

Agrifood

Sector Report

2020

Resilience and growth in the sector during the pandemic



How consumption patterns have changed in the food service industry and in the home

Agrifood exports, a mainstay of the foreign sector

Digitalisation of the agrifood sector: what does Twitter tell us?



SECTOR REPORT

Agrifood 2020 The *Sector Report* is a publication produced by CaixaBank Research

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Summary

2020



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EXECUTIVE SUMMARY

The pandemic has highlighted the strategic nature of the agrifood sector. It has been one of the sectors least affected by the crisis; in fact, its share of the total economy has increased.



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DIGITALISATION OF THE AGRIFOOD SECTOR

Conclusions can be drawn regarding how digitalised the whole agrifood chain is, which technologies are the most popular and which digital tools the sector excels in by analysing the millions of tweets sent on Twitter.



02

COVID-19 SPECIAL

Analysis of how the agrifood sector has performed during the pandemic, of the changes in consumption and the industry's importance for Spain's exports.

«Farming gives us the luxury of spending our valuable time on activities other than foraging for food».

J. M. MULET



The strength of the agrifood sector during the coronavirus crisis

3.8% of GDP
Share of the primary sector in Q2 2020 (+1.1 pp compared with 2019)

-9.4%
Decline in food production between April and June 2020, much lower than the decline in manufacturing overall (-26.7%) manufacturera total (-26,7%)



The pandemic has led to a notable change in the food consumption patterns of Spanish households

DURING LOCKDOWN



+50%
Greater expenditure on supermarkets and large food stores

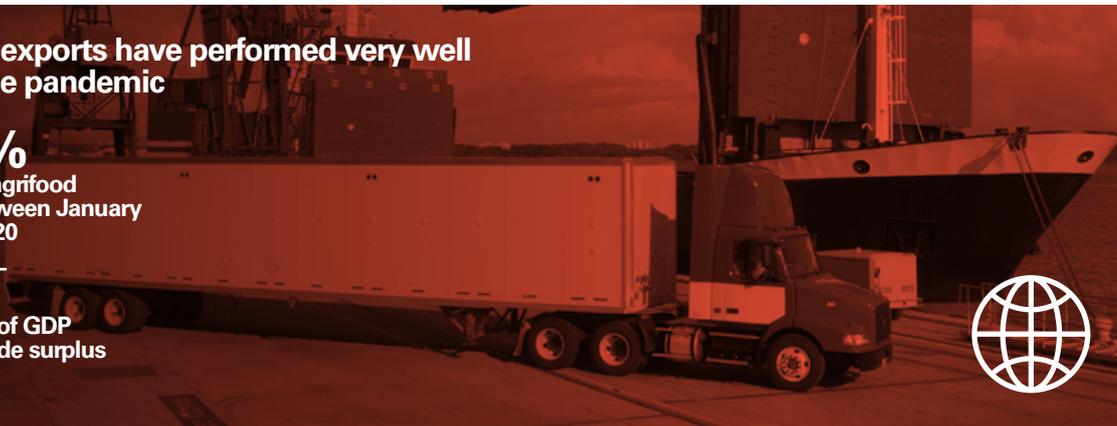
-90%
Less expenditure on restaurants

+60%
More food purchased online

Agrifood exports have performed very well during the pandemic

+4.9%
Increase in agrifood exports between January and July 2020

1.3% of GDP
Agrifood trade surplus



The sector must progress in its digital transformation to continue improving its competitiveness

24 million tweets analysed

We examined the degree of popularity of the various digital technologies used in the primary sector and agrifood industry based on a text analysis of tweets sent via the social media site, Twitter.



Executive Summary

Resilience and growth in the agrifood sector during the pandemic

The **COVID-19 pandemic** has highlighted the importance of the agrifood sector as a mainstay of the Spanish economy. During the months of lockdown, the entire food chain (which includes farmers, breeders, fishermen, cooperatives and the food industry, wholesalers, retailers, distributors and logistics operators) had to adapt quickly to secure the population's food supply. In retrospect, it is only fair to acknowledge the excellent response by the whole sector in tackling this challenge.

Available economic indicators show that the sector has been one of the least affected by the crisis. In fact, **the primary sector's relative share of the total economy increased and the agrifood industry posted a much smaller decline than the manufacturing industry as a whole in Q2 2020**. Similarly, in the area of employment, the sector has recorded fewer job losses and a smaller percentage of workers have been furloughed.

The pandemic has led to a notable change in the food consumption patterns of Spanish households, with home consumption gaining weight. In fact, during the weeks of lockdown, consumption outside the home plummeted (i.e. hotel and catering industry). The use of e-commerce to buy food has also increased, in part to minimise travel and contact between people. We can examine these patterns in detail by using CaixaBank's own data on card expenditure via its POS terminals. In spite of the agrifood sector's good performance overall, we can see that the disruption to foreign tourism continues to harm the food service establishments aimed at international clients and, consequently, the sub-groups of agrifood products sold to such establishments for final consumption.

On the other hand, the agrifood sector's relatively good performance during the crisis cannot be fully understood without considering exports. A large proportion of the sector's production is destined for export (around 50 billion euros worth), to the extent that Spain is the fourth largest exporter in the European Union and the seventh worldwide. **With the crisis, agrifood exports have increased across the board, with the upturn in exports of citrus fruits to Europe and swine meat to Asia being particularly notable.**

The good positioning of Spanish agrifood products in international markets is the result of the efforts made in recent years to internationalise the industry, reflecting its high level of competitiveness compared with other agrifood-producing countries. But if the situation we are going through has demonstrated anything, it is that more digitalised companies are better prepared to adapt to a changing environment. **Consequently, in order to become even more competitive, the sector needs to take advantage of the new digital technologies at all the different links in the food chain.** Digital transformation also offers ways to resolve some of the major challenges facing the sector. For instance, precision-farming techniques can help to improve crop yields whilst also enhancing the sector's sustainability by using water and energy more efficiently.

In short, the technological revolution of the century is transforming an agrifood sector that is moving away from its traditional image. The future will bring us the Food Chain 4.0, a totally connected ecosystem from farm to table.



Agrifood



The year we haven't gone hungry

While society was confounded by the lockdown due to the COVID-19 pandemic, the agrifood sector and the entire chain of production and distribution continued to work to keep supermarkets supplied. The sector demonstrated its strength, increased its share of the Spanish economy and proved its resilience in exports, all while consumption patterns were changing, both in the home and in restaurants.



ANALYSIS OF SUPPLY

The strength of the agrifood sector during the coronavirus crisis

The pandemic has highlighted the strategic nature of the agrifood industry as an essential activity to supply the population with food. The sector has therefore been one of the least affected by the crisis: the primary sector's relative share of the total economy increased and the agrifood industry posted a much smaller decline than manufacturing industry as a whole in Q2 2020. Labour market trends have also been relatively favourable, with relatively few job losses and a smaller proportion of workers affected by furlough measures.

The economic impact of the COVID-19 crisis

At this point in the pandemic it is well-known that the crisis caused by COVID-19 is having an unprecedented impact on the world's economy, and on the Spanish economy in particular. The strict lockdown measures in place for much of Q2 2020 and restrictions on international tourism led to a historic fall in Spain's GDP, down by 17.8% quarter-on-quarter (21.5% year-on-year), the largest drop observed since 1995 (the year the National Statistics Institute started to produce this homogeneous series). In comparison, other nearby European economies recorded a very sharp but clearly smaller decline in economic activity. In quarter-on-quarter terms: -11.8% in the euro area as a whole, -9.7% in Germany, -13.8% in France, -12.4% in Italy and -13.9% in Portugal. Only the United Kingdom posted a larger decline than Spain's economy in Q2, namely -20.4% quarter-on-quarter, as in addition to being hit hard by the pandemic it is also immersed in the complex process of finalising Brexit.



Despite activity picking up during the summer months, the economic recovery is still incomplete, fragile and uncertain

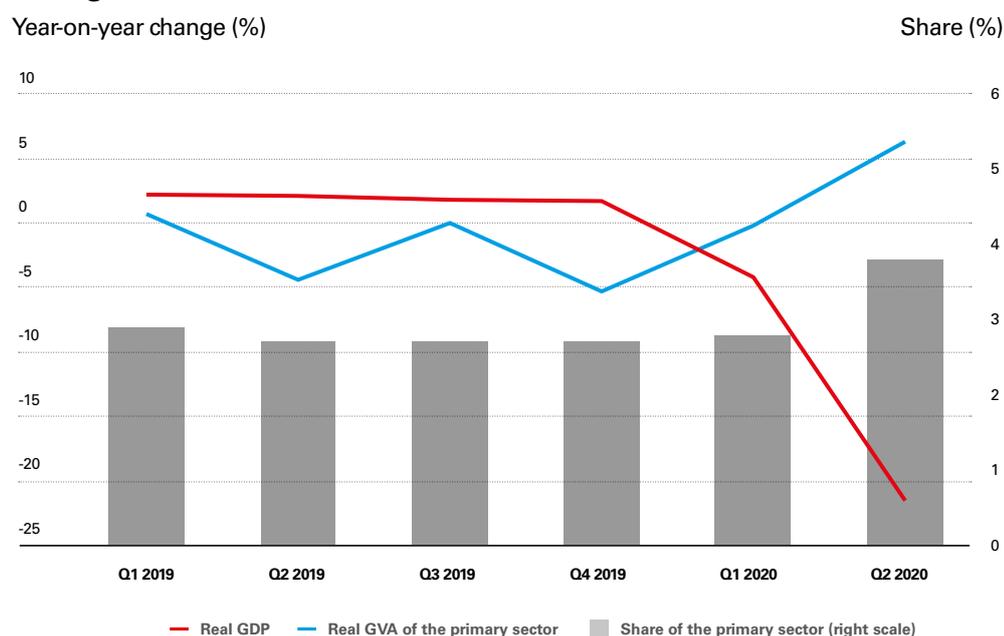
Available activity indicators for Q3 suggest the Spanish economy rebounded remarkably well thanks to the lifting of the restrictions on people's movements. However, there are signs of a slowdown in this improvement due to the sharp rise in the number of confirmed COVID-19 cases and the new measures being taken to curb the spread of the disease. It is estimated that, in the last quarter of the year, activity could be 12% below the previous year's level. The recovery is therefore still incomplete and the severity of the reduction in activity means that it will take years to regain pre-crisis levels. Specifically, CaixaBank Research's macroeconomic scenario predicts this will not happen until 2023, although it should be remembered that the degree of uncertainty surrounding economic forecasts is unusually high.

The agrifood sector's response to the crisis

Within this context of a dramatic reduction in activity, **the agrifood sector has reported highly favourable** and even counter-cyclical trends. The **primary sector's gross value added grew by 3.6% quarter-on-quarter (6.3% year-on-year) in Q2 2020**, a quarter during which most of Spain's population was under lockdown and the consumption of essential goods rose considerably. The primary sector therefore increased its share in the overall economy in Q2, contributing 3.8% of GDP compared with 2.7% in 2019.

During the lockdown, the agrifood sector performed very well as a supplier of basic goods for the entire population

The primary sector has increased its relative share of the economy during the COVID-19 crisis



Source: CaixaBank Research, based on data from the National Statistics Institute.

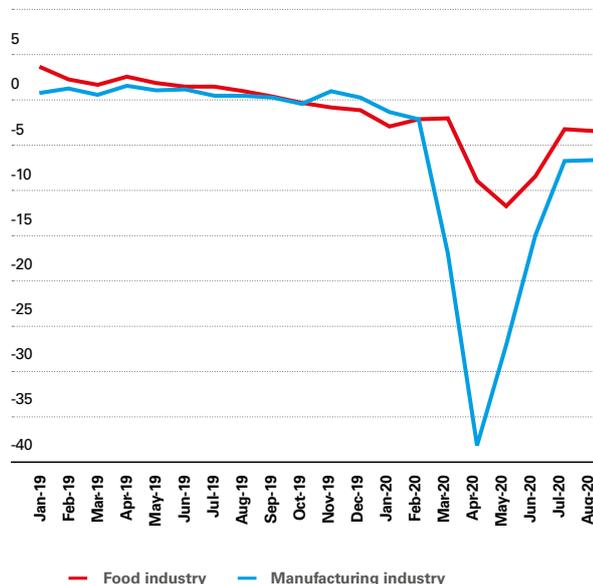


The trend in the agrifood industry has also been positive compared with the manufacturing industry as a whole, much harder hit by the lockdown. Specifically, while total manufacturing output fell by 26.7% year-on-year during April-June, **the decline in food production was less pronounced, at -9.4%**. In August (latest figures available), the industrial production index for the food sector continued to recover and was only 1.3% below its pre-crisis level. Electricity consumption by business sector also shows that the agrifood industry was operating at almost full capacity during the most critical months of the pandemic: while industry's electricity consumption fell overall by 16.3% year-on-year in Q2 2020, it was barely 1% less in the food industry.

Smaller decline in the agrifood industry

Industrial production

Year-on-year change (%)



Electricity consumption

Year-on-year change (%)



Source: CaixaBank Research, based on data from to the National Statistics Institute.

Employment trends in the agrifood sector

The extent to which employment altered during the months of lockdown and its subsequent recovery has been very uneven across different sectors. **In the primary sector, the number of workers registered with Social Security fell by 1.9% year-on-year in Q2** (compared with -4.4% for all such workers) while **in the agrifood industry it fell by 2.4%** (compared with -3.7% for the manufacturing industry as a whole).

Moreover, the agrifood industry has not tended to use the measures implemented to contain job losses (the furlough scheme and extraordinary allowances for self-employed workers). In May, over 3 million employees had been furloughed, 20.8% of the total.¹ By contrast, the percentage of furloughed employees in the primary sector was just 0.5% (around 4,000 people) and 11.8% in the agrifood industry (compared with 18.3% in manufacturing). The percentage of self-employed workers without work in the primary sector reached 3.5% in May (compared with 43.7% for the economy as a whole and 34.1% for manufacturing).²

① Average data for the month.

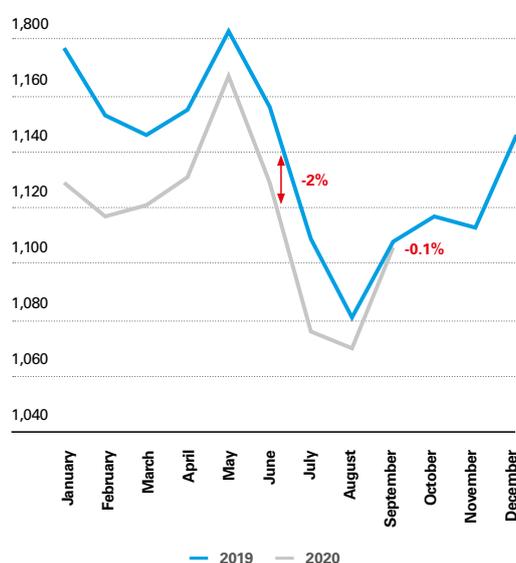
② Data on cessation of business broken down to the 2-digit level of the Spanish activity code are not published. The figure for the agrifood industry is therefore not available.

The agrifood sector has recorded fewer job losses and a lower proportion of furloughed workers, and the recovery in the number of workers registered with Social Security has consolidated during the summer

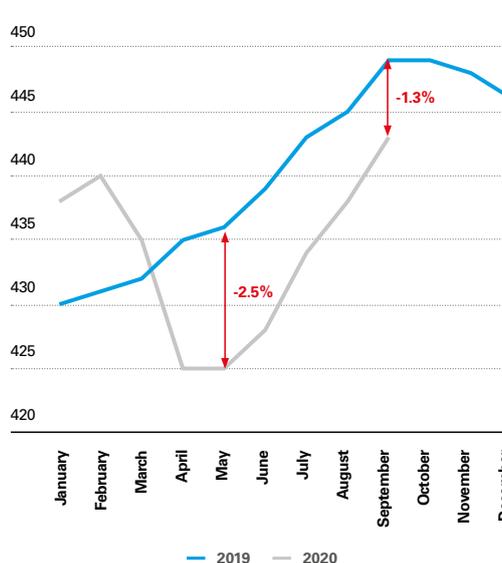
The most recent data, for the month of September, show that the recovery in registered workers has got stronger over the summer. Both sectors have posted smaller decreases than in previous months: -0.1% and -1.3% year-on-year in the primary sector and in the agrifood industry, respectively. Moreover, **September has seen the notable return to the labour market of furloughed workers**: only 0.1% and 2.8% of employees in the primary

Positive trend in the labour market

Primary sector registered workers
(thousands)



Food industry registered workers
(thousands)

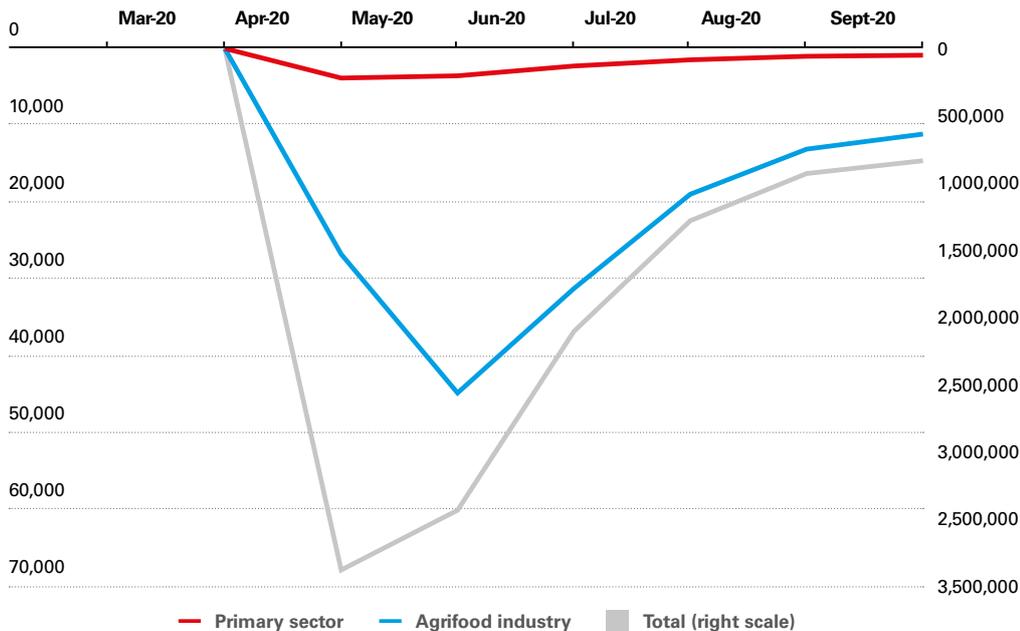


Source: CaixaBank Research, based on data from MITRAMISS.



sector and agrifood industry were in this situation, respectively (compared with 4.8% of total employees). The furlough scheme has therefore been hugely effective in safeguarding labour relations during the toughest months of the pandemic.

Furloughed employees



Note: Registered with Social Security, end of month data.
Source: CaixaBank Research, based on data from MITRAMISS.

- As noted above, the agrifood sector's good performance during the most critical months of the pandemic could be explained by the lockdown itself, which forced people to stay at home and led to an increase in the consumption of basic goods such as food (as well as a certain stockpiling effect during the first few weeks of the state of emergency). Consequently, one direct result of the lockdown was therefore a marked change in household food consumption patterns, which increased sharply within the home and all but disappeared outside (i.e. in the hotel and catering industry). This substitution effect has continued, albeit to a lesser extent, after the state of emergency was lifted. We explore this issue further in the next article, «Changing consumption patterns during lockdown: from the restaurant to the home».
- A second factor that would explain the agrifood sector's good performance during the coronavirus crisis is more structural in nature, thanks to the good positioning of Spanish agrifood products in international markets as a result of the internationalisation efforts made over the past few years. We examine the trends in agrifood exports in more detail in the third article of this report: «The resilience of Spanish agrifood exports».

ANALYSIS OF DEMAND

Changing consumption patterns during lockdown: from the restaurant to the home

During the months of lockdown there was a radical change in food consumption patterns in Spain. Using internal data on spending with Spanish and foreign cards via CaixaBank POS terminals, we can see that expenditure in supermarkets and large food stores picked up noticeably during the state of emergency. Online shopping also increased, partly to minimise travel and contact between people, whereas consumption in restaurants plummeted. Despite the fact that, during the summer, household expenditure on restaurants picked up strongly, the slump in foreign tourism continues to be particularly detrimental to establishments geared towards international clients.

Food consumption and COVID-19: a watershed

Before the coronavirus crisis, Spanish households used to consume a significant part of their food outside the home. Specifically, 36.5% of food expenditure in 2019 (8.6% of total household expenditure, equivalent to 48.5 billion euros) was spent outside the home.³ **The arrival of the coronavirus and strict measures restricting mobility to stop it from spreading radically changed families' consumption patterns;** they stopped frequenting restaurants and other catering establishments to consume food almost exclusively in their homes.

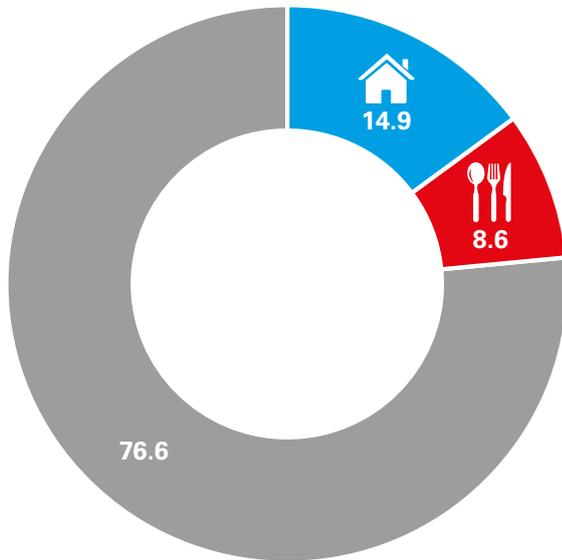
³ In 2019, expenditure on food and beverages in the home totalled approximately 84 billion euros, or 14.9% of total household expenditure. Data from the National Statistics Institute's household budget survey.





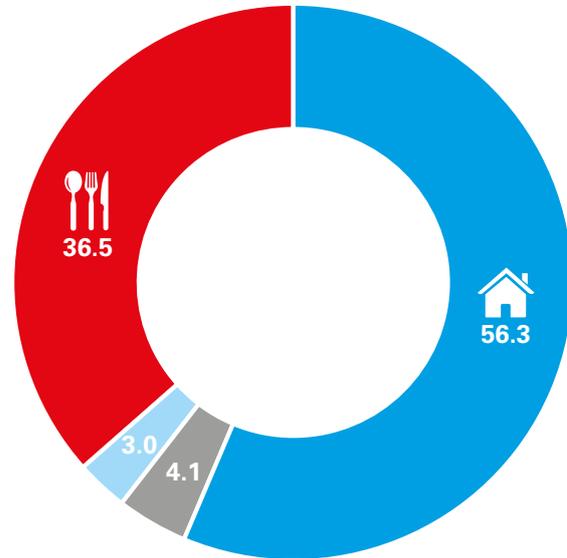
Household expenditure on food in the home and at food service establishments

Share of total household expenditure (%)



- Food and beverages at home
- Food service establishments
- Rest

Share of total food expenditure (%)



- Food at home
- Food service establishments
- Non-alcoholic beverages at home
- Alcoholic beverages at home

Note: Data from 2019.

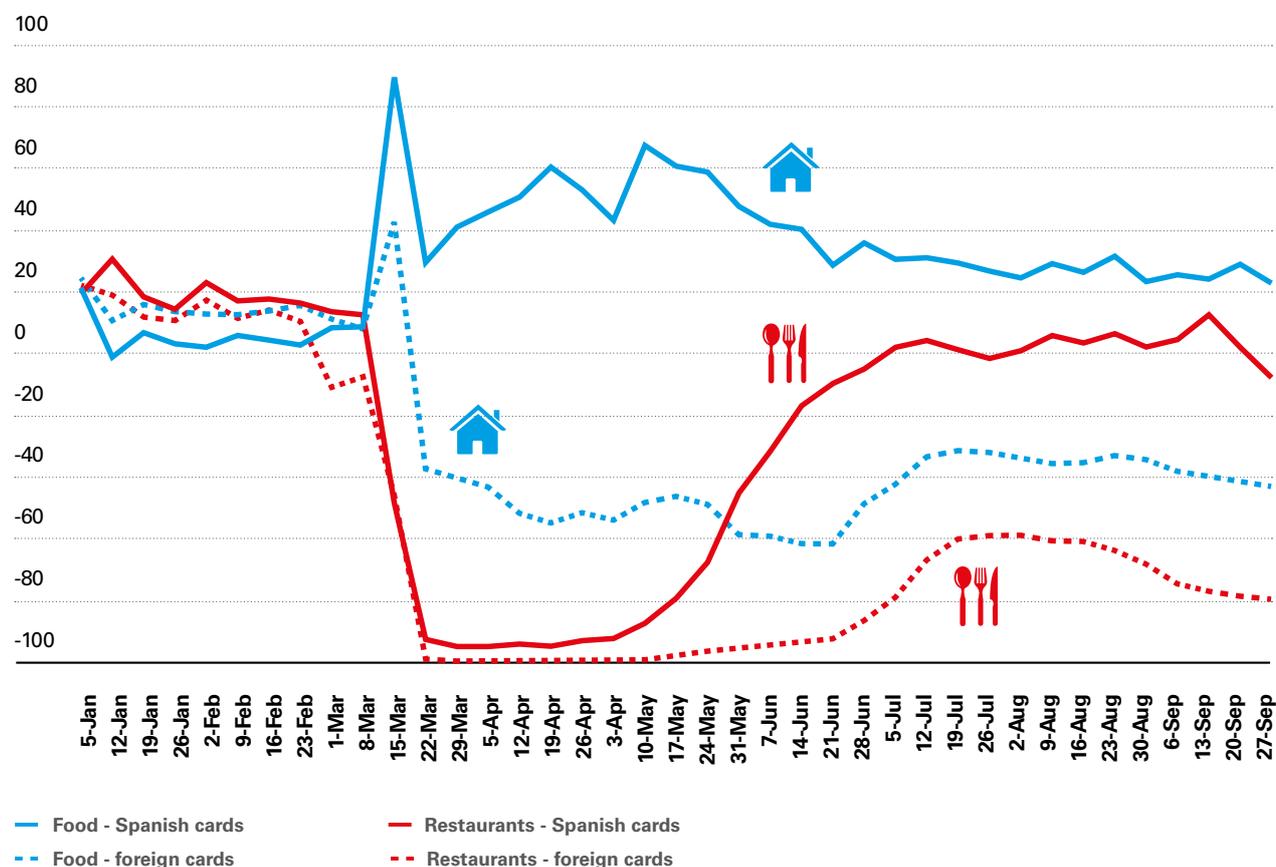
Source: CaixaBank Research, based on data from the National Statistics Institute (household budget survey).

During lockdown, food consumption in the home rocketed while restaurant spending plummeted. The entire food chain had to adapt quickly to the changes in household consumption patterns

According to data on payment card activity via CaixaBank POS terminals, **during the state of emergency spending on supermarkets and large food stores grew by nearly 50% year-on-year.** The week of 9-15 March saw a 90% increase; i.e. card purchases almost doubled compared to the same week last year, mainly due to the stockpiling of food by many households and, to a lesser extent, the increased use of cards instead of cash as a means of payment. **The pandemic tested the food chain's resilience and ability to adapt** to a surge in demand, the greatest stress it has been put under in recent history. In hindsight, it is only fair to acknowledge **the excellent response by the entire sector in meeting this challenge and securing food supplies for the entire population at all times.**

Consumption at CaixaBank POS terminals

Year-on-year change (%)



Note: Data include face-to-face operations and online shopping.

Source: CaixaBank Research, from internal data on payments via CaixaBank POS terminals.

Food consumption in the «new normal»

From July onwards, with the relaxation of lockdown measures, a gradual slowdown in food expenditure began to be observed. However, demand is still unusually high: at the end of September, card expenditure on food was still 20% higher than the previous year, showing that the health crisis is still affecting household consumption patterns.

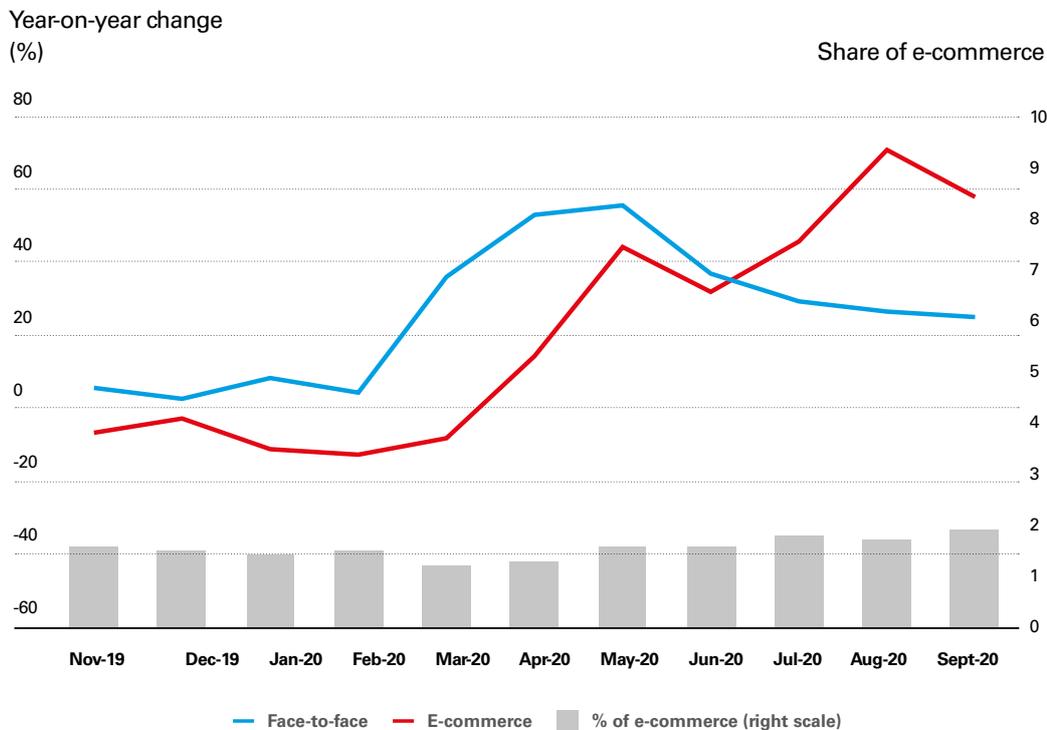
Online shopping recorded a remarkable increase during the lockdown. Here, too, companies showed themselves to be highly flexible and adaptable in responding to new consumer needs



Although all food product distribution channels have seen their sales increase, the rise in online shopping was particularly notable. Although the sector was not always able to respond to the peak demand via this channel during the first weeks of the state of emergency, after a short time many companies had already expanded their logistics capacity and workforce to meet consumers' new needs. Specifically, **payments via CaixaBank virtual POS terminals recorded a considerable upturn in online shopping from the second half of April and growth rates are still strong, close to 60%**. As a result, the market share of e-commerce has increased significantly: from 1.6% in 2019 to 2.4% between 9 March and 6 June 2020, according to data published by the Ministry of Agriculture.⁴

④ See the introduction to the «Informe del consumo alimentario en España 2019» by the Ministry of Agriculture, Fisheries and Food, in which some data for 2020 have been advanced: https://www.mapa.gob.es/es/alimentacion/temas/consumo-tendencias/presentaciondatosconsumo_vf_ok_tcm30-540247.pdf

Food expenditure via card: face-to-face and online



Source: CaixaBank Research, from internal data on payments via CaixaBank POS terminals.

Another interesting figure that allows us to assess the degree of penetration of online food purchases comes from the CIS barometer which, in May, included several questions on consumption habits and trends during lockdown. The barometer revealed that **20% of respondents had purchased food products via online channels during lockdown**, a percentage very similar to those who had purchased computers and IT equipment and only exceeded by purchases of clothing, fashion and footwear (27.7% of respondents). This survey also revealed that 67% of respondents made face-to-face purchases less frequently and that 19% preferred neighbourhood and local stores (compared to 12% before the state of emergency).

The agrifood sector has been affected by the crisis via the hotel and catering industry, selectively damaging some sub-products that depend on the food service industry for their final consumption

The drop in consumption in hotels, restaurants and cafés

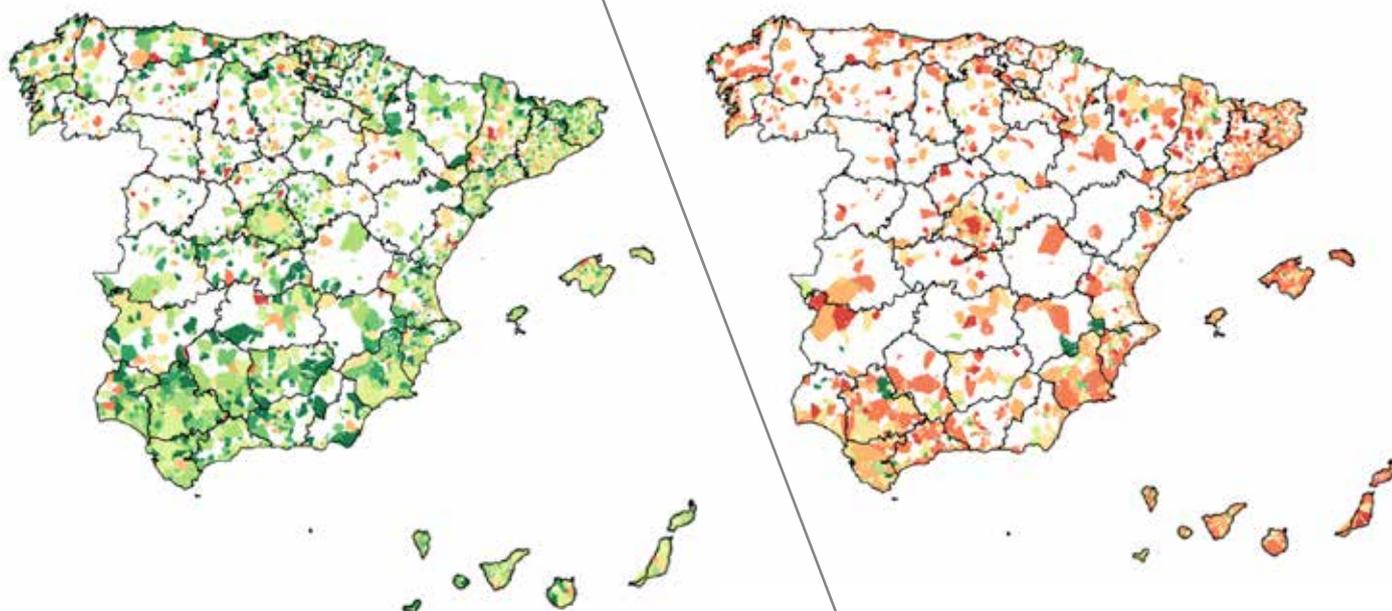
The agrifood sector, however, has also suffered from the crisis. Shutting down the Spanish economy to stop the spread of the pandemic significantly affected the hotel and catering industry, which accounts for a third of the industry's total turnover, especially affecting those sub-sectors whose production is almost entirely aimed at this channel.

As can be seen in the chart above on CaixaBank POS terminal activity, **spending on food service establishments plummeted with the onset of the state of emergency, posting falls of over 90% between the second half of March and the end of April.** In May, food service expenditure using Spanish cards began to recover relatively quickly, picking up considerably in the summer months.

Expenditure on food service during the summer months by municipality

Spanish cards

Foreign cards



Notes: Variation in expenditure on food service establishments in July-August 2020 compared with July-August 2019 by municipality. Green (red) indicates a positive (negative) year-on-year change and the darker the colour, the greater the increase (decrease). Municipalities with a minimum of 1,000 euros spent on food service.

Source: CaixaBank Research, from internal data on payments via CaixaBank POS terminals.



However, **foreign card spending on food service has suffered a severe blow and has yet to show signs of recovery.** While there was some improvement in July and August (–60% year-on-year compared with falls of over 90% during the state of emergency), in September the drop was once again severe (–80% year-on-year). The maps above show the trend in expenditure on food service in July and August 2020 compared with the same period in 2019 at a municipal level. The predominant colour on each map is evident: green in the map on the left, corresponding to Spanish cards and indicating positive year-on-year growth in most municipalities; and red in the map on the right, reflecting the decrease in foreign card expenditure on food service this summer. The islands and the Mediterranean basin have been hardest hit because of their greater dependence on tourism.

The food service sector and its dependence on tourism

The food service sector is certainly very dependent on tourism. According to CaixaBank's own data, **21% of card expenditure on bars and restaurants in 2019 was made with foreign cards** (see the table below), a percentage that rises to 37% for gastronomic restaurants. In addition, **15% of expenditure was made with Spanish cards from a province other than the one** in which the establishment is located (an indication of dependence on domestic tourism).⁵ In the case of gastronomic restaurants, almost half their turnover depends on domestic and foreign tourism. Moreover, in many cases these are highly seasonal businesses that have been hugely affected by the collapse of international tourism during the summer. In July and August, foreign tourist arrivals in Spain totalled fewer than 5 million compared with 20 million in 2019 (–75% year-on-year).

⁵ Specifically, for each card the sum of expenditure at POS in each Spanish province is calculated for the whole of 2019. The residence of the card is assigned to the province with the greatest expenditure.

The food service sector is highly dependent on tourism

	 Bars	 Restaurants	 Gastronomic restaurants	TOTAL
AVERAGE SPEND	14 €	35 €	136 €	24 €
FOREIGN CARD EXPENDITURE	18%	23%	37%	21%
EXPENDITURE WITH SPANISH CARDS FROM THE SAME PROVINCE	69%	61%	48%	64%
EXPENDITURE WITH SPANISH CARDS FROM A DIFFERENT PROVINCE	13%	16%	15%	15%
	100%	100%	100%	100%

Note: Data from 2019.

Source: CaixaBank Research, from internal data on payments via CaixaBank POS terminals.



The collapse of international tourism has significant implications for the demand of food products. According to an analysis of the input-output tables, for every euro of turnover in accommodation and food services, 30 cents are demanded from the agrifood sector.⁶ In other words, any shock to tourism is passed on through the food chain to those who supply food to these restaurants, products that are less frequently consumed at home and therefore face significant difficulties in finding an alternative market.

Among the products most affected at the beginning of the lockdown were lamb and goat meat, sheep and goat's milk, fresh fish and wine, among others. In response to this situation, some small producers formed alliances to develop online distribution channels and promote local sales, revealing a great capacity to adapt to an exceptional situation. Even the Minister of Agriculture himself, at the beginning of the state of emergency, called on households to consume products that had particularly suffered from the closure of the food service business.

Recent developments in the pandemic in Spain does not allow us to be too optimistic about international tourism's prospects for recovery in the short term. Until there is an effective vaccine or treatment against COVID-19, tourist numbers are likely to remain very low. However, once we have overcome the pandemic, the excellent position enjoyed by Spain's tourism industry before the crisis suggests it will recover strongly in the medium term.⁷

⁶ See [«Evolución reciente y perspectivas para el sector turístico español e implicaciones para el conjunto de la economía»](#), Bank of Spain, Annual Report (2019).

⁷ See the article [«The tourism industry in the face of COVID-19: an unprecedented impact»](#), published in the Tourism Sector Report of July 2020.



FOREIGN SECTOR

The resilience of Spanish agrifood exports

Agrifood exports have continued to perform very well during the pandemic within a context where international trade has been particularly hard hit by the crisis. Swine meat, fruit and some fresh vegetables have been in greatest demand, while the Basque Country and especially Aragon have been the regions posting the largest growth in exports between January and July 2020. Despite this favourable performance to date, however, the sector is keeping a close eye on developments in global trade tensions, especially between the US and EU and the Brexit negotiations.

A mainstay of Spain's foreign sector that has withstood the crisis

The agrifood industry is a mainstay of the foreign sector for the Spanish economy. **In 2019, sales abroad totalled 50.36 billion euros, 5.9% more than in 2018, accounting for 17.4% of all goods exported.** Spain is a major exporter of agrifood products: it is the fourth largest exporter in the sector in the EU, behind only the Netherlands,⁸ Germany and France, and globally it overtook Canada in seventh place in the world ranking of food-exporting countries in 2018 (latest available WTO data), with a global market share of 3.6%, well above the 1.8% share for all goods exports.

⁸ The Netherlands exports some domestically produced goods but much of its foreign trade is due to re-exports of goods between European countries that pass through Dutch ports.

Spain is a major exporter of agrifood products: it ranks fourth in the EU and seventh in the world

Since last March, the COVID-19 pandemic has had an extraordinarily negative impact on international trade. However, in spite of this general pattern of decline, **Spanish agrifood exports grew by 4.9% year-on-year between January and July 2020.** Exports from the primary sector were stronger, posting a year-on-year increase of 6.3% in the year to July, while exports by the agrifood industry rose by 4.1% in the same period. Such growth contrasts with the decline in all goods exports (-14.6%), so that the share of agrifood

Ranking of countries according to their agrifood product exports (2018)



		Billions (USD)	Global figure	Share of food exports*
1	US	139	9.0%	8.4%
2	Netherlands	93	6.0%	12.8%
3	Germany	82	5.3%	5.3%
4	Brazil	81	5.2%	33.7%
5	China	72	4.6%	2.9%
6	France	71	4.6%	12.1%
7	Spain	56	3.6%	16.2%
8	Canada	50	3.3%	11.2%
9	Italy	47	3.1%	8.6%
10	Belgium	45	2.9%	9.5%

Note: (*) As a percentage of the country's total exports.

Source: CaixaBank Research, based on data from the WTO.

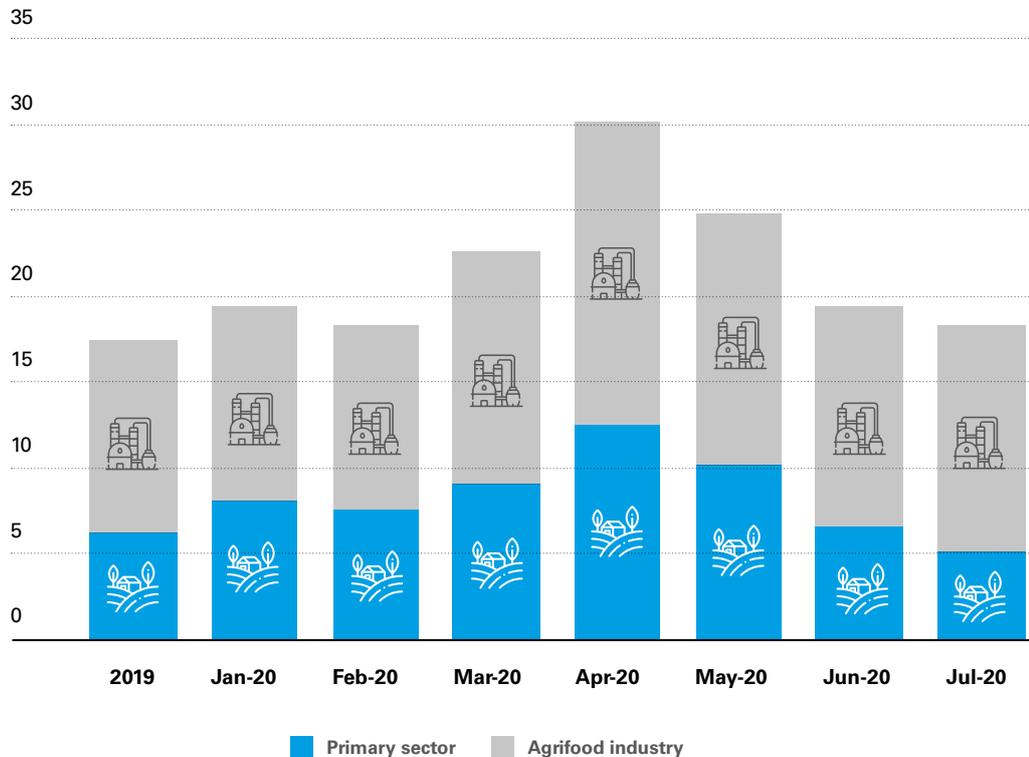
exports out of the total has grown significantly, reaching 30% in April. Agrifood imports also increased during this period but to a lesser extent, so that the **external trade surplus of agrifood goods reached a record high in July: 1.30% of GDP** (compared with 1.06% in 2019).

Despite the strong impact of the pandemic on international trade, Spanish agrifood exports have performed very well



Share of agrifood exports*

(%)



Note: (*) As a percentage of all goods exports.

Source: CaixaBank Research, based on data from DataComex.

Which products have contributed the most to export growth in 2020?

The meat sector has led the growth of agrifood exports with a 25% year-on-year increase between January and July 2020, thanks to the rise in sales of swine meat (+35%).⁹ The second group of products with the largest increase is that of canned meat or fish (+13.2%). Next come the product groups of oilseeds and coffee and tea, up by more than 10% but with a smaller share of all exports (close to 1%). More significant is the progress made by fruit (+9.4%), the most exported group (17.6% of all agrifood exports in 2019).

⁹ In this article, products are defined according to the 4-digit TARIC system (Integrated Trade Tariffs of the European Union). The TARIC codes considered as agrifood products are between 0101 and 2403. The product groups are defined by their first 2 TARIC digits.

Swine meat and fruit and vegetable products have led the growth of Spanish agrifood exports during the pandemic

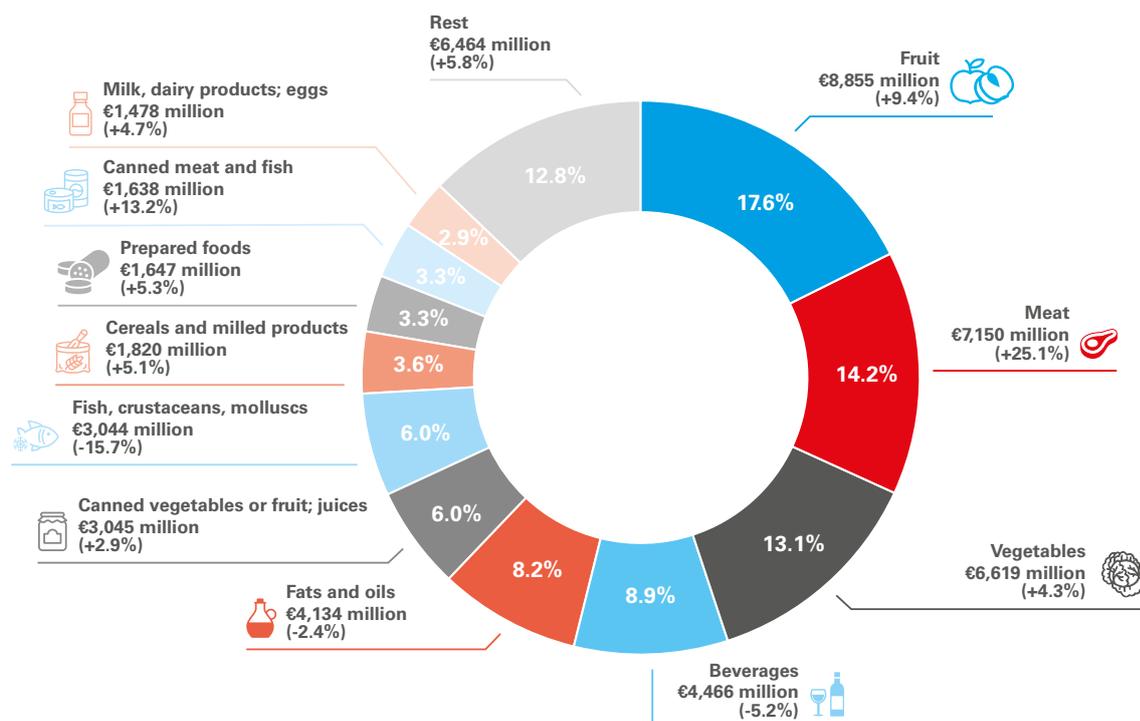
Among fruits, citrus (TARIC 0805) and apricots, cherries, peaches, plums and sloes (TARIC 0809) have seen strong growth (+18.2% and +17.2% year-on-year until July, respectively). Pulses and vegetables, which accounted for 13.1% of all agrifood exports in 2019, performed more modestly in the first seven months of 2020 (4.3%) but some products such as carrots, cucumbers and cabbages posted very significant increases. On the other



hand, some product groups have recorded declines, such as fish, crustaceans and molluscs (-15.7%), beverages (-5.2%) and fats (-5.4%). In particular, olive oil exports have fallen by 7.4% year-on-year and wine by 5.4%, although both products are still in the top 5 of exported agrifood products.

Agrifood exports by product group

Value of exports in 2019 and growth between January and July 2020



Notes: The chart represents the value of agrifood exports for each product group out of all Spanish agrifood exports in 2019. The figure in brackets is the change between January and July 2020 compared with the same period the previous year.

Source: CaixaBank Research, based on data from DataComex.



Top 10 agrifood exports

TARIC	Product	Exports in 2019 (million euros)	Share* in 2019	Variation January-July 2020
0203	 SWINE MEAT	4,582	9.1%	▲ 34.6%
0805	 CITRUS FRUIT, FRESH OR DRIED	3,198	6.4%	▲ 18.2%
1509	 OLIVE OIL AND ITS FRACTIONS	2,931	5.8%	▼ -7.4%
2204	 WINE OF FRESH GRAPES	2,739	5.4%	▼ -5.4%
0709	 OTHER VEGETABLES, FRESH OR CHILLED	2,057	4.1%	▲ 6.7%
0810	 OTHER FRUIT, FRESH	1,720	3.4%	▼ -1.2%
1905	 BREAD, PASTRY, CAKES, BISCUITS AND OTHER BAKERS' WARES	1,075	2.1%	▲ 4.0%
0809	 APRICOTS, CHERRIES, PEACHES, PLUMS AND SLOES, FRESH	1,070	2.1%	▲ 17.2%
2005	 OTHER VEGETABLES PREPARED OR PRESERVED	975	1.9%	▼ -1.4%
0702	 TOMATOES, FRESH OR CHILLED	922	1.8%	▲ 1.7%
TOTAL AGRIFOOD EXPORTS		50,361	100.0%	5.4%

Note: (*) The share is the value of agrifood exports for each product out of all Spanish agrifood exports. Variation between January and July 2020 compared with the same period the previous year.

Source: CaixaBank Research, based on data from DataComex.

How have agrifood exports fared in the different autonomous regions?

Aragon is the autonomous region with the highest growth in exports in the first seven months of 2020 (+33.8%) thanks to its specialisation in swine meat (TARIC 0203), whose demand has picked up strongly, especially from Asian countries. This is followed by the Basque Country (+13.3%) due to the upturn in exports of chemically modified fats and oils (TARIC 1518); Catalonia (+8.8%) also benefited from the boom in swine meat exports and Valencia recovered (+7.6%) due to the effect of citrus products (+16.7%, more than 200 million euros compared with the same period in 2019), in great demand by our trading partners during the COVID-19 crisis. **At the other end of the scale were the Balearic Islands and Canary Islands with very sharp falls in their agrifood exports (-28.4% and -25.0%, respectively).** Although the share of these exports out of the total exports of island goods is quite low (4.7% and 9.0%, respectively, compared with 17.4% for Spain as a whole), these are not good figures for economies that have already been very hard hit by the huge crisis in the tourism industry.

Agrifood exports by autonomous region

Value of exports in 2019 and growth between January and July 2020



Source: CaixaBank Research, based on data from DataComex.

What are the main destinations for Spain's agrifood exports?

EU countries are the main destinations for Spanish agrifood exports, with France and Germany at the top. Both destinations have performed very well in the first seven months of 2020, with advances of 4.7% and 9.5% year-on-year, respectively. They are closely followed by Italy and Portugal which received 9.8% and 8.9% of Spanish agrifood exports in 2019, respectively. These two markets, however, have shown some weakness this year.

EU countries are the main destinations for Spanish agrifood exports. Uncertainty over future trade relations with the UK and trade tensions with the US have not marred the sector's excellent performance



In fifth position is the United Kingdom, with 7.7% of the total and the first non-EU destination. Between January and July 2020, exports to the UK grew strongly (6.8% year-on-year), a remarkable fact given the sharp decline in the country's economy in Q2 2020. It is clear that the high level of uncertainty regarding the rules that will govern trade relations between the UK and the EU from January onwards is causing some concern in the sector.

In the hypothetical case that the relationship between these two parties would ultimately involve tariffs, agrifood products (along with textiles and, to a lesser degree, motor vehicles) are among the goods to which higher tariffs, on average, would be applied, according to a Bank of Spain report.¹⁰ The same report identifies Murcia as one of the regions that could be most affected by a hard Brexit (or lack of agreement) due to the large volume of fruit and vegetable exports it sends to the UK market. In any case, the study also points out that the vulnerability to Brexit of Spanish exporters to the United Kingdom is partly offset by their relatively high level of productivity and the degree of geographical diversification of their exports.

¹⁰ See «Empresas españolas que exportan bienes al Reino Unido», Bank of Spain, Economic Bulletin 3/2020. <https://www.bde.es/f/webbde/SES/Secciones/Publicaciones/Informes-BoletinesRevistas/ArticulosAnaliticos/20/T3/descargar/Fich/be2003-art27.pdf>. For a more detailed analysis of the sector's exposure to the United Kingdom, see the Bilateral Agrifood and Fisheries Trade Report with the UK, published by the Ministry of Agriculture (2018). <https://www.mapa.gob.es/es/ministerio/servicios/analisis-y-prospectiva/informereinounido2018tcm30-514096.pdf>

Trend in agrifood exports to the main destinations

	Exports in 2019 (million euros)	Share in 2019	Variation January-July 2020
France	7,546	15.0%	▲ 4.7%
Germany	5,587	11.1%	▲ 9.5%
Italy	4,933	9.8%	▼ -5.1%
Portugal	4,492	8.9%	▼ -1.2%
United Kingdom	3,893	7.7%	▲ 6.8%
Netherlands	2,162	4.3%	▲ 3.2%
China	2,079	4.1%	▲ 94.1%
United States	1,929	3.8%	▼ -1.0%
Poland	1,164	2.3%	▲ 10.1%
Belgium	1,061	2.1%	▲ 6.3%

Note: The share is the value of agrifood exports to each destination out of all Spanish agrifood exports.
Source: CaixaBank Research, based on data from DataComex.

China is the second largest non-EU destination for Spain's agrifood exports, a figure that practically doubled in the first seven months of 2020 compared with the same period last year (+94.1%). This exceptional performance is due to swine meat exports to the country (+216%), still affected by African swine fever.

The next country in the ranking is the United States, with almost 2 billion euros of exports in 2019, 3.8% of the total. However, the recent trend is not very positive since, between January and July 2020, there was a slight decline of 1% year-on-year. This decrease could be related to the higher tariffs (from 3.5% to 25%) imposed by the US on certain agrifood products on 19 October 2019, a decision under the WTO ruling on state aid to Airbus that

authorized the US to impose countermeasures to the EU worth 6.8 billion euros, which affected Spain to the tune of about 790 million euros.

The table below details the trend in exports of the main products affected by these measures. **It can be observed that Spanish exports to the US of olive oil, fatty cheeses and biscuits are performing well in spite of the tariffs.** In fact, exports of these products to the US are growing more than to other destinations. On the other hand, the trend is very bad for wine, olives, certain types of swine meat and lemons. Perhaps the most worrying case is that of olives, as 22% of these exports went to the US in 2019. On the other hand, the share of the US market for other products is lower, so it may be relatively easier to redirect these to other markets.

Main agrifood products affected by US tariffs

TARIC	PRODUCT	Exports in 2019 (million euros)		US share in 2019	Variation January-June 2020 (%)	
		Total	To the US		Total	To the US
15091020	 EXTRA VIRGIN OLIVE OIL	2,057	280.1	13.6%	▼ -8.1%	▲ 7.8%
220421	 WINE, ALCOHOLIC STRENGTH ≤14% VOL. IN CONTAINERS HOLDING ≤2 LITRES	1,713	220.5	12.9%	▼ -4.2%	▼ -1.8%
200570	 CANNED OLIVES	690	151.7	22.0%	▼ -1.2%	▼ -5.1%
150990	 OLIVE OIL (EXCL. EXTRA VIRGIN)	569	121.5	21.3%	▲ 3.6%	▲ 15.3%
04069099	 CHEESE WITH FAT CONTENT > 40%	102	38.5	37.7%	▲ 14.7%	▲ 23.9%
020329	 OTHER SWINE MEAT	2,215	24.6	1.1%	▲ 43.6%	▼ -82.7%
190531	 SWEET BISCUITS	236	15.0	6.4%	▲ 3.2%	▲ 24.6%
220870	 LIQUEURS	155	7.8	5.1%	▼ -2.8%	▼ -50.0%
04061050	 OTHER CHEESES (SKYR, PIZZA CHEESE)	116	7.5	6.4%	▼ -7.8%	▼ -74.7%
08055010	 LEMONS	721	6.4	0.9%	▲ 32.1%	▼ -90.2%

Notes: The share is the value of agrifood exports to the US out of all Spain's exports of that product. Variation between January and July 2020 compared with the same period the previous year.

Source: CaixaBank Research, based on data from DataComex.

However, although the figures do not seem alarming, it should be noted that **there is a high degree of uncertainty surrounding the policies that will govern Europe's future trade relations with the US.** Trade has been the US government's battleground since the beginning of 2018 when it began its bitter disputes with China as well as the EU, albeit to a lesser degree. Although there was some rapprochement at the end of August (in the end, the US did not carry out its threat to raise tariffs already imposed on European products in October 2019), recent restrictions on technology clearly indicate that trade tensions could easily return and affect the sector again. On the other hand, it is also important to note that the EU is still pushing its trade policy agenda, reaching bilateral trade agreements with other countries such as Canada and Japan, which could open up new opportunities for the agrifood sector.



New technologies

Digitalisation of the agrifood sector: what does Twitter tell us?

Technology is advancing at a frenetic pace and offers the agrifood chain a large number of opportunities to make its production more efficient and sustainable. Moreover, the arrival of COVID-19 has shown that the most digitalised companies were able to continue their activities more readily than the rest. In this article we examine the degree of popularity of the different digital technologies used in the primary sector and agrifood industry based on a text analysis of over 2 million tweets on Twitter. All these technologies are essential to create a connected ecosystem that will make up the Food Chain 4.0 of the future.

The unexpected arrival of the pandemic has shown that the most digitalised companies were more prepared to adapt to the new situation and were able to continue to operate much more smoothly than the rest. There is no doubt that, in this new environment, **the digital transformation of companies is now unavoidable in order to boost their competitiveness.**

Big data, robotics, the internet of things and blockchain are just some examples of the new digital technologies gradually being adapted by firms, particularly in the agrifood sector. Technology is advancing at a frenetic pace and is offering the agrifood chain a large number of opportunities to produce more efficiently and sustainably. However, statistical information on the degree to which such technologies have been taken up, and the most comprehensive official statistical source¹¹, does not provide information on the primary sector. Below we present a novel analysis of the «popularity» of new digital technologies in the agrifood sector based on data from Twitter.

¹¹ Survey on the use of information and communication technologies (ICT) and e-commerce in companies, compiled by the National Statistics Institute.

Twitter as a source of information to detect future trends

Data from Twitter can be extremely valuable in detecting new trends as it allows us to analyse the popularity of certain terms according to how frequently they appear in tweets. However, it is true that «talking about something» is not the same as successfully implementing the various digital technologies in a company's recurring operations. For this



reason the results presented below should be interpreted simply as an indication of new trends that may be taking root in agrifood companies.

Data from Twitter allow us to analyse how popular the different digital technologies are in the agrifood sector according to how often they are mentioned in tweets

For this study, **data was processed from over 24 million tweets sent by individual users and digital media during the period 2017-2019.** Among these, 2 million corresponded to the agrifood sector. Using natural language processing techniques, the tweets were categorised according to mentions of different digital technologies and to the business sector.¹² The key to obtaining relevant data from social media is to first define «seed» words or phrases to identify texts corresponding to each of the business sectors, as well as «seed» words or phrases related to the different digital technologies of interest.¹³ Using a machine-learning algorithm, other words and phrases related to the concept in question that were not initially included were also identified, thus broadening the spectrum of texts analysed. At this stage, it is important to carefully screen for polysemous words (i.e. those that have more than one meaning, such as the word «reserva» in Spanish, which can be used to refer to a hotel booking as well as an aged wine).

¹²This analysis was carried out in collaboration with Citibeats, a company specialising in unstructured natural language processing.

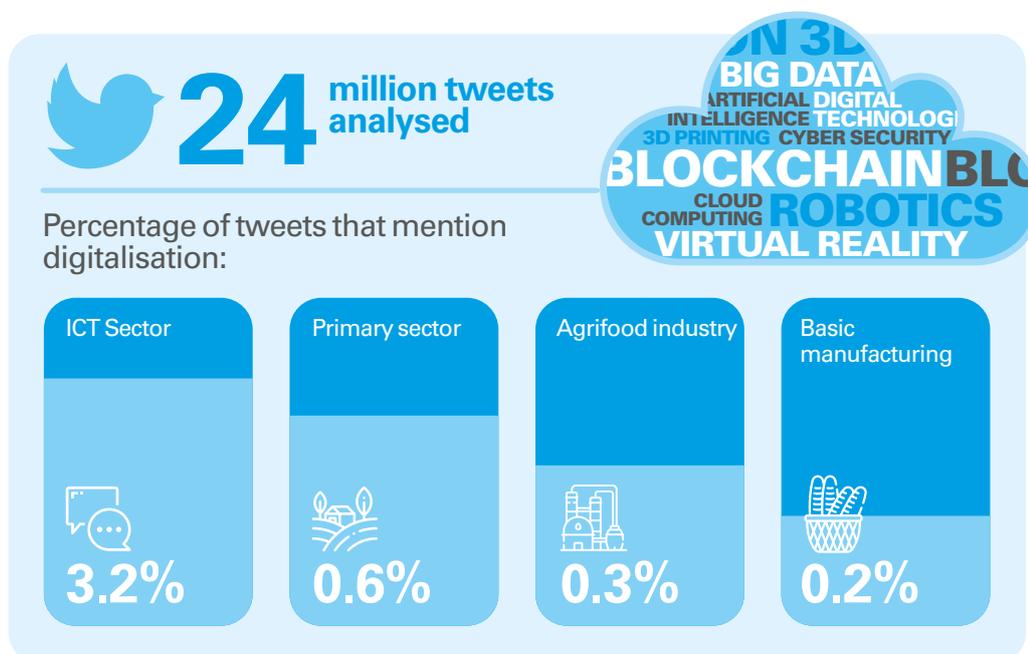
¹³For example, the «seed» words and phrases used to identify big data were: analytics, arquitectura de sistemas (system architecture), data mining, database, inteligencia empresarial (business intelligence), Python and SQL, among others (as well as the term big data *per se*).



What is the degree of digitalisation of the agrifood sector according to Twitter?

To assess the agrifood sector's degree of digitalisation according to data from Twitter, we first need to know how common tweets about digitalisation are in other business sectors. The most digitalised industry according to our analysis is the information and communication technologies (ICT) sector: 3.2% of the sector's tweets contain terms related to digitalisation, a result that is not surprising given the very nature of the industry. Next comes finance and insurance with 2.7% of the tweets.

This percentage is obviously lower in the primary sector at 0.6% but it is similar to the 0.7% for professional, scientific and technical activities. In the case of the agrifood industry, the percentage of tweets on digitalisation is only 0.3%, very close to the basic manufacturing sector (which includes the textile, wood, paper and graphic arts industries), with the lowest percentage among the sectors analysed, 0.2%.



Which digital technologies are most popular in the agrifood sector according to Twitter?

The wealth of data obtained from Twitter allow us to identify the most popular digital tools in each business sector according to how frequently they are mentioned in the tweets examined. According to our analysis, **a large proportion of the primary sector's tweets about digitalisation tend to include issues related to big data** (45% of all tweets about digitalisation). One clear example of the application of big data in the sector can be found in «precision agriculture» techniques which require large amounts of data to be analysed to optimise decisions and thereby increase production and, in turn, ensure sustainability. These techniques are used, for instance, to calculate the irrigation requirements of crops by taking into account climatic conditions (sunlight, wind, temperature and relative humidity) and crop characteristics (species, state of development, planting density, etc.). To carry out this calculation, real-time updated meteorological data, a large computing capacity and fast data transmission speeds are all required for an automatic irrigation system to be properly

adjusted. This technology helps to use water more efficiently, a highly relevant aspect in areas with a Mediterranean climate that are extremely vulnerable to climate change and where water is in short supply.

Big data, the internet of things and robotics are the most popular technologies in the primary sector, indispensable for advancing the application of precision agriculture techniques and smart automated farming

Other popular technologies in the primary sector are the internet of things (16% of tweets) and robotics, including drones (10% of tweets). The new digital technologies promise to revolutionise the field of agriculture and stockbreeding by the middle of this century, the same as the mechanisation of farming in the XXI century. Agricultural Machinery 4.0 (which is closer to the robots in science fiction films than to the tractors we are used to seeing on all farms in the country) helps to increase productivity whilst also improving working conditions in the field. This trend towards more automated agricultural tasks has become stronger in the wake of the coronavirus pandemic, as the difficulty in recruiting seasonal workers due to international mobility restrictions has led to increased interest in robotics and agricultural automation. In fact, companies that manufacture robots for agriculture have seen a sharp increase in orders, such as robots that pick strawberries while removing mould with ultraviolet light.¹⁴

The use of drones warrants particular attention as this has grown exponentially in recent years and applications are increasingly widespread: from the early detection of pests and the aerial inspection of large areas of crops to locating wild boar with heat-sensitive cameras to prevent the spread of African swine fever to domestic pigs.¹⁵

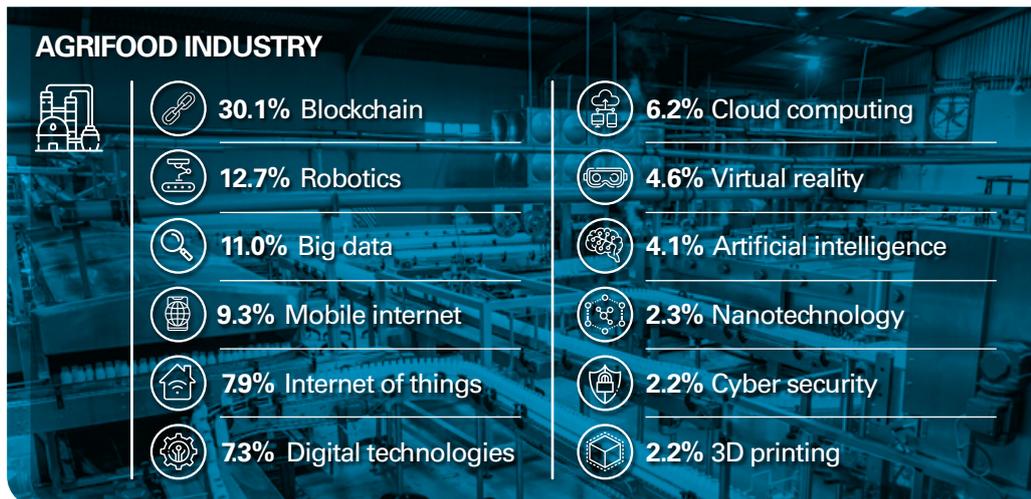
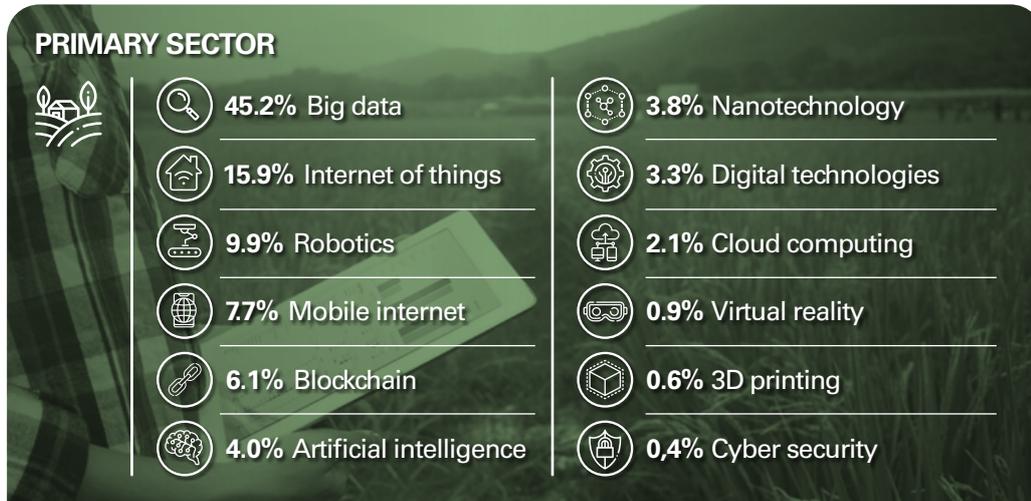
¹⁴ See FinancialTimes Agritech «Farm robots given Covid-19 boost», 30 August 2020.

¹⁵ See <http://www.catedragrobank.udl.cat/es/actualidad/drones-contra-jabalies>





The popularity of various digital technologies in the agrifood sector



Note: Number of tweets mentioning a technology out of the total number of tweets related to the sector's digitalisation.
Source: CaixaBank Research.

Blockchain is the technology that stands out most in the food sector (30% of the total number of tweets on the sector's digitalisation) and this comes as no surprise as it has many different applications for the food and beverage industry. Producing a chain of unalterable, reliable records, blockchain makes it possible to guarantee the complete traceability of products throughout all the links in the food chain. Simply scanning a QR code provides access to all the data regarding the origin, production method, veterinary treatments received, ingredients used, etc. A large number of agrifood companies are already experimenting with blockchain as it offers clear benefits in terms of transparency regarding origin, product quality and food safety, aspects that are increasingly valued by consumers. Blockchain technology is also being used to limit food waste, another essential challenge for the sector.

Blockchain enables the digital verification of food products, making them traceable throughout the links in the food chain

Compared with other sectors, which tools are particularly significant for the agrifood industry?

There are some digital technologies that are not very popular across all economic sectors, perhaps because they have a more limited or specific range of application. These are technologies that, despite having a low percentage of tweets in absolute terms according to our study, may be relatively popular for a particular sector compared with the rest.

To detect such cases, we have calculated a new metric, namely a concentration index which takes into account the *relative* popularity of technologies in a sector compared with the rest of the sectors.¹⁶ By using this methodology, we have found that the **primary sector** continues to stand out in terms of big data. Specifically, the primary sector concentrates 9.2% of the total number of tweets mentioning big data made by all sectors, a much larger proportion than the 3.1% share of primary sector tweets out of the total number of tweets analysed (as can be seen in the following table, in this case the concentration index is 3). We have also determined that the sector is particularly interested in the internet of things, as already mentioned, but have discovered that **nanotechnology is also a relatively popular technology in the primary sector**. In other words, although only 3.8% of the tweets in the primary sector deal with nanotechnology, this percentage is high compared with the 1.7% share of nanotechnology tweets out of the total (in other words, this technology is not very popular in general across all sectors but is slightly more popular in the primary sector than the others). This find is not surprising since genetic engineering is one of the fields in which technology has advanced most in order to boost crop yields. For example, by optimising

¹⁶ The concentration index is calculated as the ratio between (1) the percentage of tweets related to a particular technology and sector out of the total tweets for this technology, and (2) the percentage of tweets by a sector out of the total tweets of all sectors. Values above 1 indicate the technology is relatively more popular in that sector.

Concentration index for tweets related to each technology in comparison with the other sectors

Digital technologies	Primary sector	Agrifood industry
 TRADITIONAL DIGITAL TECHNOLOGIES	0.5	1.2
 MOBILE INTERNET	0.3	0.4
 CLOUD COMPUTING	0.2	0.6
 BIG DATA	3.0	0.7
 INTERNET OF THINGS	2.4	1.2
 ARTIFICIAL INTELLIGENCE	0.8	0.8
 ROBOTICS	1.6	2.1
 VIRTUAL AND AUGMENTED REALITY	0.5	2.5
 3D PRINTING	0.4	1.4
 BLOCKCHAIN	0.3	1.7
 CYBER SECURITY	0.1	0.6
 NANOTECHNOLOGY	2.4	1.5

Note: The concentration index is calculated as the ratio between (1) the percentage of tweets related to a technology and sector out of the total tweets of this technology, and (2) the percentage of tweets by a sector out of the total tweets of all sectors. Values above 1 indicate the technology is relatively more popular in that sector.

Source: CaixaBank Research.



the yield of vines it is possible to develop plants that are much more resistant to extreme weather conditions and pests.

Finally, virtual and augmented reality is also a relatively popular technology in the agrifood industry. Specifically, the agrifood industry concentrates 6.2% of the total virtual and augmented reality tweets made by all sectors, a percentage that more than doubles the 2.5% share of primary sector tweets out of the total number of tweets analysed (the concentration index is equal to 2.5 in this case). This technology uses virtual environments (virtual reality) or incorporates virtual elements into reality (augmented reality) that provide additional knowledge and data that can be used to optimise processes. At first it may be surprising that this technology is relatively popular in the agrifood industry but its uses are spreading as the industry implements digital technologies in its production processes, in the so-called Industry 4.0. One specific example of how this technology is used is in repairing breakdowns. When a fault occurs, operators can use augmented reality goggles to follow the steps contained in virtual instruction manuals that are projected onto the lens to help resolve the incident. The glasses recognise the different parts of the machine and visually indicate to operators where they should act to solve the specific problem.

There are numerous examples of new digital technologies being applied in the agrifood sector. We are witnessing a revolution that is destined to transform the different links in the food chain: from the exploitation of data and the use of drones to make harvesting more efficient to implementing blockchain technology to improve the traceability of the final products that reach our homes. In short, the future will bring us the Food Chain 4.0, a totally connected ecosystem from the field to the table.

Main indicators for the agrifood sector

Annual change, unless otherwise specified

	Average 2000-2007	Average 2008-2014	Average 2015-2018	2019	2020	Date of latest data
Economic activity indicators						
Total GDP of the economy	3.7	-1.0	3.1	2.0	-21.5	Q2 2020
GVA primary sector	1.4	0.6	3.3	-2.3	6.3	Q2 2020
GVA agrifood industry	4.6	-2.7	1.2	-	-	2018
Agrarian income	3.0	2.1	9.0	-8.4	-	2019
Industrial production index: manufacturing industry	1.4	-4.8	2.8	0.7	-14.2 (*)	Aug-20
Industrial production index: food	1.8	0.0	1.2	1.2	-5.3 (*)	Aug-20
Industrial production index: beverages	2.3	-1.7	-0.5	4.1	-10.4 (*)	Aug-20
Turnover index: manufacturing industry	5.5	-3.1	3.6	0.5	-16.3 (*)	Jul-20
Turnover index: food	4.1	1.1	2.5	4.2	-0.8 (*)	Jul-20
Turnover index: beverages	4.6	-1.2	1.9	2.7	-16.2 (*)	Jul-20
Demand indicators						
Retail sales index: whole economy	2.8	-4.0	2.3	2.4	-78 (*)	Aug-20
Retail sales index: food	1.5	-2.1	1.1	1.1	0.1 (*)	Aug-20
Expenditure on food	2.6	-2.1	0.2	1.0	-	2019
Share of expenditure on food (%)	15.9	16.1	15.1	14.5	-	2019
Labour market						
Total registered workers, whole economy	3.5	-2.1	3.2	2.6	-2.3	Sept-20
Registered workers, primary sector	-1.4	-0.6	0.7	-0.1	-0.1	Sept-20
Registered workers, agrifood industry	-	-0.8	3.2	2.4	-1.3	Sept-20
Total employees, whole economy	4.3	-2.4	2.7	2.3	-6.0	Q2 2020
Employees, primary sector	-1.5	-2.4	2.5	-1.9	-5.7	Q2 2020
Employees, agrifood industry	-	-1.0	1.1	3.4	-0.7	Q2 2020
Foreign sector						
Agrifood exports	6.3	6.0	5.2	5.8	4.9 (*)	Jul-20
Primary sector exports	4.7	5.1	4.8	5.2	6.3 (*)	Jul-20
Agrifood industry exports	7.3	6.6	5.5	6.1	4.1 (*)	Jul-20
Agrifood imports	6.7	2.0	5.2	1.4	-2.7 (*)	Jul-20
Primary sector imports	5.2	2.2	4.9	2.3	1.3 (*)	Jul-20
Agrifood industry imports	7.6	1.8	5.3	1.0	-4.8 (*)	Jul-20
Agrifood balance of trade (% of GDP)	0.1	0.4	0.9	1.1	1.3 (*)	Q2 2020
Primary sector balance (% of GDP)	0.2	0.2	0.4	0.4	0.5 (*)	Q2 2020
Agrifood industry balance (% of GDP)	-0.1	0.2	0.5	0.7	0.8 (*)	Q2 2020
Financing						
Outstanding balance of credit to the primary sector	9.9	-5.0	4.6	1.0	3.1	Q2 2020
NPL rate, primary sector (%)	1.3	7.4	8.2	6.0	5.9	Q2 2020
Outstanding balance of credit to the agrifood industry	10.4	-1.8	4.9	2.5	7.1	Q2 2020
NPL rate, agrifood industry (%)	1.6	7.1	6.5	4.1	3.8	Q2 2020

Note: For the indicators marked (*), the 2020 figure corresponds to the annual cumulative change up to the latest figure available. For the rest of the indicators, the year-on-year change for the latest figure available is shown.

Source: CaixaBank Research, based on data from the National Statistics Institute, DataComex, Social Security and Bank of Spain.



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