

Agriculture Practice

US food supply chain: Disruptions and implications from COVID-19

Changes in consumer behavior continue to ripple through the US food and agricultural supply chains. What should companies do now?

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Until early 2020, consumer spending on food

in the United States had been remarkably stable, growing by around 4 percent over the previous five years. Total sales were roughly split evenly between retail outlets (such as grocery stores and supermarkets) and food-service companies (such as restaurants, hospitals, and schools). And until February, revenues were continuing in the same direction.

Then came March and with it, the COVID-19 pandemic. Since then, physical distancing and associated lockdowns have dramatically reversed the trend of consumer spending on food. Consumers, forgoing public venues and eating at home, stocked up on groceries and supplies, boosting sales for the month by 29 percent over the prior year.¹ Meanwhile, sales declined at restaurants, fast-food locations, coffee venues, and casual-dining locations by 27 percent (Exhibit 1).

By now, ripple effects into that previously balanced system have become clear. Distribution channels have been upended, with food stranded upstream, creating food-security risks for vulnerable populations. Companies that produce, convert, and deliver food to consumers and businesses face a web of interrelated risks and uncertainties across all steps in the value chain—from farmers to end-customer channels. Food-service suppliers, for example, faced abrupt order cancellations across their entire customer bases. That left many of them with excess stock that they couldn't easily redirect to consumers because of packaging-size mismatches. Few home chefs have the cupboard space to accommodate restaurant-size cans of fruit and vegetables, but creating consumer-friendly formats would require additional investment of capital and time. And that would put perishable materials at risk, threatening narrow margins among prices, logistics, and transaction costs.

Not surprisingly, all that creates uncertainty across the global value chain, with distinct challenges for farmers, distributors, producers, consumer-

and packaged-goods companies, and retailers alike. Managers with a clear understanding of the challenges across the sector will be better prepared to decide whether to wait out the crisis or to invest for a longer-term shift in consumer spending. Much also depends on whether—and how quickly—they expect a return to pre-pandemic norms.

Farmers

For many farm operations that require significant amounts of labor (mainly, production of specialty crops, such as strawberries and lettuce), the most pressing pandemic-related challenge faced so far was the availability of workers. Some farmers faced other distinct challenges, such as a steep drop in grain prices following a shock to oil demand. Those value chains are operated in rural areas with low population density and limited opportunities to find skilled labor.

Within the United States, multiple farming and processing value chains are dependent on migrant workers, including those under sponsored visa programs. Only three in ten workers in the US agricultural workforce are born in or are citizens of the United States; the rest are born in other countries, and many are in the United States on guest agricultural visas.² If concerns related to the COVID-19 pandemic persist, it may be challenging to find workers, even at a premium, as people avoid close-quarters activities and limit their own exposure risk. Since worker wages are already a significant cost factor for farms, the pandemic may further strain farm economics.

Moreover, movement restrictions related to the COVID-19 pandemic could deter nonlocal workforces from moving among counties or states for work. That would further increase labor challenges for farms, leading to shortages during production peaks and putting harvests at risk. Difficulties in redeploying workers to farms connected to retail-demand-driven organizations or to processing plants with consistent or increased demand could further amplify the imbalance among channels.

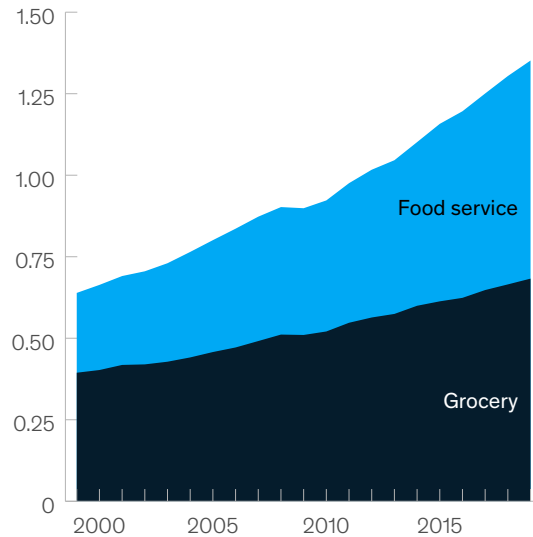
¹ Russell Redman, "Food sales stay strong in April despite U.S. retail sales plunge," Supermarket News, May 18, 2020, supermarketnews.com.

² "Farm labor," Economic Research Service, April 22, 2020, ers.usda.gov.

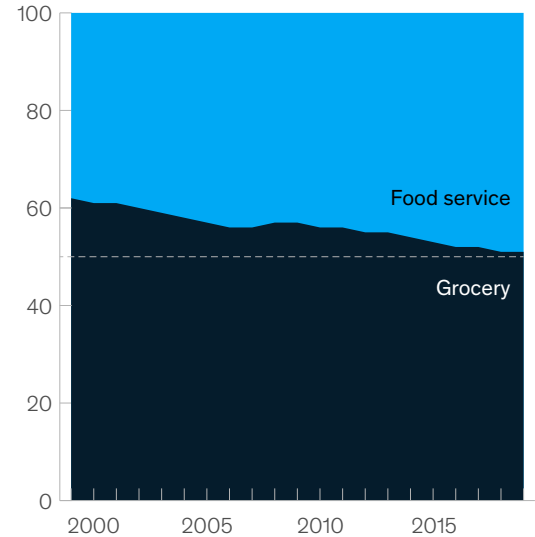
Exhibit 1

Until March 2020, consumer food spending had converged on equilibrium between grocery and food service.

US consumer food spending, \$ trillion



US consumer food spending, % of total



US consumer food spending, Mar 2019 vs Mar 2020, \$ billion



Source: Administrative records; McKinsey Annual Retail Trade Survey; McKinsey Monthly Retail Trade Survey; McKinsey Service Annual Survey

With such uncertain futures, the dilemma farmers face is whether they should change crops; plow ahead with planned crops, hoping for a return to normal; or exit production entirely. For many value chains, crops can be returned once rotations are complete. For value chains in areas such as dairy, it can take years to recover production after farmers decide to reduce herds. Already, farmers are taking extreme measures to deal with excess product—for example, breaking eggs, spilling milk, and plowing under crops. If farmers go a step further to reduce capacity, such as eliminating hens, culling herds, and selling farmland, they could reduce capacity for the long term. That could lead to product shortages and price increases for both food producers and consumers when downstream demand returns.

Food-service distributors

Distributors run an optimized and stable supply chain, with upstream orders coming in that anticipate downstream orders going out. Margins depend on there being a steady flow in both directions and having only a subset of products in inventory awaiting orders.

Immediately after coronavirus-related shutdowns, outbound orders suddenly stopped because of government-mandated closures of restaurants, even though inbound orders of food kept coming in from farmers, food-service producers, and processors. That led to logistical bottlenecks and storage-space shortages as distributors worked to cancel incoming shipments of inventory from

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farmers. Distributors have been significantly affected by quick-service and casual-dining restaurants in their switch to takeout only, with slow recovery given the staged return to full service. Some distributors have also adapted by at least partially initiating online-ordering and delivery services, but that has not been universal. For those unaccustomed to supplying the retail channel, redirecting their sales adds the complexity of modifying their current supply chains—and that can also add to costs.

Having rebalanced supplies with outgoing orders, food-service distributors are now left with overcapacity in their storage facilities and distribution networks, including the costlier “cold chain”—the temperature-controlled storage, equipment, and logistics needed to maintain a desired low temperature. The dilemma distributors face is how to stabilize their network cost structures in the interim. They could scale down support within each facility while maintaining a footprint. Or they could consolidate their networks of state-aligned distribution centers into regional ones, in spite of increased miles and lead times in a highly competitive environment. But consolidating some distribution centers and exiting others would reduce overall capacity in the long term. It would also limit local distribution options for food-service companies when demand returns, reducing channels for food-service producers as well.

Food-service producers

Food-service producers, such as produce and meat processors, face similar volume declines as their distributors do. Although in-store sales have increased to date, that increase has not covered the scale of decrease in food service, so plant utilizations remain significantly reduced. Additionally, many producers’ brands may not be recognized by retail consumers, making it difficult to gauge demand immediately.

Moreover, many food-service producers have already invested in equipment and facilities to produce and package food in large multi-serving formats for complex prepared-, processed-, frozen-, canned-, and packaged-food value chains. It would be highly inefficient to reconfigure those investments to single service sizes. In addition, producers’ plant personnel may be at risk of infection, since, in some cases, the factories require associates to work in close proximity.

For food-service producers, the dilemma is around the two- to five-year payback period of new packaging lines. Reinvesting and rebalancing a food-service network for retail is not a straightforward decision. Companies making new investments would be facing a 40 percent or more decline in revenue. And any number of issues could extend the payback period or make investments

unrecoverable. Forecasts are uncertain, for example, about the duration of pandemic-related demand shifts, the recovery of the food-service economy, and the timeline of returning to full employment. Competition for volume is already putting downward pressure on prices. And short-term solutions, such as manual packing, are labor intensive and face incremental challenges because of physical-distancing precautions.

Consumer and packaged-goods companies

Retail-facing consumer- and packaged-goods companies are facing multiple challenges because of the COVID-19 crisis. As with many companies in manufacturing, they bear risks related to employees working in close quarters at plants functioning at peak capacity. They also face significant increase in demand for certain product types (especially shelf-stable products) and packaging types (such as smaller sizes for home consumption) for which they have limited capabilities and capacity to supply. And they have distribution challenges because of a heightened demand for trucking coupled with a reduction in third-party-logistics capacity. That increases both competition and prices for trucking capacity.

Recent COVID-19 infections at meat-processor plants have raised the possibility of mass closures of plants, causing significant risk to a value chain with limited excess capacity. As of this writing, 18 processing plants in the United States have already been closed, affecting more than a third of the country's beef and pork supply. The US government recently invoked the Defense Production Act of 1950 to keep plants open. To comply, companies are offering a blend of incentives and incremental safety investments to maximize worker attendance and plant production—and to keep the food supply chain running.

Companies are increasing production to maintain their presence on retail shelves, offering incentives

to keep employees at work, and expediting raw materials (or engaging new suppliers) to meet production demand. Some companies are also increasing their e-commerce presence by going direct to consumer, given the spike in e-commerce purchases during the COVID-19 crisis.³ Those actions can add costs even as on-shelf prices stay fixed—in the face of competition or to avoid raising prices under crisis conditions, some have already brought mothballed production lines back into service and are evaluating their manufacturing footprints to reduce the number of plants.

But consumer- and packaged-goods companies still face the dilemmas of how to approach demand peaks and what demand scenario to prepare for. A company might continue scaling up production at the expense of margin, but when capacity is truly maximized, it will need to decide whether to activate mothballed facilities, make acquisitions, or invest in new or external capacity. It might also partner with food-service producers that likely have excess capacity or even pass up volume requests from retailers, allowing consumer trials and potential long-term share loss to competitor brands and private labels.

Grocery retailers

Grocery stores are benefiting from significant demand increases from demand previously met by food-service companies. However, they face additional challenges and extraordinary activities to protect and serve their consumers. Those include constant and visible cleaning of stores, frequent loading of shelves to keep up with demand, hazard-pay bonuses and incentives to maintain employee numbers, and hiring of additional labor, with limited time for training.

Challenges also include the cost of expanded hours of operation (since foot traffic is limited because of physical distancing), the cost of scaling up online-ordering and delivery systems, and the associated cost of handling consumer complaints for late and

³ Tatiana Walk-Morris, "Adobe: COVID-19 spurs spike in e-commerce," *Retail Dive*, May 25, 2020, retaildive.com.

errant deliveries. E-commerce has bridged the gap of declining foot traffic in the retail world, with surging delivery volumes across multiple channels escalating the importance of last-mile delivery during the COVID-19 crisis. The e-commerce channel now represents 10 to 15 percent of total grocery spend, increasing fivefold in the past few weeks. That has created a lot of strain in the system, as there are multiple challenges associated with last-minute delivery, given the significant ramp-up in labor required with limited training time. Walmart, for example, has hired 50,000 additional people, and Instacart has hired 300,000, even as they navigate new COVID-19-related safety precautions.

In the months since the pandemic began, Amazon, Walmart, and most grocers have reported impressive sales increases,⁴ but margin growth has significantly lagged. At the same time, consumers are facing increasing economic hardship, limiting their ability to pay for goods. Many retailers are caught between the demand of reassuring consumers, protecting workers, and maintaining supply at increasing costs and the need to maintain value for consumers. They may be able to increase throughput for their supply chains, despite what will likely be a finite period of increased demand, but will need to maintain high product quality even while establishing relationships with new suppliers. And there is always the risk of potential new entrants and additional channel shifts in the next normal.

What can be done now and in the future?

In the short to medium terms, in the absence of a COVID-19 vaccine, the challenges for each value-chain participant will continue. The severity of those challenges will depend on how quickly and safely governments open up economies and how quickly channels restabilize. Even after reopening, food service will continue to face significant challenges (such as requirements for a minimum distance between patrons, causing operating constraints) that may affect demand.

Given fixed prices and cost-driven margin compression in retailer value chains, the returns on investment may not exist for farmers, producers, distributors, and retailers to make medium-term investments to address channel mismatches via investments and rebalancing. Therefore, channel mismatches may continue, with significant consequences to individual participants. If inaction leads to exit by food-value-chain players, it will remove food capacity from the value chain that would, under equilibrium conditions, have been consumed. That may create inflationary pressures when demand returns, if it exceeds supply. Such exits will also remove jobs from the economy well beyond the initial recovery phase, limiting the strength of the rebound.

Food-service companies will need to pursue creative solutions, such as continued delivery and pickup services, to hit break-even volumes when there is limited seating in restaurants. Retail-channel participants, from farm to shelf, will need to coordinate in unprecedented ways to ensure continuity in supply despite rolling plant closures and pockets of equilibrium rebalancing. Profit margins will likely be affected at each step during messy rebalancing. Companies will need to rewire for agility versus trying to achieve static optimization states.

Over the long term, the impact of uncertainty on the food supply chain could take many shapes, depending on how business owners expect the situation to evolve and resolve. On a spectrum of nine potential economic scenarios,⁵ a plurality of executives expect two to be most likely. Those two assume that some combination of effective or relatively effective public-health and economic-policy interventions will either contain the virus or limit it to some minor recurrences, resulting in a slow recovery. Under those scenarios, the recovery for food services, for example, has its own trajectory, shaped by shifts in consumer habits, safety at restaurants, and the overall economy (Exhibit 2). Depending on how well the virus is contained and the level of any recurrences, it could take between

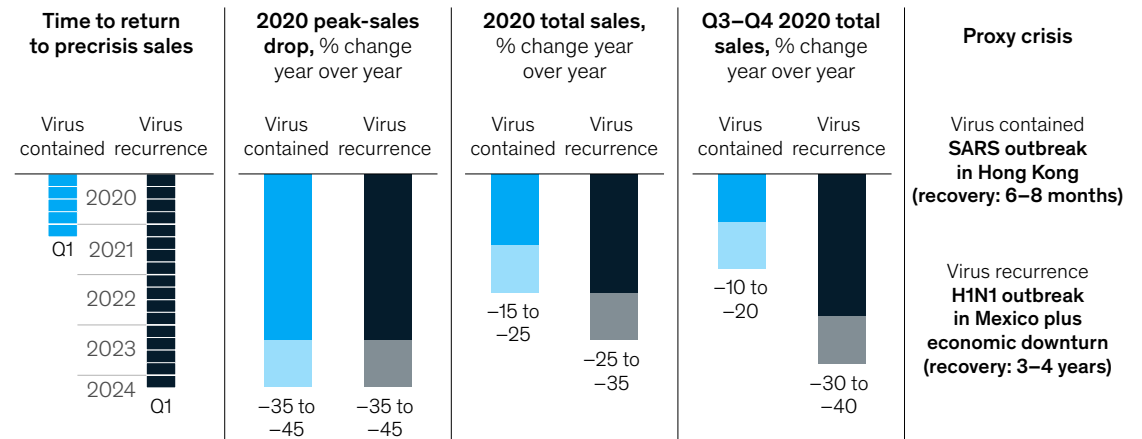
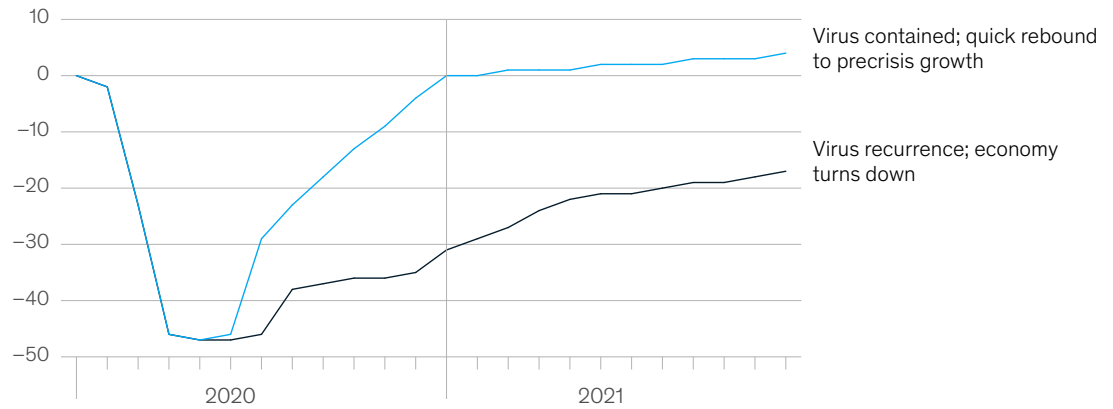
⁴ Russell Redman, "Kroger sees March identical-store sales jump 30% due to coronavirus," Supermarket News, April 2020, supermarketnews.com.

⁵ Kevin Buehler, Arvind Govindarajan, Ezra Greenberg, Martin Hirt, Susan Lund, and Sven Smit, "Safeguarding our lives and our livelihoods: The imperative of our time," March 2020, McKinsey.com.

Exhibit 2

US food-service recovery will vary, depending on how the coronavirus is contained.

Monthly restaurant sales, % change from 2019



Note: Includes quick-service and fast-casual restaurants; excludes fine-dining restaurants. Based on 2 most likely scenarios expected by US executives. See Sven Smit et al., "In the tunnel: Executive expectations about the shape of the coronavirus crisis," April 2020, McKinsey.com. Source: Earnest; expert interviews; Foursquare; industry reports; McKinsey analysis, in partnership with Oxford Economics; McKinsey COVID-19 US Consumer Pulse Survey, Mar 30–Apr 5, 2020

one and four years for food service to recover. However, it is possible that demand will never return to pre-pandemic levels, creating further challenges across the value chain.

Trying times up and down the food value chain vex company managers with considerable uncertainty. Profit pools are bound to continue shifting, with M&A activity (including potential integration across the value chain) to be expected, raising the need for efficient but resilient supply chains.

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