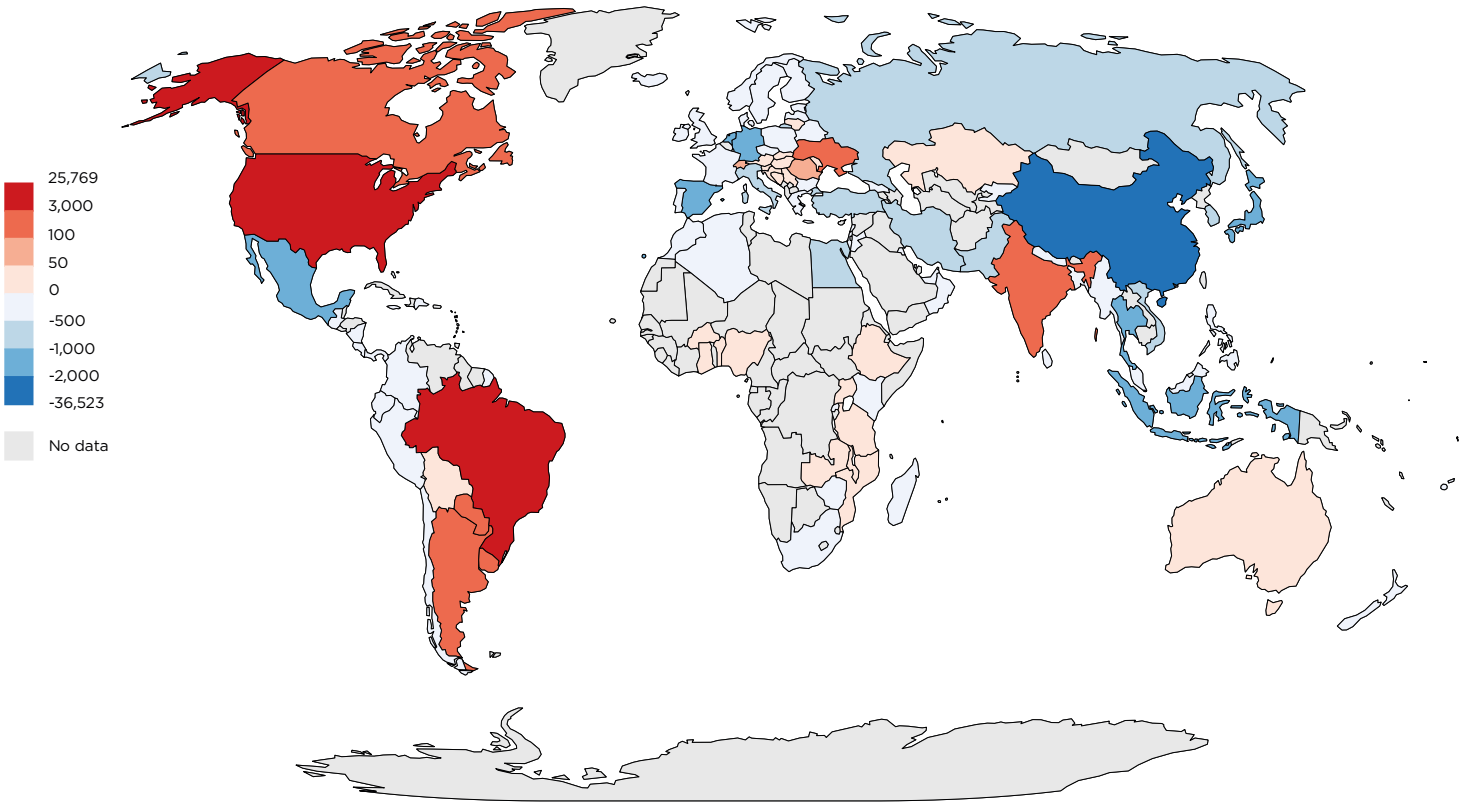
China's decision to put tariffs on US soybeans (as well as several other agricultural goods) in retaliation against US protectionary measures in April 2018 (**Table 1**), thus had a huge impact on the US soybean market in the fourth quarter (Q4) 2018. Rather than just decreasing its imports of US soybeans, in practice, China almost stopped importing them altogether, as can be seen on Chart 1. This chart compares average monthly exports from the US to China between 2010 and 2017 against exports in 2018 and 2019 (for 2019: data available represented in the chart are from January to September). As can be seen, most of these soybean exports to China usually happened during the fourth quarter (Q4) during the period 2010-2017, with Q4 accounting for 73% of yearly exports. Moreover, the chart shows that while exports were usually buoyant between October and February, they remained close to zero in Q4 2018 and in January 2019 (in Q4 2018 and January 2019 exports were respectively 99% and 96% lower than the 2010 – 2017 averages). The measures taken by the Chinese authorities have in practice deterred agrifood actors in China from importing US soybean. Hopes for a trade deal between the US and China mainly explain import increases between February and September 2019 shown on chart 1. The new wave of tariffs announced by China's commerce Ministry last August (**Table 1**) could halt soybean imports to China, like in 2018. This is especially the case as China's requirements for soybeans are decreasing, due to the country's pandemic African Swine Fever (ASF).

4 United States Department of Agriculture, Foreign Agricultural Service (2019, April). Livestock and Poultry: World Markets and Trade.
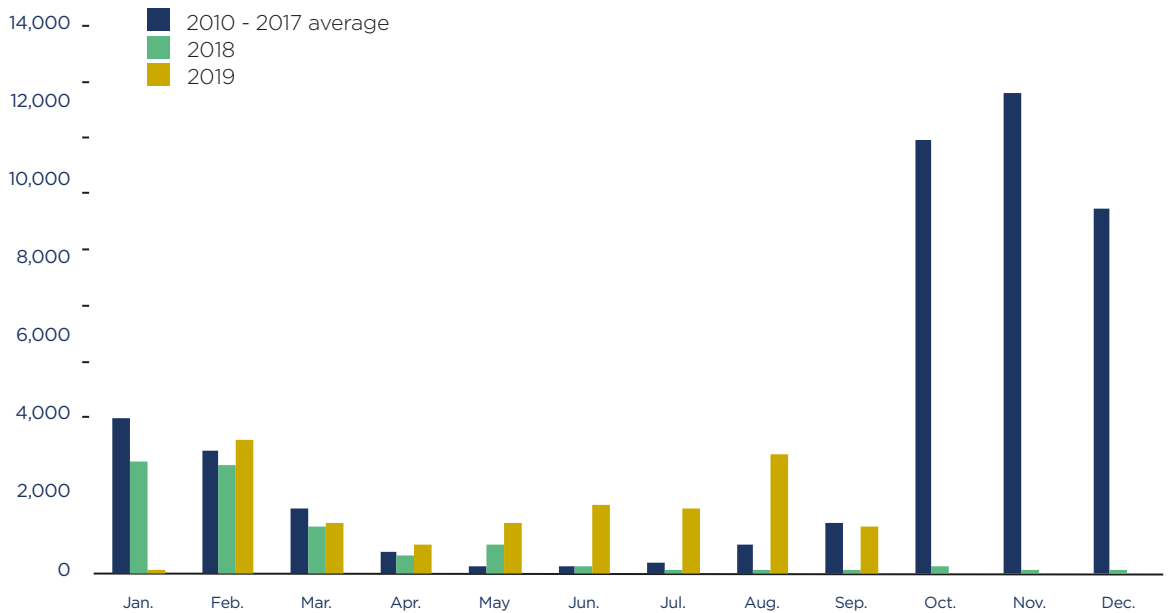5 United States Department of Agriculture, Foreign Agricultural Service (2019, June). World Agricultural Supply and Demand Estimates.

MAP 1:
Soybean net exports (2017, million USD)

Source: UN COMTRADE

Chart 1:
Soybean exports from US to China (Thousand metric tons) halted after Chinese
tariffs on Soybean imports

Source: USDA, Coface

China's measure to put tariffs on US soybean imports, as mentionned previously,led in practice to a stop in US soybeans imports. This situation significantly contributed to a strong decrease in international demand for US soybeans. This led to a fall in US soybean prices (**Chart 6**), which decreased by 18% between May and July 2018. In efforts to offset the loss of its main soybean buyer, the US has been looking at the European Union (EU) to increase its purchase of US soybeans. European soybean imports from the US increased by 121% between July 2018 and April 2019, compared to the same period a year before[6]. Nevertheless, as China is a much bigger importer of soybeans than the EU, even if the latter were to buy all of its soybeans from the US, it would never offset the loss of the Chinese market. During the 2016/2017 marketing year, the EU imported a total of 13.4 million metric tons (MMT) of soybeans, including 5.8 MMT from United States. During the same period, China imported 27.6 MMT from US, which is more than double the amount of global soybean exports to the EU. In addition, President Trump recently decided to put tariffs on several agricultural goods including wine and cheese, for a value of USD 7.5 bn from Germany, France, UK and Italy. This could cool down relationships between the EU and the US, and subsequently lead to reduced soybean imports from the US.

Although we have thus far focused on the consequences of the trade war on the soybean market, other agricultural commodities are impacted (to a lesser extent) by the Chinese tariffs:
• US wheat exports to China decreased by 44% between 2016/2017 and 2017/2018 Marketing Years (MY[7]) and by 95% between 2017/2018 and the 2018/2019 MY.

• US corn exports decreased by 50% between 2016/2017 and the 2017/2018 MY[8] and by 80% between the 9 first months of 2017/2018 and the 2018/2019 MY.
• US sorghum exports to China, which represented 88% of its sorghum exports in the 2016/2017 MY, fell strongly in May 2019, declining by 94% during the May-December 2018 period (year on year).
• US pork exports to China were impacted by the trade war, falling by 48% in 2018. Nevertheless, pork shortages in China caused by ASF are leading to higher pork demand, which is negating the effects of tariffs.

The impacts of Chinese tariffs on wheat, corn and sorghum on the US economy are nonetheless likely to be much lower than those of soybeans. Chinese imports of US wheat and corn in 2016/2017 accounted for 6% and 1%, respectively, of global US wheat and corn exports. Moreover, when the time comes for sowing crops, soybean farmers can switch to corn and *vice versa*. If trade tensions continue, some US soy farmers will switch to corn, as it is less impacted by the trade war and US soybean prices are expected to remain low. While US farmers faced decreasing exports and low soybean prices, they also had to deal with higher storage costs due to US tariffs on steel and aluminium. As a consequence, some farmers chose to let their crops rot, rather than storing them. Due to Chinese tariffs and their effects on the US agri-food sector, Coface downgraded the latter from "medium risk" to "high risk" in the Q3 2018 barometer[9]. It has remained a "high risk" sector since then.

Table 3:
Coface Regional Sector Risks Assessments on agri-food, Barometer Q3 2019[10]

	Asia-Pacific	Central & Eastern Europe	Latin America	Middle East & Turkey	North America	Western Europe
Agri–food	🟨	🟨	🟧	🟨	🟧	🟨

BUSINESS DEFAULT RISK

Low Risk	Medium Risk	High Risk	Very High Risk	Upgrade	Downgrade
🟩	🟨	🟧	🟥	↗	↘

6 European Commission. (2019). *The United States is Europe's main soya beans supplier with imports up by 121%.* [online] Available at: http://europa.eu/rapid/press-release_IP-19-2154_en.htm?locale=EN[Accessed 2 Jul. 2019].
7 In the US, wheat Marketing Years start in June and end in May
8 US corn and sorghum MY starts in September and ends in August
9 Coface (2018), A New Deal Of Cards For Emerging Markets - Country And Sectors Risks Barometer, available at: https://www.coface.com/News-Publications/Publications/A-new-deal-of-cards-for-emerging-markets
10 Coface (2019), Global economy in 2020: general slowdown despite the action of central banks - Country And Sectors Risks Barometer

Knock-on effects on the global agri-food sector: will Brazil be the main winner?

Given that the agri-food side of the trade war has so far focused on soybeans, Brazil and, to a lesser extent, Argentina are likely to be the main winners, as they are major international soybean producers (**Insert 1 p. 8**). Together, the US, Brazil and Argentina are the largest producers and exporters of soybeans, accounting for 88% of exports and 82% of global production in 2016/2017. Having halted US soybean purchases, China began to import its soybeans almost exclusively from Brazil and, to a lesser extent, Argentina. Until then, Brazil and the US used to be the main soybean suppliers of China. In 2017, they exported 90% of all Chinese soybean imports (56% for Brazil and 34% for the US).

As illustrated by the soybean market, the trade war impacts global agrifood trends. However, the scale of these impacts does vary heavily according to the period of the year, since US and Brazilian soybeans are produced and exported in different seasons. US harvests take place between September and December (which explains why most exports to China occur in Q4). Brazil harvests soybeans between March and May, exporting much of its soybeans during this period (in 2017, 45% of soybean exports occurred during these months) even if the difference with other months is less marked than in the US. The difference between the two seasons implies that the US and Brazil used to share the time of the year when they exported soybeans to China .

The US export season is between October and February, while Brazil's is between March and September (**Chart 2**). In 2018, however, there was a different pattern, as Brazilian exports increased in October compared to September and were much higher than the year before. This change is due to the start of the trade war between China and the US. Given the consequences of China's decision on US soybeans as a retaliation measure towards the US administration's ones of April 2018, when China usually bought US soybean during Q4, it turned towards Brazil that time.

The different seasons imply that the impact of the tariffs' effects is most important during a specific period of the year. As can be seen on chart 2, the most important increase in Brazilian soybean exports to China occurred indeed in Q4 2018 (+123% YoY) - the period during which the US usually makes most of its soybean exports. This implies that the health of the US soybean market this year will heavily rely on Chinese purchases of US soybeans during Q4 2019. At the time of writing, there are already active tariffs put in place by the Chinese administration on US soybean imports (**Table 1**), that are likely to continue to have a significant negative effect on US soybean imports to China, as demonstrated earlier in this article. This is likely to continue to 'fuel' soybean prices volatility and its downward trend, somewhat offset by lower global production (**Insert 2**).

At the time of writing, there is no sign that tensions will significantly and permanently cool between the US and China. Moreover, there are factors other than the trade war that need to be considered, in order to have a clear picture of the sector global trends in the medium term.

Chart 2:
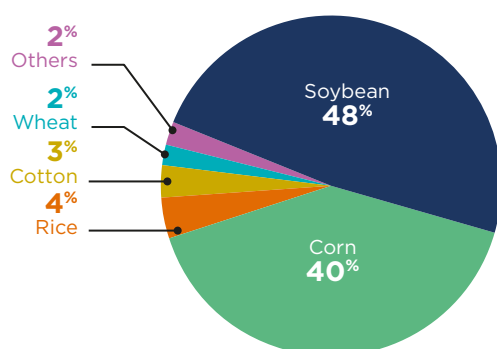Soybean exports from Brazil to China (Thousand metric tons)
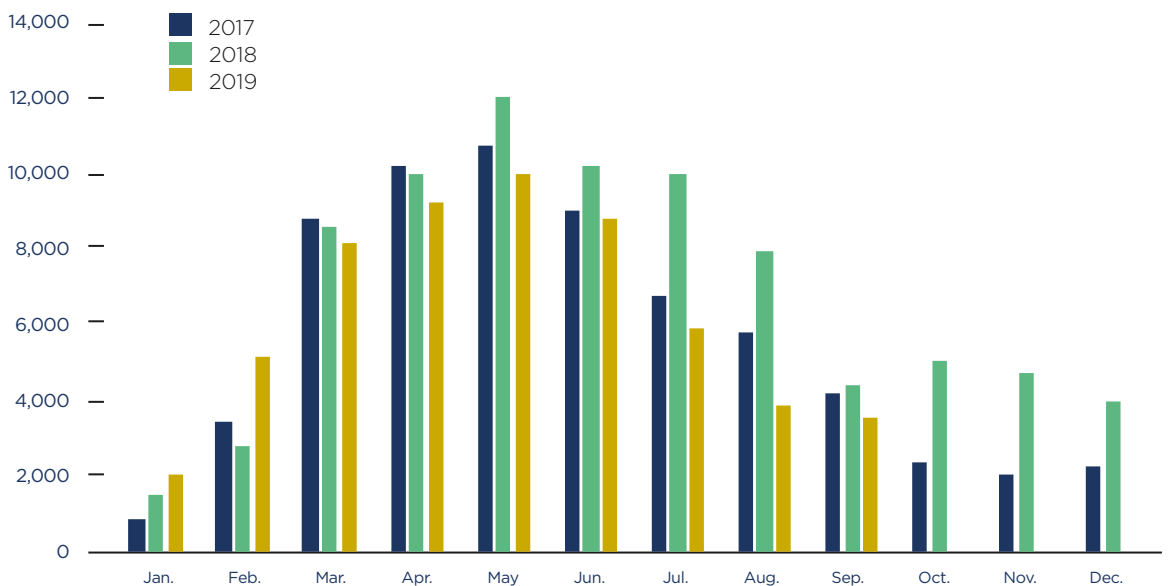
Source: Ministry of Economy of Brazil, Coface

INSERT 1:

Looking forward, what are the main risks and opportunities for the agri-food sectors of Argentina and Brazil?

Chart 3:
Brazil and Argentina main crops repartition

Brazil - Main crops
(% of total estimated crop of 237 million tonnes for 2018/19)

Argentina- Main crops
(% of total estimated crop of 147 million tonnes for 2018/19)
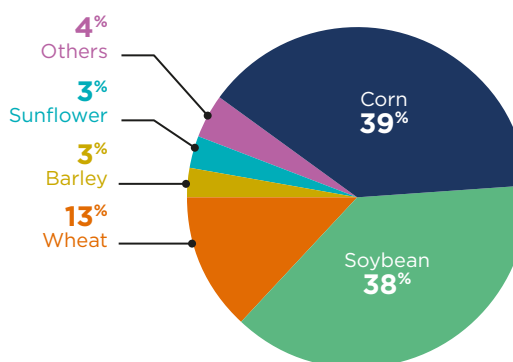
Sources: Conab and Argentinian agroindustry secretariat

Table 4:
Brazil and Argentina agri-food sectors main characteristics

Brazil	Argentina
√ Agriculture activity represents roughly 5% of GDP and 32% of exports	√ Agriculture activity represents roughly 6% of GDP and 49% of exports
√ Crop 2018/19: estimated at 241 million tonnes (+ 5.7% compared with previous crop)	√ Crop 2018/19: estimated at 145 million tonnes (+ 30% compared with previous crop)
√ Soybean: world´s second largest producer and main exporter	√ Soybean: world´s third largest producer and exporter
√ Corn: world´s third largest producer and second largest exporter	√ Corn: world´s fifth largest producer and fourth exporter
√ Poultry: world´s second largest producer and main exporter	√ Poultry: world´s tenth largest producer and exporter
√ Pork: fourth largest producer and exporter	√ Pork: not a main global player
√ Beef: second largest producer and main exporter	√ Beef: sixth main producer and exporter

Sources: Conab, Rosario Stock Exchange, IBGE, WTO, Indec and USDA

Trade tensions have so far led to limited gains for Brazil and Argentina

The knock-on effects of escalating trade tensions between the US and China have impacted the global agro market, with spill over effects for Brazil and Argentina. This is particularly noticeable in the soybean market, as the two South American countries are, respectively, the world's second and third largest producers (**Table 4**). As mentioned earlier, China is the largest global consumer and importer of soybean and the US has historically been the largest provider of the oilseed to the Asian giant. That said, the context of higher tariffs imposed by China on US soybean imports has increased the competitiveness of products from Brazil and Argentina. This environment has also driven up demand for other grains (such as corn and cotton) and meat (such as pork, beef and poultry**). Nevertheless, while Brazil and Argentina would have been expected to raise their global supply in agri-food products, the gains in terms of volume (and in particular revenues) tend to be partially cushioned by the behaviour of international prices (which are directly impacted by rising trade tensions and lower global growth).**

In this context, recent export figures for Brazil are lacklustre. The country's total soya complex exports (beans, oil and meal) dropped by 12% in volume terms, YoY, during the first eight months of 2019. The decline in USD revenue terms was, however, far steeper, with 22% YoY during the same period, due to the drop of -12% (YoY) in average prices. Finally, when converting to the Brazilian Real (BRL), the picture is relatively more positive, as the average exchange rate during the period from Jan to August 2019 depreciated by 10% YoY.

As for Argentina, the Argentinian Peso depreciated even more, by 83% during the same period (in nominal terms). It is however worth noting that Argentinian soybean complex exports are expected to register strong growth in 2019 (+31% YoY in volume terms, according to the USDA), due to an expected sharp rebound following the severe drought of 2018. Moreover, while China has been the top buyer of raw Argentine soybeans, it has long resisted opening up to soymeal. Nevertheless, last September, the Argentine government announced that it won a long-sought approval from China to export soymeal to the country from early 2020 (once required plant approvals and registrations have been made).

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The misfortunes of some are the fortunes of others: China's swine fever epidemic could benefit Argentina and Brazil

The African swine fever (ASF) which is affecting herds in China represents both tailwinds and headwinds for agricultural sectors in Argentina and Brazil. On one hand, the Chinese pig farming industry represents the largest market for Brazilian grains (particularly soybeans). Coface therefore expects the lower supply of pork to contribute in pushing down grain prices and demand. On the other hand, the demand for more pork imports from China could benefit Brazilian production and exports. In addition, the expected continous downward evolution of soybean prices overall (**Insert 2** below), a major input cost for livestock production, is likely to benefit to Brazilian pig farmers, due to reduced production costs and higher final prices. According to USDA estimates from April 2019, China's pork production will drop by 10% in 2019 (roughly 5 million tons less than in 2018), leading to record high imports this year. Brazil, as the fourth largest global producer and exporter, is indeed well positioned to boost shipments to China. In 2018, Brazil sold 730 thousand tons globally, a volume well below the three leaders, with the European Union at 2.9 million tons, the USA at 2.7 million tons and Canada at 1.3 million tons. It is also worth noting that, whilst the trade war between China and the US increases the competitiveness of Brazilian pork compared to US pork, Brazil´s supply capacity remains limited in the short term. This is due to the fact that the cycle of pig farming is unlikely to be able to face a surge in demand in the very short term. The US Department for Agriculture (USDA) forecasts a 23% rise in Brazilian pork exports, to reach 900 thousand tons in 2019. According to the Brazilian Ministry of Development, Industry and Foreign Trade (MDIC) figures, in the 12 months accumulated until August 2019, total swine exports rose by only 5.2% YoY in terms of revenues. In the year until August 2019, they rose by 22% YoY, driven by higher average prices (7% YoY) and exported volume (+14% YoY).

Taking into account the fact that global pork exports totalled 8.5 million tons in 2018, **Chinese consumers will need to turn to other sources of protein, such as poultry and beef. This situation is expected to benefit Brazil and Argentina's exports.** Brazil is the world's second largest exporter of beef, with approximately 19% of market share, while Argentina is the tenth largest, with 3.3% of market share. The USDA estimates that Argentinian and Brazilian chicken meat exports will expand respectively by 17% (totalling 145 thousand tons) and 2.4% (totalling 3.8 million tons), in 2019. Moreover, the year-to-date figures suggest that this growth may even surpass the estimates. From January to August 2019, Brazil's USD revenues from chicken meat exports rose by 10% YoY (exports to China rose by 37% YoY, on the same basis). Similarly, the beef market is expected to reap benefits. According to the USDA, Brazil, Argentina, and Uruguay captured together almost 70% of China's market in 2018 and are poised to remain key suppliers in 2019. Brazil's total beef exports are expected to rise by 6% in 2019 (reaching 2.2 tons), while Argentina´s beef exports are forecast to grow by 13% (reaching 575 thousand tons). In the year until August, Brazil´s beef exports rose by 7, 6% YOY in USD revenues. In September 2019, the Brazilian Ministry of Agriculture announced that China enabled 25 Brazilian meatpackers to export meat to the country. Among the new

establishments authorized, seventeen are producers of beef. Six of them produce chickens, one pork and one donkey.

Meanwhile, Argentina has accelerated its beef exports to China and overthrown Brazil as the top exporter of the product to the Asian country in the first seven months of 2019. Chinese customs data compiled in the publication "Beef to China" show that from January to July, Argentine shipments reached 186 thousand tons, compared to Brazilian sales of 180 thousand tons, and yielded USD 870.1 million, more than double compared to the same period of 2018. The volume sold represented 70% of Argentina's total beef exports in the period, and 21.7% of China's imports. Argentine cattle ranchers are hoping to build on that status by getting more local meatpacking plants approved by Beijing.

Domestic agricultural environment: good weather conditions in the midst of a challenging political and economic scenario

The agriculture secretariat of Argentina estimates that 2018/19 crops will expand by 30% YoY, reaching a record high of 147 million tons, driven by strong rebounds in soybean (+46%) and corn (+31%) output. Moreover, it also stated that good soil moisture conditions have favoured planting for the 2019/20 harvest. These positive perspectives come after having faced a severe drought in 2018. Similarly, in Brazil, estimates are also quite positive. The country has experienced generally good weather conditions for recent crops. This is expected to be the case again for 2018/19 and 2019/20. According to Conab, 2018/19 crops are expected to reach 241 million tons, a rise of 6% YoY.

There are some additional factors regarding profitability. While international prices for soybean may remain low, due to the reasons previously mentioned, in local currency terms gains could be higher if local currencies depreciate (this has been the case for the BRL and mostly the ARS). On the other hand, domestic demand for agro products in both countries is likely to remain constrained in the short term, due to weak economic momentum (GDP forecast 2019: Brazil +0.8% and Argentina -2.5%) and skyrocketing inflation in Argentina (54.5% YoY in August 2019). Argentina's recession of almost two-years has also led policymakers to revive taxes on agro exports and these will remain in effect until at least the end of 2020 (putting downwards pressure on farmer's margins). Moreover, tightening monetary policy in Argentina has also made it difficult to finance harvesting. Finally, yet crucially, the country will hold presidential elections in October 2019. The primary election of August 11 showed the opposition candidate, Alberto Fernández, to be leading the race with a wide margin. This means that a shift in power is highly probable, which could lead to changes in economic policies, including for the agricultural sector. Nonetheless, due to the current recession affecting fiscal revenues and the limited foreign exchange reserves, taxes on agro exports are likely to be retained for 2020, independently of who wins the elections. Finally, on September 1st 2019, to try to contain strong ARS depreciation pressures, the government announced some capital controls. Among them, the Central bank sets a deadline for repatriation of foreign earnings for exporters within 5 working days after payment or 180 days after receiving the shipping permit (15 days for commodities).

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The productivity of local agricultural sectors does not include the process of production flow to ports. According to a study by the Brazilian Ministry of Agriculture, the average annual growth rate of agricultural production between 1975 and 2017 was between 3.8% and 4%. The study's productivity indicators (on labour, land and capital), show that the training of personnel employed in agriculture occurs slowly, while the provision of equipment, such as the use of tractors and harvesters, were decisive factors in performance. **Over the next few** years, investments in technology are expected to gain momentum. There are already sensors and equipment for obtaining information online to assist in all production processes, from planting, to post-production, in order to reduce costs and increase productivity and business performance. **On the other hand, both countries are poorly positioned in terms of infrastructure and transportation networks, facing significant bottlenecks for transporting their outputs. This is one of the consequences of years of underinvestment.** The tight fiscal budgets faced by both countries have limited their governments' ability to boost investments in the medium term, turning mandatory measures to incentivise private investments.

The Mercosur-EU agreement announced at the end of June 2019 could have positive impacts on both countries agri-food sectors in the long term. The deal, which covers goods, services, investments and government purchases, will allow most products to be commercialised between blocks with zero tariffs. Although the EU will retain import quotas on some agricultural products (it released only 82% of all imports in the sector), the net balance is positive for the agriculture sectors in Brazil and Argentina. At the time the trade deal was announced, the Brazilian Ministry of Agriculture forecasted that it would lead to an increase of USD 87.5 billion in GDP and USD 113 billion in investments over 15 years, in addition to an increment of USD 100 billion in exports by 2035. Ratification of the agreement will nevertheless face challenges and the full process could take between two to five years. Major agricultural countries such as France, Ireland and Poland are particularly dubious of the deal's benefits and beef producers are on the front lines in fighting the agreement. Moreover, in the European parliament, parties from different part of the political spectrum do not support the agreement. Criticisms faced by the Brazilian government led by President Jair Bolsonaro include concern on the lack of commitment over environmental issues. This topic gained momentum in August 2019, following the fires in the Amazon rainforest. This is making ratification by European countries more difficult. Finally, a change in power in Argentina also threatens the trade deal. The current leader in the polls, Alberto Fernández, has cast doubt on the deal, citing the need to better analyse possible disadvantages for the local industry.

2 WHAT ARE THE OTHER MAIN RISKS ON AGRI-FOOD GLOBAL TREND IN THE MEDIUM TERM?

Climatic Conditions: Focus on the El Niño phenomenon

One of the agri-food sector's key weaknesses is its dependency on climatic conditions, which can have both direct and indirect impacts. Direct effects include drought or heavy rainfall, which can damage the harvest of agricultural commodities. Indirect factors include the consequences that some weather phenomenons can have on selected crops, leading to knock on effects on the value chain or on other products. As an example, decreased soybean production leads to higher costs for pork producers, who use soybeans as a protein source for their livestock. El Niño can affect the agri-food sector *via* these channels. El Niño[11], which occurs every two to seven years and is often followed by a 'La Niña' episode, which upsets the usual weather conditions of the Pacific Ocean. The western coasts of North and South America experience warmer surface water temperatures and increased rainfall, while the Western Pacific faces cooler-than-usual water temperatures and decreased rainfall. La Niña causes exaggerated climatic conditions compared to the "neutral" state. Due to the dependence of agricultural commodities on climatic conditions, El Niño events have huge impacts on international crops. However, not all agricultural commodities are impacted to the same extent. From a global point of view, corn crops are overall more affected by El Niño than soybean and wheat[12]. In other words, despite the different climatic manifestations of El Niño around the world, crops losses and gains are not offset, leading to lower global production. The International Research Institute for Climate and Society at Columbia University (IRI) is forecasting that El Nino Southern Oscillation (ENSO) will remain in the "neutral" state, at least until March 2020 (**Chart 4**). As El Niño episodes are caused by warmer-than-average sea surface temperatures in the Pacific Ocean, several studies have explored the hypothesis that these phenomena are related to global warming. A recent study[13] pointed out that global warming could exacerbate El Niño/La Niña effects, including heavier floods and more severe droughts.

11 An 'El Niño' event is anticipated with the El Niño Southern Oscillation (ENSO) index, which indicates that the sea surface temperature (SST) of the Southern Pacific is above its long-term average. The opposite phenomenon of El Niño is called La Niña and occurs when the SST is lower than its long term average.

12 Anderson, W. B.; Seager, R.; Baethgen, W.; Cane, M.; and You, Liangzhi (2019). Synchronous crop failures and climate-forced production variability. *Science Advances* 5(7): eaaw1976. https://advances.sciencemag.org/content/5/7/eaaw1976

13 Fasullo, J. T., Otto-Bliesner, B. L., & Stevenson, S. (2018). ENSO's changing influence on temperature, precipitation, and wildfire in a warming climate. Geophysical Research Letters, 45, 9216–9225. https://doi.org/10.1029/2018GL079022

Chart 4:
ENSO probability forecasts
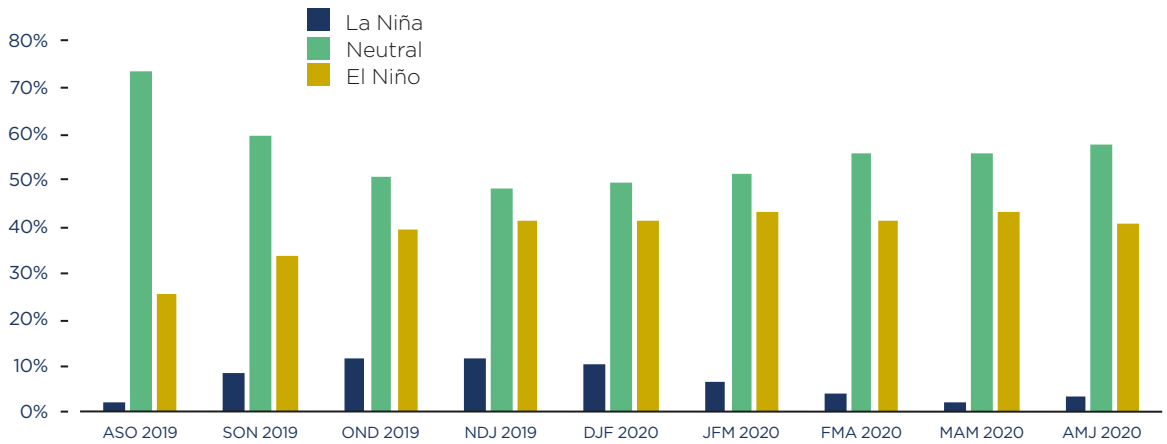
Source : IRI, August 19, 2019

Biological factors can add further pressure on the agri-food sector: African Swine Fever and Fall Armyworm.

African Swine Fever (ASF) in China: how diminishing pork production is affecting global markets

During the summer of 2018, ASF outbreaks were detected in China and Eastern Europe. Although this disease does not affect humans, ASF is highly contagious and has a mortality rate of close to 100%. There is neither vaccine nor treatment for the disease and pork producers are forced to slaughter their livestock to prevent ASF from spreading. The pandemic is particularly virulent in China – a country which accounts for nearly 50% of global pork production. It has also spread to other Asian countries including Laos, Mongolia, Vietnam, Cambodia , South Korea and North Korea. The European Union, the world's second largest supplier (with over 20% of global pork production) is also facing ASF but seems to be less impacted as the disease has not yet spread in Germany, Spain and France, the three biggest pork producers in the EU. ASF has led to a fall in China's pork production. The USDA forecasts a 10% decrease in Chinese pork production, and a 23% decrease in pig crops (measured in number of heads) in 2019[14]. This level of falling production has several consequences on the global markets.

The most direct outcome of this shortage is increasing demand for pork from China. Brazil and the EU have consequently increased their exports to China. China's pork imports from the EU surged by 37% during the January to April 2019 period, year on year (YoY). Despite Chinese retaliatory tariffs on US pork initially put in place in April 2018, and increased last September (**Table 1**), China increased its imports from the US to offset the consequences of ASF. US pork exports thus boomed by 435% during the January-June 2019 period YoY. This also represented a steep rise of 125% compared to the same period two years earlier, before trade tensions started. This stronger demand on the global market led to higher hog prices, which increased by 15% between January 1 and October 14 2019 (**Chart 4**) and were 50% higher in September 2019 in YoY comparaison.

ASF also has an impact on the global soybean market, as diminishing pork production implies lower requirements for pig feed, and thus downwards pressure on soybean prices. According to the USDA, Chinese soybean imports decreased by 10% between the 2017/2018 and 2018/2019 Marketing Years. This decrease suggests that even if trade tensions were to cool down, US farmers would still have difficulties exporting their soybean production.

As ASF is leading to falling pork production and higher prices, some consumers are switching from pork, to beef and poultry. China is thus increasing its imports of beef and poultry to meet stronger demand. Beef exports from the EU to China soared by 145% for the January to April 2019 period, YoY.

Chart 5:
Hog price (100 = January 2019)
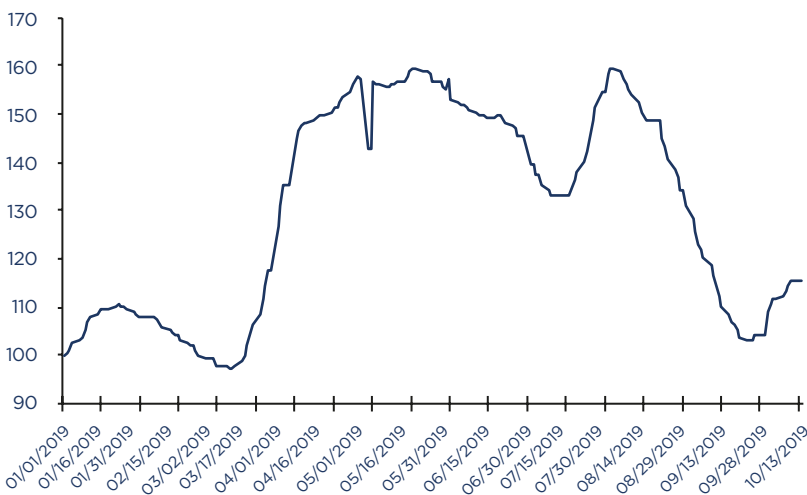
Source: CME,
Latest point: October 14, 2019

14 United States Department of Agriculture, Foreign Agricultural Service (2019, April), *op. cit.*

Fall Armyworm: a threat for Chinese corn that could disrupt the global corn market

The fall armyworm (FAW) is a caterpillar that mainly eats corn crops, but also rice, sorghum and cotton, among others. It was first detected in West Africa in early 2016. By the end of 2018, it had spread to most sub-Saharan African countries and Asia. At the time of writing, FAW has reached several Asian countries, including Vietnam, Myanmar, Bangladesh, Indonesia, Taiwan and China, and is likely to spread to other Asian countries. According to the Food and Agriculture Organization, the eradication of FAW is not yet possible, due to certain characteristics of the caterpillar. For example, adult moths can fly up to 100km a night and the FAW can eat and reproduce on many different species of plants. These factors mean that the FAW can easily spread and is not restricted by diet. Moreover, farmers sometimes confuse damage from FAW with damage from other pests, meaning that confirmation of FAW can be slow[15]. FAW in China could cause strong fluctuations on the global corn market. China is the world's second largest producer of corn and this could lead to inflationary pressure on global corn prices.

Agri-food: a core sector for trade agreements

Several free trade agreements have recently been signed and all of them incorporated measures facilitating agricultural products trade; that identifies the agri-food sector as one of the sectors at the heart of global trade. Overall, those agreements are perceived by decision makers as positive to support their domestic (or regional) agri-food sector trade perspectives.

The main risk for those agreements and future ones, as demonstrated by the protectionist environment, is increasing scepticism toward economic globalisation[16] that had led a part of public opinion, particularly in advanced economies in recent years, to be less supportive of them. Other criticisms include environmental consequences of those trade agreements that are notably argued by opposition parties like it is the case for example for the EU- Mercosur agreement. This situation could delay the ratification process on the EU parliament side. (**Insert 1**)

The latest trade agreements that have been signed to date are indeed the EU-MERCOSUR, the Japan-EU Economic Partnership Agreement (EPA) and the Comprehensive Economic and Trade Agreement (CETA, between EU and Canada). These three agreements imply removing tariffs on traded goods between the involved regions (CETA removed 98% of tariffs between EU and Canada; EPA removed 97% between EU and Japan), with the aim of encouraging trade between them. Agricultural goods are a key part of the aforementioned three trade agreements, due to the importance of these regions in the global agricultural market. The EPA, for example, which came into force on February 1 2019, opened opportunities to increase EU pork and beef exports[17]. EPA is, however, threatening US pork exports to Japan, which accounted for 32% of US pork exports in 2017. There is fierce competition between the EU and the US on pork exports to Japan. In 2017, the EU became Japan's leading pork supplier, attaining 33% of market share. Prior to this, it was the US that held this position for over a decade[18]. The EU is expected to greatly benefit from EPA, as Japanese pork consumption is on an upwards trend, particularly as consumer habits are shifting from fish, to pork and other meats. However, US President Donald Trump and Japanese Prime Minister Shinzo Abe agreed in principle, during the last August 2019 G7 summit, on a trade agreement regarding beef, pork and lamb products. This agreement could offset the US loss due to EPA. The EU-MERCOSUR trade agreement, when ratified, could impact the global soybean market, as the EU is the world's second largest soybean importer (after China). This could then increase EU soybean imports from Brazil, at the expense of the US (which is already suffering from Chinese tariffs).

15 Food and Agriculture Organization of the United Nations (2019), Fall armyworm early action policy guide, available at: http://www.fao.org/3/ca3800en/ca3800en.pdf
16 See Coface Barometer article publication "Beyond the peak of global growth?" April,2018
17 European Commission, December 12, 2018, *EU-Japan trade agreement on track to enter into force in February 2019* [Online], available at: http://trade.ec.europa.eu/doclib/press/index.cfm?id=1954
18 United States Department of Agriculture, April 2018, *Japan-EU Trade Agreement Threatens U.S. Pork Exports to Japan* [Online], available at: https://www.fas.usda.gov/sites/default/files/2018-04/2018-04_iatr_japan-eu.pdf

INSERT 2:
Selected agri-food commodities prices trends and Coface model on forecasts

Chart 6:
Agricultural commodity prices (100 = Jan 2019)
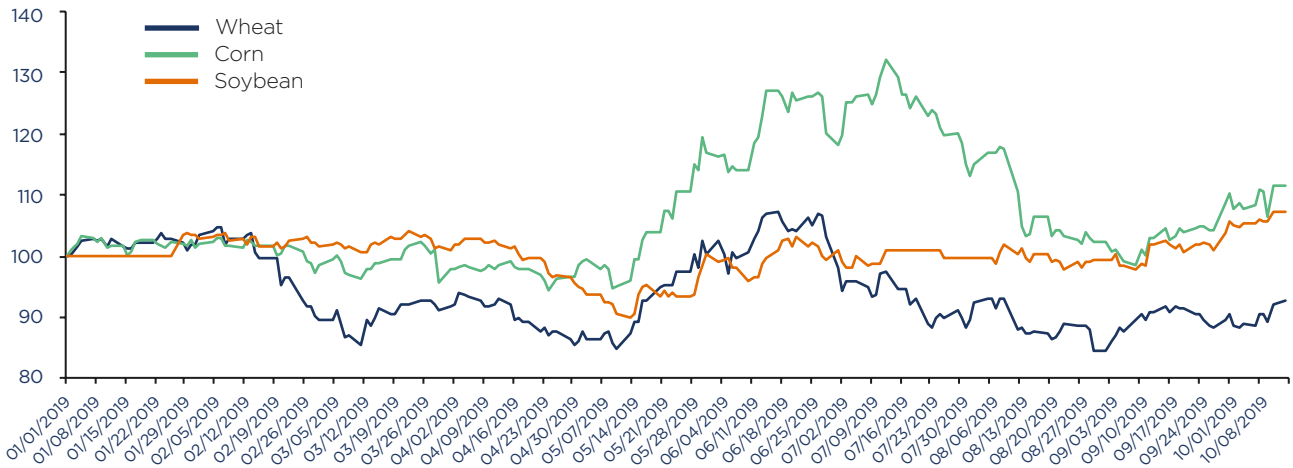
Source: Datastream,
Latest point: October 14, 2019

Trade tensions contributes to volatility on agri-food commodities prices

The prices of major grains, such as wheat, corn and soybeans, have experienced a great deal of instability since the beginning of the year (**cChart 6**). The difference between the highest and the lowest price is 27% for wheat, 40% for corn and 20% for soybeans. These variations can be explained by uncertainties surrounding trade wars. Their evolution is notably impacted by the state of negotiations between the US and China on the trade war. Trade talks and positive perceptions of improving relationships between China and the US lead to increasing demand and thus higher prices, while negative sentiments lead to falling prices. In addition, other factors are impacting prices from the supply side, specific to each commodity presented on Chart 6. These supply-side factors include the weather (good climatic conditions in Australia, Canada, Northern Europe, the Russian Federation and Ukraine led to higher global corn supply and lower prices), diseases (such as ASF, which affects soybean prices and the fall armyworm invasion in Asia, which is expected to lead to declining corn production).

Chart 7:
US Soybean prices (USD/bushel)
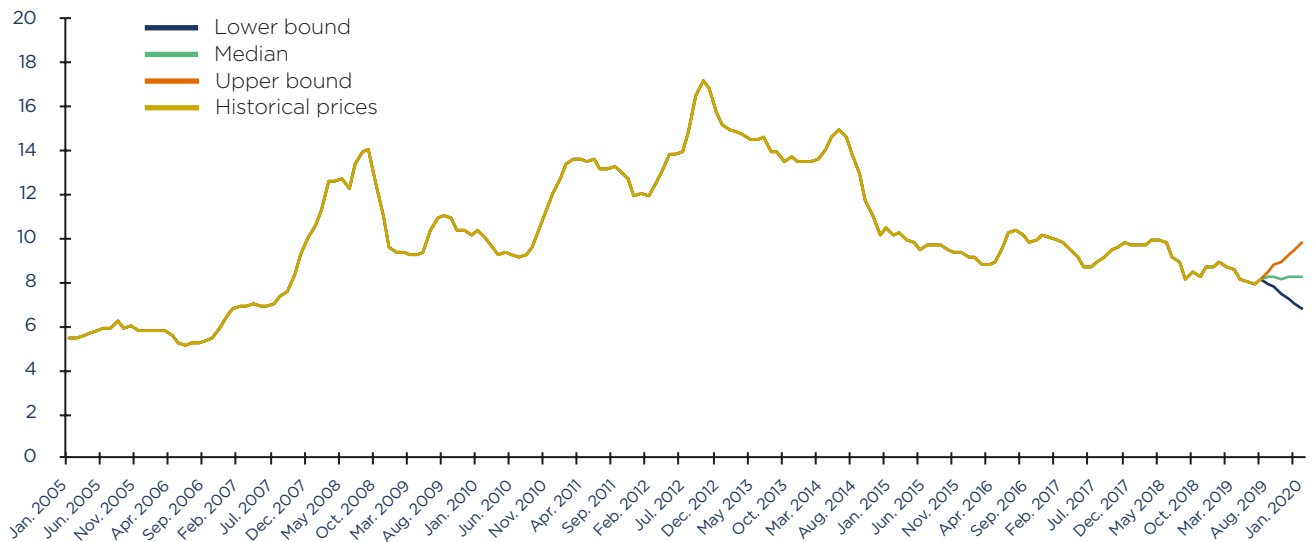
Source: Datastream, Coface calculation
Forecasts start in September 2019
Last data point: February 2020

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Coface anticipates a downward trend overall on soybean prices in the upcoming 6 months

Commodity prices are a key concern for agricultural market players, as they affect their costs and revenues. Forecasting commodity prices has thus become a major preoccupation. For these purposes, Coface has developed its own methodology to forecast a range of agricultural commodity prices, including prices for wheat and soybeans. Chart 7 represents a 6 month forecast for soybean prices. According to this model, Coface's median scenario forecasts USD 8.34 for 2019 (in the six months ahead starting from August 2019) - representing decreases of 9%, compared with 2018. According to the model, this decreasing trend should continue although at a slower pace: soybean prices are expected to decrease to USD 8.25 for the 6 months to February 2020 ; that represents a 0.3% decrease comparing to the 6 previous months. This forecast is consistent with Coface scenario, as we do not anticipate trade tensions between China and the US to end in the short to medium term . Moreover, ASF is expected to keep ravaging Chinese hog herd; therefore contributing to reduce soybean demand on the one hand, and lower global soybean production in the 2019/2020 Marketing Year (-6% compared to the previous MY) should slightly pull prices up, on the other hand.

Insights on Coface's model to forecast commodities prices

Coface selected the variables to include in the model according to each commodity, depending on its main global exporters and importers. Then, for those countries, domestic economy variables were retained such as inflation, real interest rates and the real effective exchange rate index.

We then added "global" variables, such as oil prices and the Baltic Dry Index (a price index for dry bulk cargo). A three-month rolling average was calculated on all the variables, to remove short-term noise and improve the model.

Among the several tested models, Coface selected LASSO (Least Absolute Selection Shrinkage Operator), as it minimises forecast errors. The intuition behind LASSO is that the model only retains "important" variables and sets the coefficients of other variables to exactly zero. This type of model is useful for dealing with high dimensional data – something that "regular" linear models (such as Least Squares) cannot properly deal with.

Mathematically speaking, we have the following linear model:

$$Y = X\beta + \varepsilon$$

The estimator $\hat{\beta}$ comes from the following minimisation program:

$$\hat{\beta} = \underset{\beta \varepsilon \mathbb{R}^p}{\arg\min} \ \frac{1}{2}||Y - X\beta||_2^2 + \lambda||\beta||_1$$

Where:
- Y is the first difference of the three months rolling average of commodity prices
- X is the matrix of the explanatory variables
- $\hat{\beta}$ is the estimated vector of the true vector parameter β

A confidence interval was then added to the forecast, by simulating residuals following the distribution of the observed errors. This allowed the "use" of the information that the LASSO did not model. We used a 60% confidence interval.

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20 MY is defined here as the US soybean's MY, which runs from September to August.
21 United States Department of Agriculture, Foreign Agricultural Service (2019, September). World Agricultural Supply and Demand Estimates.

October 2019 — Layout: increa * — Photo: Shutterstock

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