Farm Action

"Kings Over the Necessaries of Life": Monopolization and the Elimination of Competition in America's Agriculture System

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> The future of our antitrust laws will have great influence on the kind of life we are to lead on this continent. If they fail, then the free opportunity of humble men to engage in . . . independent enterprise must pass away. We are engaged in a struggle to keep from being a nation controlled by a couple of dozen corporations. That isn't Americanism as we have struggled to create it. That isn't Americanism as we stand ready to fight for it.
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> — U.S. Assistant Attorney General Robert H. Jackson
> "Farmers and Anti-Trust Law": An Address to
> the American Farm Bureau Federation
> December 13, 1937

Introduction

This report sets out definitive evidence that a handful of monopolistic corporations have consolidated a dangerous amount of power over America's food and agriculture system. Around three dozen corporations now dictate the lines of development and terms of trade for almost every industry that manufactures agricultural inputs, processes agricultural crops, and distributes food to the American public. In some of these industries, a single corporation exercises monopoly power over major products by itself, controlling prices as it deems fit and holding the survival of its competitors in its hands. In others, tight oligopolies share dominance and restrict competition through collusive arrangements. Across the agricultural supply chain, a corporate oligarchy has arrogated for itself the power to decide who gets to farm and how they farm, what food gets produced and sold in this country, and how much we all have to pay for it.

Four multinationals now dominate the development and production of seeds and pesticides. Single firms monopolize each of the domestic markets for nitrogen, phosphorus, and potassium fertilizers. One corporation wields monopoly power over the manufacture, distribution, and repair of new farm tractors and combines. Four conglomerates share power over the export of corn, wheat, and soybeans, as well as the processing of these crops into food and feed ingredients — with one of them often exercising monopolistic control over particular regional export markets and particular industries like flour and corn milling. Five companies hold similar sway over the nation's meat and poultry industries, with one or two usually dominating the procurement and slaughter of cattle, hogs, and chickens in particular regions of the country. Comparable concentrations of market power pervade the fruit and vegetable processing industries and extend to egg production, milk processing, and grocery retailing. Grocery sales — historically the domain of countless local and regional firms — are now primarily in the hands of just four national retailers.

These corporate oligarchs are not benign autocrats. They regularly abuse their power to keep themselves in power, to block innovation and honest rivalry that threaten their interests, and to extract wealth from farmers, workers, and consumers alike. The seed and pesticide oligopoly, for example, has straitjacketed innovation in agricultural biotechnology to trap corn and soybean farmers into ever-more intensive use of high-priced transgenic seeds and paired pesticides whose efficacy is

declining. The fertilizer monopolists have engineered chronic shortages of their products to keep prices high, enabling them to collect Apple-style profit margins over the past two decades on commodity products they have not improved in over half a century. The dominant tractor-and-combine manufacturer has embedded — and pushed smaller manufacturers to embed — useless technology into their machines designed solely to make it impossible for farmers to use independent repair shops, and force them to use, and pay for, the exorbitantly priced repair services of manufacturer-licensed dealerships instead.

The oligopoly that dominates the meat industry seems to catch a price-fixing or wage-fixing lawsuit every other day, but their abuses strike deeper. They depress the prices paid to farmers for livestock, subject plant workers to unconscionable labor conditions, and deceive consumers into paying premium prices with rampant false advertising about the origin, quality, and sustainability of their products. The handful of national processors who dominate the milk sector have raised the price of bottled milk by leaps and bounds over the past two decades, but kept the price of raw milk paid to dairy farmers in a near-permanent depression. Dominant egg producers have orchestrated a chronic shortage of egg supplies relative to domestic consumption since the mid-2000s — something that until then had never happened in the history of the United States — allowing them to raise the wholesale price of eggs several times over the level it had previously maintained for four decades (in real dollars).

In this report, we trace the rise of this exploitative corporate oligarchy, revealing its roots in the abandonment of antitrust enforcement and the embrace of *laissez-faire* dogma by Democratic and Republican administrations alike starting in the 1980s — and in the illegal practices which that abandonment permitted monopolizers to perpetrate with impunity. As the report demonstrates with in-depth investigations into the historical development of every major sector of the agricultural economy, the present concentration of power in America's food system did not arise by an act of God. It was not foreordained by so-called technological "imperatives" or by ghost-like economic "forces." It certainly did not result from dominant firms outcompeting their rivals on the merits. No, the handful of firms that dominate the agriculture system today gained power by systematically deploying illegal practices to *seize* power: Serial mergers and acquisitions designed to eliminate competition, exclusive contracts with suppliers and customers designed to handicap rivals, discriminatory pricing arrangements designed to entrench incumbents, and a variety of predatory and deceptive business practices aimed at destroying non-cooperative firms — all perpetrated in violation of the antitrust laws while enforcers looked the other way. These were the methods that brought us the extreme concentration of economic power we face in America's agriculture system today — arguably the most severe this nation has ever seen with respect to the food we grow, trade, and eat.

Luckily, the history uncovered in this report teaches us that the American people are not powerless in the face of would-be corporate masters. Indeed, as the crusading anti-monopoly Governor Ellis Arnall of Georgia once said: "In the fight between the exploiting monopolists and the people of the United States," the people "have won most of the wars, and lost all of the peace treaties." Although the antitrust laws were enacted at the turn of the 20th century, a combination of judicial activism, administrative neglect, and public apathy (not unlike the kind we have endured since the 1980s) turned those laws into dead letters until the late 1930s — allowing dangerous concentrations of economic power to metastasize across the nation's basic industries. After examining the situation, the Federal Trade Commission (FTC) issued a stark warning to the nation: "[A] definite choice has to be

made," it said. "Either this country is going down the road to collectivism, or it must stand and fight for competition as the protector of all that is embodied in free enterprise."

America chose to fight. Through leaders like Assistant Attorneys General for the Antitrust Division Robert H. Jackson and Thurman Arnold, the country launched the greatest trust-busting campaign in history — breaking up hundreds of monopolies and cartels across the economy. Simultaneously, a comprehensive apparatus of anti-monopoly policies and programs was implemented through Congress, state legislatures, and the courts to guard against the re-consolidation of power by corporate oligarchs. Within a decade, farmers could — for the first time in generations — buy their supplies from competitive markets and sell their crops into competitive markets. Rural communities and small cities in the West and South could determine their own economic destinies again, instead of being subjected to extraction like colonies for the financiers and industrialists of the East. A republic of free, independent enterprise was reborn.

Until the recent appointments of Chair Lina Khan to the FTC and Assistant Attorney General Jonathan Kanter to the Antitrust Division, the ideas that spurred Americans to demand the enactment of the antitrust laws in the 1890s and their full implementation in the 1940s were forgotten in high places. For over four decades, administration after administration had ignored the letter and spirit of the antitrust laws in favor of letting monopolization run amok. Today — as our forebears did on the eve of World War II — we, too, face a time for choosing.

Part 1: The Rise and Fall of Anti-Monopoly Policy in American Agriculture

Chapter 1. 1860s-1890s: The Anti-Monopoly Movement Fights for "Free Soil, Free Labor, Free Men"

On the eve of the Civil War, the South was ruled by an oligarchy of eight thousand planters who held millions in slavery and peonage.[1] "The wealthiest men in the country were cotton kings; half the millionaires in 1850 lived in one town in Mississippi."[2] The cotton planted and picked by slaves and tenants on the plantations of these oligarchs was "at the center of the global financial and trading system," which stretched "from Mississippi to Wall Street to the looms in Manchester across the sea."[3] After Abraham Lincoln was elected in November of 1860, the "Money Power" of Wall Street "joined hands with the Slave Power" of the South in support of secession.[4] Before Confederate soldiers had fired the first cannon at Fort Sumter, the mayor of New York City, Fernando Wood, was asking its Common Council to declare the city "independent" so it could "make common cause with the South."[5] "The profits, luxuries, and necessities—nay, even the physical existence of" New York, Wood claimed, "depend[ed] upon continuance of slave labor and the prosperity of the slave master."[6]

Over the course of the Civil War, Congress passed, and Lincoln signed into law, a series of bills aimed at breaking the power of this corrupt plutocracy. They enacted the Homestead Act to grant a 160-acre farm in the West to anyone who agreed to work on and improve the land for a five-year period. They wrote the National Banking Act to free people from dependence on money-center banks and allow them to charter — and access credit from — sound local banks under public regulation. They passed the Morrill Act, which founded the land-grant colleges in every state in the Union, and established the U.S. Department of Agriculture (USDA) to help the country's farmers succeed. Envisioned by Lincoln as the "People's Department,"[7] the USDA was charged "to acquire and to diffuse among the people of the United States useful information on subjects connected with agriculture, … and to procure, propagate, and distribute among the people new and valuable seeds and plants."[8]

Not long after the Civil War, however, the insidious union of bankers and planters began to reassert itself. Northern capitalists, seeking to restore their lucrative relations with Southern planters, pressured the Republican Party to abandon Reconstruction and the vision of "propertied independence for the farmer, working person, [and] shopkeeper" it pursued.[9] By 1870, the Southern Homestead Act — passed in 1866 to end the slaver oligarchy for good by distributing public lands in the South to freedmen and poor whites — was repealed. Then, as the 1870s turned to the 1880s, "Americans were treated to a series of chaotic business conflicts and speculations, sometimes followed by devastating economic panics and collapses."[10] On the farm, the most obvious feature of the era was a long decline in prices. With some chaotic fluctuations driven by unregulated financial speculation, "prices for agricultural products dropped seriously and continually during this period."[11] Between 1866 and 1894, the farm-gate price of wheat plummeted by more than 75%, while the price of corn fell to less than a third (33%) of what it was at the end of the Civil War.[12]

Some attributed these disasters to "simple moral corruption."[13] The real story, however, was that "a new group of would-be aristocrats" — financiers and industrial barons — were emerging and developing new "ways of concentrating power and wealth" at the public's expense.[14] Railroad and

telegraph corporations had stitched the nation together during the Civil War, and unprecedented combinations of capital had been formed to finance their continent-spanning projects. The financial sector that resulted amassed immense power and wealth, and was soon deploying both with alacrity. Roll-ups were orchestrated in industry after industry to centralize control over production — first in the "trusts," which made decisions on behalf of component firms by delegation, and after those came under attack, in holding companies that simply bought up and absorbed predecessor firms as subsidiaries. As the power of these combinations to dominate the nation's economic life grew, they quickly came to be considered "dangerous to the whole country."[15]

A broad anti-monopoly coalition — composed of farmers, workers, small producers, and local merchants — mobilized in response to this danger, calling on Congress to curtail and disperse the concentrated power of business trusts and combinations through national "anti-trust" legislation.[16] "Widespread opposition to trusts from all over the country [became] the rule."[17] Farmers, acting through cooperative organizations such as the National Grange and the Farmers' Alliance, were at the heart of this movement.[18] Facing oppressive railroads and monopolistic processors that exploited their power to pick winners and losers and manipulate the economic fortunes of whole communities, farmers' sought to challenge the monopolists' centralization of power, on the one hand, and to rally cooperation among farmers, workers, and small producers, on the other.[19] In the words of the historian Grant McConnell:

> The great farmer movements of the nineteenth century were upwellings of protest against the system of power growing out of the raw and turbulent capitalism of the era. The protest was made not merely against injustice to farmers but against injustice to all common men. Agrarianism spoke in the name of all. The enemy which it challenged was power. . . .
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> [I]n 1892, as in 1800 and 1828, the farmer's movement was something more than a challenge to industrialism. There were economic demands, the class demands of agrarianism, to be sure. A lower tariff, restrictions on alien landholding, removal of fences on public lands, expansion of the supply of money—these were characteristic. But, equally, farmers demanded a graduated income tax, restraints on monopoly, education, the direct election of senators, the Australian ballot, the initiative, and the referendum. These were not narrow class demands. They were honest and genuine attempts to ensure the operations of democracy, to make certain that *no group* was excluded from sharing in the political process. . . .
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> To some among the Populists, it was [also] evident that the rapacity of corporations was the sole and adequate cause for the ills that beset men. Money and monopoly had usurped power throughout the land, and the common people were becoming slaves.[20]

The rise of the Populist movement in the late 19th century "shook to their foundations" the existing political parties and power structures and won several early victories for the public.[21] The Interstate Commerce Act of 1887 subjected the giant railroads to public regulation and prohibited them both from charging "unreasonable" rates and "unjustly discriminating" between shippers or communities. The Second Morrill Act of 1890 expanded the land-grant college system to the South, while the Hatch Act established agricultural experiment stations at land-grant colleges to develop better crops and farming techniques in the public interest. The crowning achievement of the Populists, however, was the Sherman Antitrust Act of 1890. Intended to outlaw the industrial trusts and corporate combinations that had taken over wide swaths of the country's economic life, it forbade in sweeping terms "[e]very contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce" — and declared "[e]very person who shall monopolize, or attempt to monopolize, or conspire with any other person or persons to monopolize any part of trade or commerce . . . guilty of a felony."[22]

In developing and sharing its anti-monopoly vision, the Populist coalition marshaled what historians now call the "moral economy" traditions of local English and American markets.[23] These "old notions of right" were the moral values familiar to people in the day-to-day commercial life of the time, and they were embodied in the common law on "restraints of trade."[24] Broadly, these values frowned upon schemes to subject markets to private control or manipulation and exhorted people to cooperate in good faith to ensure just prices and fair conduct in the marketplace.[25] Congress drafted the Sherman Act in conscious response to this anti-monopoly vision. As Senator Platt — a key ally of the agrarian populists — suggested in a pivotal floor speech during the congressional debates on the Sherman Act, the law's primary goal was to disperse power in the nation's markets so that cooperation and bargaining among participants could yield "prices [that are] just and reasonable and fair … [and that] render a fair return to all persons engaged in its production."[26]

When the bill was brought to a vote, it was approved 52-to-1 in the Senate and 247-to-85 in the House, reflecting the bipartisan desire to curb the "combinations of capital" whose power threatened to "control production and trade" and "break down competition."[27] In the words of the Act's namesake, Senator John Sherman of Ohio, the law would finally offer adequate protection for the country from the usurpations of would-be "autocrats of trade," and the injustices of self-appointed "kings over the production, transportation, and sale of the necessaries of life."[28]

Chapter 2. 1890s-1920s: Wall Street's Revenge and "The Era of Antitrust Neglect"

Unable to defeat the Populists on the legislative front, the industrial trusts and their financier backers quickly turned to more subversive methods. When the Justice Department brought its first lawsuits against trusts and combinations in restraint of trade under the Sherman Act, the trusts and combinations fought back tooth and nail in the courts — and found solicitous ears for their pleadings in the judiciary. Less than five years after the Sherman Act was passed, the Supreme Court gutted the Act by holding that production and manufacturing activities — all of them — were outside its scope.[29] Since this extremely narrow construction left little in the way of economic activity *within* the Act's scope, it made the statute a practical nullity. The question of how the political branches of government would respond to this judicial decision set up the 1896 presidential election to be a titanic struggle. Common farmers, laborers and small merchants arrayed on one side, organizing as they had been to retain their liberty and independence against centralizing forces. A "moneyed aristocracy" arrayed on the other, determined to consolidate power over the country's economic life.[30]

1. The "Great Commoner" vs. The "Money Power"

At the 1896 Democratic National Convention, populist delegates from the South and West fought the reactionary "Bourbon Democrats" to get a young Nebraska preacher-turned-politician named William Jennings Bryan selected as the Democratic Party's standard-bearer. The Bourbons, who represented the Southern planter class, bolted out of the Democratic Convention in response and cast their lot with Bryan's opponents. Bryan, who had come to be known as the "Great Commoner," would ultimately face off against William McKinley — the handpicked choice of trading magnate and Republican machine boss Mark Hanna, a man who was backed by all the money and power that financiers and tycoons could throw into a political campaign.

"There are two things that matter in politics," Hanna was fond of saying. "The first is money, and I can't remember the second." Making this pitch to banks and millionaires, Hanna went on to raise an unprecedented amount of money for McKinley's campaign — the equivalent of $3 billion in today's economy, including $200 million each from John D. Rockefeller and J.P. Morgan alone.[31] As the money poured in, Hanna was able to finance one of the greatest political advertising campaigns ever conducted, circulating hundreds of millions of pamphlets, brochures, and articles around the country while McKinley sat at home in Canton, Ohio, and gave speeches from his front porch. The railroad companies did their part for the cause by giving potential voters — over 500,000 of them — discounted tickets to go see McKinley's speeches; the discounts were so steep that people joked it was cheaper to go to Canton than stay at home. Meanwhile, factory bosses unleashed a flood of economic coercion on their workers — aggressively surveying their political views, threatening them with pay cuts and factory closings if Bryan won, and forcing them to participate in McKinley rallies and public displays of political fealty for him.[32]

Bryan did not share McKinley's lucrative connections to industrialists and financiers. Indeed, the traditional funders of the Democratic Party at the time — Southern planters and their New York bankers — deserted the Party when it nominated him. So did a large number of the Party's traditional

newspapers in the Midwest and Northeast, many of which came out swinging for McKinley. Undaunted, Bryan decided to go where the people were, inventing the national stumping tour from whole cloth. In just under 100 days in the Fall of 1896, he traveled more than 18,000 miles by rail to give more than 600 speeches to 5 million people in 27 states. His campaign was funded by passing the hat at rallies, and by small contributions from "the plain people" he championed. Against "the overflowing treasury of the money power," a Bryan campaign pamphlet bellowed, "we will oppose the accumulated offerings of the masses, fighting to be free[.]"[33]

In the end, however, it would not be enough. After a campaign that observers would later describe as "[more] disgraceful in the misuse of money, power, and propaganda" than any which came before,[34] McKinley won the 1896 presidential election by a bare 4.3% of the vote. When McKinley was inaugurated in 1897, it was said that "[i]rresponsibility went into office" with him, "and the era of monopoly in earnest began."[35]

2. "The Era of Monopoly In Earnest" and the Great Merger Movement

The same year McKinley's presidency started, J.P. Morgan, together with a few other financial titans, unleashed a decade-long wave of consolidation that led to "revolutionary change[s] in the legal and financial structure of . . . American industry" and ultimately came to be known as the "Great Merger Movement" by economic historians.[36] With the Sherman Act gutted and their man in the White House to keep it that way, the financiers went to town, amalgamating thousands of firms under the control of their favored managers.[37] By 1903, Wall Street publisher John Moody was reporting that "the lords of Wall Street had rolled up 8,664 companies into 445 corporations, most of which dominated entirely one market or another."[38] Through these maneuvers, a small clique of financiers and managers rapidly consolidated power over America's industrial commons — with at least a third of the combines formed in the Great Merger Movement controlling more than 70% of the markets in which they operated.[39]

This "consolidation craze" solidified the dominant position of a series of monopolies and trusts in many of the industries that sold agricultural supplies to farmers and bought agriculture products from them. American Tobacco alone acquired over 250 rivals during this period, consolidating control over virtually the entire domestic tobacco industry, with ruinous consequences for tobacco farmers.[40] J.P. Morgan personally advised and financed a merger between the "Big Five" manufacturers of harvesting machines that consolidated 80-90% of the domestic market in the hands of a single firm, the International Harvester Company.[41] From 1902 to 1912, the Big Five meatpackers — who had earned the "Meat Trust" epithet as early as the 1880s — rolled up dozens of stockyards, slaughter plants, and other operators in a wide range of related and unrelated lines of business, allowing them to secure or maintain control over more than 70% of livestock slaughter nationwide, as well as half the nation's supply of poultry, eggs, and cheese.[42] "The unequal condition" which this control engendered between "the man who sells in the yard and the man who buys [in it]," legislators later observed, not only drove livestock growers to "financial ruin and disaster," but also threatened "the equal, inalienable rights of the producer and consumer."[43]

The Great Merger Movement ushered in by McKinley's election was accompanied by "furious speculation" in securities, land, and commodities — and ultimately came to a crashing halt in the Panic of 1907.[44] President McKinley was assassinated in 1901, leaving the office to his vice president,

Theodore Roosevelt. Initially, Roosevelt made a show of battling the Morgan interests. He won a significant victory in 1905 when he pushed the Supreme Court to abandon its narrow interpretation of the Sherman Act from a decade prior and to apply the law as written to block a Morgan-backed merger between three competing railroads.[45] After this victory, however, Roosevelt arrived at a "gentlemen's agreement" with the financial kingpin. Morgan assented to supervision by Roosevelt's new apparatus of regulatory agencies. In exchange, Roosevelt blessed Morgan's efforts to consolidate the nation's banking interests and basic industries.[46]

When Roosevelt's successor, President Taft, finally brought suit to break up the Standard Oil monopoly, the Supreme Court responded by watering-down the Sherman Act once again. Although the Court ordered that Standard Oil be divided into 35 separate units, it simultaneously held that the Sherman Act prohibited, not *all* monopolies and restraints of trade but only those which judges find "unreasonable."[47] This arrogation of unchecked policymaking power by the Court satisfied Wall Street: The stock market rallied after the decision was announced.[48] William Jennings Bryan, meanwhile, sounded the alarm: "The Trusts Have Won."[49]

3. Interregnum: The "New Freedom" vs. The "Curse of Bigness"

In the aftermath of the Panic of 1907 and the Court's *Standard Oil* decision, popular agitation against the trusts returned, fueling the election of President Wilson in 1912. Wilson ran on a vision that entrusted power to workers, farmers, and entrepreneurs instead of moneychangers and captains of industry. "America," he said, "was created to break every kind of monopoly, and to set men free, upon a footing of equality, upon a footing of opportunity, to match their brains and their energies." His political and policy agenda — popularized as "The New Freedom" platform — was heavily shaped by attorney Louis Brandeis, who had come to be known as "The People's Lawyer" after fighting J.P. Morgan's efforts to monopolize the nation's rail lines. Together, they would attack what Brandeis called "the curse of bigness."

First and foremost, Wilson and his allies in Congress moved swiftly to patch up the nation's antitrust laws. In 1914, they passed the Clayton Act to restrict the use of business methods that were "common and favorite method[s] of promoting monopoly," including corporate mergers, exclusive deals and tying arrangements, price discriminations, and interlocking directorates.[50] Consistent with the original anti-monopoly vision advocated by the Populists, the Clayton Act also made it clear that "citizens have a right to form labor unions and farmer cooperatives, to strike, and to encourage others to strike."[51] Learning their lesson from the judicial hijacking of the Sherman Act, legislators passed another law — the Federal Trade Commission Act of 1914 — establishing an independent agency to administer the Clayton Act in accordance with congressional intent and to promulgate additional fair trade rules as needed to protect the nation's market from new and unanticipated methods of unfair competition.[52]

Outside of antitrust law, Wilson took the "Money Trust" — the small group of large New York banks that a congressional investigation in 1912 had revealed to "wiel[d] 'despotic' power over the business and commerce of the nation"[53] — head on. These dominant bankers, Brandeis explained in his influential book, *Other People's Money* (1914), "bestride as masters America's business world, so that practically no large enterprise can be undertaken successfully without their participation or approval." Through the Federal Reserve Act of 1914, Wilson sought to divest Wall Street of control over the

nation's money supply and liberate community banks from reliance on the money-center institutions of the East for critical services — like money wires and emergency credit — by chartering a suite of regional bank cooperatives (the twelve regional Federal Reserve Banks) to perform these functions under public supervision. Two years later, Wilson extended similar principles to the farm credit sector by signing the Federal Land Bank Act, which authorized farmers to establish cooperative "land banks" under public oversight and provided capital to help them do so, finally "put[ting] farmers upon an equality with all others who have genuine assets."[54]

On the other side of the farmer — in the markets for farm products — the Wilson administration sought to impose integrity on commodity markets, where speculative bets and manipulative schemes had caused ruinous fluctuations in the prices of agricultural products throughout the Gilded Age. Through a series of laws, including the Cotton Futures Act and the Grain Standards Act, deceptive practices in the marketing and procurement of major U.S. farm crops were outlawed, and the USDA was charged with establishing physical standards for commodities, investigating misconduct, and enforcing the law's protections for the benefit of farmers and consumers.[55]

Altogether, in his first 18 months, Wilson passed more legislation than any president since the Civil War, including an income tax, the first federal child labor law, the first law mandating an eight-hour workday for industrial workers, and a major tariff revision — writing much of the earlier Populist movement's agenda into law. Looking back on this period, Brandeis said it was "the only time in recent American history when rich men had not had undue influence with an administration."[56]

In reality, however, this was only partially true. Wilson, the first Southerner to win the presidency since before the Civil War, was an inveterate racist who approved of — and aided — the Bourbon interests in fastening the racial terror of Jim Crow and the Ku Klux Klan upon the South. He not only hosted a private screening of "Birth of a Nation," a film that valorized the Klan, right in the White House, but more importantly, he allowed federal officials to segregate their departments of government and even categorically deny employment to Black people. In Georgia, the federal revenue collector appointed by Wilson used this new authority to fire all Black employees, proclaiming that "[t]here are no government positions for Negroes in the South. A Negro's place is in the corn field."[57]

That is where things stood at the end of Wilson's first term. He had broken the stranglehold of "the financiers and the corporate masters" on the government and implemented a series of anti-monopoly policies to protect small businesses, farmers, and consumers from the concentration and abuse of economic power.[58] These laws were designed mainly with White America in mind, but to an extent — particularly outside the South — they served to protect the openness of the market for Black farmers and businesses as well. Unfortunately, even these imperfect steps toward economic democracy were not to last.

4. World War I Starts "The Era of Antitrust Neglect"

A few months into Wilson's second term, the march toward the New Freedom was not just derailed but decisively rolled back. In April of 1917, the United States entered World War I, and fighting a total war abroad forced a détente in Wilson's war on monopolies at home. "To vindicate the [antitrust] law," Wilson lamented, "would disorganize industry," something he believed he could not risk while the

country was at war in Europe.[59] Wilson decided to suspend most antitrust activity until the end of the conflict. That decision would prove to be the New Freedom's undoing.

Government agencies seeking to sustain the production of war materiel and avoid shortages of civilian goods ended up having to cooperate with big business, which controlled much of the nation's productive capacity. When they adopted regulations to allocate raw materials and plan the production and distribution of goods, those regulations necessarily reflected existing market structures and arrangements — entrenching dominant incumbents. As Wilson had warned would happen in his 1912 campaign, when the government chose to regulate monopolized markets instead of restructuring them, "monopoly [saw] to it that it regulate[d] the government."[60]

a. "Food Will Win the War": Big Business Policy Induces Overproduction, Leads to Agricultural Depression

The consequences of these choices were particularly tragic for farmers and rural communities. Seeking to head off a food crisis resulting from war-time demand, in 1917, Congress established an independent Food Administration to regulate the production, distribution, and trading of farm and food products, with Herbert Hoover as its head. Soon after he was confirmed, Hoover appointed industry executives to run the Food Administration's most important programs — its regulatory and procurement programs for wheat, flour, hogs, and pork — claiming he needed "the country's industrial brains" to intelligently manage the relevant markets.[61]

On the wheat side, Hoover appointed a prominent businessman in the grain export industry, Julius Barnes, to lead the Food Administration's Grain Corporation, a government-owned company that was authorized to buy, store, and sell wheat and flour. He appointed "millers still active in business" to run its regulatory and procurement program for the milling industry.[62] In lockstep, these men moved first to shut down grain trading on open markets and exchanges (such as the Chicago Board of Trade) and then to use the buying power of the Grain Corporation to depress the price of wheat down to the minimum of $2 per bushel allowed by law. This minimum price was lower than the price of wheat realized in 1916 and did not reflect the rapid inflation in the cost of farm inputs, such as fertilizers and equipment, that was generated by the war effort. As farmers' profit margins shrank, those with the money and credit to do so responded by rapidly expanding production, plowing more than 11 million previously uncultivated acres in an effort to make up for lost margin with greater output.[63] Those who could not expand — including poor farmers, many Black farmers, and sharecroppers — struggled along with falling income, or were displaced.

The Food Administration established a similar "minimum price" arrangement for hogs through a "voluntary" agreement with the Big Five meatpackers, who had become "vital elements" in the agency's efforts to "increase [pork] production and control the overall [pork] market."[64] The effect on livestock growers was the same — more debt fueling more production on a diminishing profit margin.[65] By the end of the war, America had "an agricultural sector [that was] riddled with debt, yet capable of producing more than ever."[66] The risks inherent in this model were concealed during the war, as the fighting on French fields and the blockage of Russian grain shipments left Britain and France heavily dependent on American food exports. When the war ended and European agriculture came back to life, however, those risks turned into disaster.

In the summer of 1920, the price of wheat plummeted by 64%, while the price of corn and cotton dropped by 78% and 57%, respectively.[67] The price of hogs collapsed by more than half.[68] Since many farmers had borrowed heavily to expand production during the war, they could not respond to collapsing demand by simply producing less; they had to keep production high to service their debts, which only deepened the commodity glut.[69] As surpluses mounted, prices dropped further, causing a "major agricultural depression" to take hold across the country.[70]

b. "The First Victims Of the Failure to Enforce the Antitrust Laws Were the Farmers"

The agricultural depression was aggravated by the fact that the cost of farm inputs — of plows, tractors, fertilizers, and other factory-made goods — did not fall along with the prices of farm products, "creating a new gulf between farm income and [farm] costs."[71] The Fertilizer Trust, the Harvester Trust, and the other manufacturing combinations from which farmers had to buy their inputs — all emerging stronger from the war than before — reacted to the depression in farmers' demand for their goods by cutting production and keeping prices high.[72] The processing trusts to which farmers had to sell their crops — the Tobacco Trust, the Meat Trust, the Sugar Trust, and more — also came out of World War I stronger and more tightly coordinated. Thurman Arnold, a small-town lawyer at the time, described the economic predicament that farmers faced during this era in stark terms:

> The first victims of the failure to enforce the antitrust laws were the farmers. They were powerless in the face of the growing industrial concentration, since concentration in agriculture is practically impossible. They bought in a closed market and sold in an open market. The economic force of supply and demand affected the prices they received in the world markets for their produce; it did not affect the control of the manufacturing combinations over the prices of factory-made goods which the farmers bought.[73]

While trusts and monopolies were raising farmers' costs and depressing their incomes, the election of President Warren Harding on a platform that promised a "return to normalcy" in 1920 spelled the end of antitrust enforcement for the rest of that decade.[74] Harding and his two successors, Calvin Coolidge and Herbert Hoover, were either apathetic about the antitrust laws or downright hostile to them. The Supreme Court followed their lead, pushing the antitrust laws back into irrelevance through a series of decisions that practically nullified the Clayton Act,[75] and re-affirmed and expanded the holding of *Standard Oil* (1911) that the antitrust laws only prohibited such conduct as a judge deemed "unreasonable."[76] This standard, in turn, "made possible a plausible defense of almost any combination in restraint of trade."[77]

With *laissez faire* policy ascendant, a new merger wave took off in the mid-1920s. Within just five years, over 4,800 mergers were consummated — a record pace at the time.[78] Bethlehem Steel and Republic Steel merged. Allied Chemical and Dye was formed out of five major chemical companies, consolidating the supply of synthetic nitrogen both to farmers and to industrial users. Giant companies such as National Dairy Products, Standard Brands, and General Foods acquired their way to dominance over much of the country's food processing industry. Since the Supreme Court watered

down the Clayton Act's prohibitions on predatory pricing, retailers with privileged access to capital — then known as "chain stores" — were left free to sell their goods at below cost in order to drive their smaller rivals out of business. Using this and other monopolistic tactics, chain stores expanded dramatically. In 1914, the largest chain store — the Great Atlantic & Pacific Tea Company, commonly known as A&P — had $31 million in revenue and fewer than five hundred stores. By 1928, it had nearly $1 billion in revenue and more than four thousand stores.[79]

c. "Absentee Ownership" Turns "The West and South" Into "Colonies of the Industrial East"

As farming the land — let alone making a fair return on it — became impossible for many, the value of farmland plummeted, and a wave of foreclosures, bankruptcies, and consolidations swept through American agriculture.[80] Millions of independent farmers were either forced off their land or forced to become sharecroppers and farmworkers for a landed gentry that grew more entrenched.[81] Rural communities steadily lost purchasing power and economic independence, as many rural businesses either closed or sold out to corporations with faraway headquarters. A "system of absentee ownership grew up," in Thurman Arnold's words, that turned "[t]he West and South" into "colonies of the industrial East":

> I can illustrate what happened by my own experience. In the small Western town in which I practiced law before the depression [Laramie, Wyoming], I had as clients a motion picture theatre, a small oil refinery and a concern which manufactured plaster from a gypsum deposit. All these at the time were owned by local businessmen; they had been originally financed by local money and conceived by local ingenuity. But by the time I left for the East the refinery had been purchased by one of the Standard Oil Company affiliates and closed down; the plaster company was still operating but had been acquired by an Eastern firm; the theatre owner had been forced to sell his theatre as a result of the conspiracy between the principal motion picture producers which denied him the pictures he needed. Today my old home town is absentee-owned. The nickels and dimes and dollars of its citizens do not remain to build up local wealth and local purchasing power. They are siphoned off to the Eastern corporations.
>
> The 1929 depression illustrates what happens when this kind of development is multiplied to national proportions. Farmers stop buying; businessmen in small towns have to stop buying; men are then laid off in the Eastern factories and they, in turn, stop buying. The spiral begins, ending in the collapse of our entire credit structure.[82]

By the middle of the 1920s, rural banks were failing — first by a trickle, then by their thousands, in a cascade that would ultimately drive the country to financial crisis in 1929. When Black Tuesday (October 29, 1929) pushed the rest of America into the Great Depression, it was the ultimate consequence of a monopoly-friendly public policy that endorsed agricultural overproduction and

evermore intensive exploitation of the land by the wealthy few at the expense of economic and environmental degradation for the many. The damage wrought in the wake of this policy was astounding: Fully one in four family farms were sold off between 1920 and 1933.[83]

Chapter 3. 1930s–1970s: The New Deal and the Redemption of Anti-Monopoly Policy

When Franklin Roosevelt entered office in 1933, his administration "was faced with the daunting task of reversing the effects of total war and overproduction on the agricultural market and the further damage of around 15 years of post-war production at or above wartime levels."[84] Roosevelt understood that the country's farmers needed a long-term solution to what he called the "vicious circle" of "producing as much as the land will yield, overfilling the market, [and] fighting depressed prices by forcing still more from the land," a circle which consistently ended with the farmer "ruining himself while threatening to ruin us all."[85] Toward that end, he appointed Henry A. Wallace to be Secretary of Agriculture, a man who had been the principal voice of farmers harmed by the Food Administration's policies during World War I and attacked Herbert Hoover as "nothing more than an autocrat of big business."[86]

1. The New Deal Farm Bill Ends the "Vicious Circle" of Overproduction

Wallace believed that "government price fixing [for crops and livestock], if unaccompanied by some plan for regulation of production, is bound to be a heavy tax on the government and in the end almost certain to ruin the industry it has been trying to save."[87] He sought a program that would create machinery in government for "the growers, the processors, the carriers, and sellers of food" to "openly and democratically" establish controls on production to bring agricultural output into balance with actual demand.[88] With the Agricultural Adjustment Act of 1933 ("AAA") — which Wallace was the principal architect of — the Roosevelt administration sought to do just that.

Through a tax on corporations that processed agricultural commodities, the AAA financed a program that would pay farmers to reduce production of the most overproduced commodities. "This new machinery [would] not work itself," however, as Wallace emphasized in a national radio address on the AAA. The government, he said, would "not go out and work for private business."[89] Farmers would have to do the work of building and administering the program from the ground up, organizing themselves into local agencies that established quotas, signed farmers to "set-aside" contracts, enforced regulations, and distributed payments. After the AAA program got moving, improvements in the prices of staple commodities "were evident as soon as the fall of 1933,"[90] with cotton farmers getting 9 cents a pound compared to only 4.5 cents the year before. By 1934, the prices for tobacco and wheat crops had nearly doubled. Overall, total farm income rose from less than $5 billion in 1932 to almost $7 billion in 1935.[91] President Roosevelt noted with satisfaction in his diary the "immediate and dramatic" results of the AAA program: "surpluses were reduced, prices rose, and farmers were more secure."[92]

To go along with the AAA, in 1936, the Roosevelt Administration successfully lobbied Congress to pass the Soil Conservation and Domestic Allotment Act, which was aimed at preventing further "dust bowls" like the one that enveloped the Great Plains between 1934 and 1935. The Act helped farmers go easy on the soil by offering them money to reduce their cultivated acreage and to plant crops that replenish and preserve the soil instead of depleting it. Finally, with the Agricultural Adjustment Act of 1938, the administration established the last element of the New Deal's supply-management framework: an "ever-normal granary" program that would stabilize prices for a wide variety of crops by buying excess supplies from the market when prices dipped too low for farmers, and by selling stockpiles into the market when prices rose too high for consumers.[93]

Altogether, this cluster of laws — which became the core of what agricultural policy expert Austin Frerick calls the "New Deal Farm Bill" — "weaned farmers off" the overproduction treadmill, "stabiliz[ing] prices" and "saving countless family farms."[94] Instead of inducing farmers "to produce more without consideration of the result," as Hoover's programs did,[95] the New Deal Farm Bill aimed to secure for the average farmer a price for their crop that would cover the cost of production and yield a sustainable return — including a living wage for the farmer and the farmer's family.[96] With these programs in place, a relatively balanced farm economy took hold in America, bringing prosperity to small and large farms alike for the next three decades. By the 1940s, widespread farm failures had become a thing of the past — as they would remain until the 1980s.

2. The New Deal's "Country Lawyers" Redeem the Antitrust Laws At Last

A forgotten aspect of the New Deal is that it took place amid inflation and rising prices.[97] For decades before 1929, enforcers and courts had, as detailed above, ignored the letter and spirit of the antitrust laws in order to support the ability of powerful companies to collectively set prices and ensure profits. In the 1920s, the FTC even encouraged trade associations in their attempts to establish restrictive output quotas, set common wages, and at the extreme, entirely undermine competition to fix prices.[98] This was capped off by an attempt in the early 1930s under the National Recovery Administration (NRA) to allow industries to cartelize under government supervision.[99]

This set of policies enabled the monopolized and cartelized sectors of the economy to impose coordinated layoffs, output reductions, and price increases on the country throughout the early-to-mid-1930s.[100] For example, "whereas farm prices dropped 63 percent and production 6 percent from 1929 to 1933," the cartelized farm equipment industry was able to drop production by 80% during that time and cut prices by only 6%.[101] Some of the most egregious price hikes came in 1936 and 1937, when the economy was emerging from the darkest days of the Depression, and dominant firms used the excuse of supply-chain shocks as cover to raise prices. Complaints about price gouging and price fixing poured into the FTC at an unprecedented rate, with over 500 reaching the agency a month in 1937.[102] In response, the FTC launched investigations into dozens of industries, culminating in a 700-page report that found controlled prices and administered output policies in most of the industries examined.[103]

Faced with these economic realities, the Roosevelt Administration — whose officials had until then been "torn" between a faction that favored "the Theodore Roosevelt theory of regulated bigness," on the one hand, and a faction that favored "the Wilsonian-Brandeis theory of free competition and retention of smaller units," on the other[104] — took a definite anti-monopoly turn in its second term. By

1938, President Roosevelt had become "convinced that the monopoly problem was the most important economic issue facing the country."[105]

a. Robert Jackson Converts FDR to the Anti-Monopoly Cause

The advisor who played the most crucial role in converting Franklin Roosevelt to the anti-monopoly cause was Robert H. Jackson, a self-proclaimed "country lawyer" from upstate New York whom Roosevelt appointed to lead the Justice Department's Antitrust Division in 1937. Jackson began his life in a small hamlet of around 1,900 people known as Frewsburg in the extreme western part of New York. He never went to college and spent only a year at Albany Law School before dropping out, opting to "read law" and gain his entrance to the bar by apprenticing with a practicing attorney. By the 1930s, he had built a thriving small-town practice in upstate New York and came to be known as a brilliant trial lawyer. In 1934, Roosevelt tapped Jackson to serve as Counsel to the Bureau of Internal Revenue — a position in which Jackson quickly earned a reputation as a fearless and effective enforcer.

In his very first year, Jackson put Andrew Mellon — the so-called "emperor" of American finance and the third richest man in the country at the time — on trial for using his sprawling empire of banks and corporations to hide over $40 million of income from taxation.[106] When the press asked the elite attorney representing Mellon about his opponent, he dismissed Jackson as "just a country lawyer" who was in over his head. Jackson was delighted. "Yes," he replied, "that's what I am. That's *just* what I am." After Mellon's trial ended in 1937, Jackson not only won a judgment against Mellon for $850,000 in unpaid taxes, but ultimately he also compelled the aristocrat to donate his $40 million art collection to the federal government — seeding the National Art Gallery in Washington, D.C.[107]

Impressed with Jackson's victory against Mellon, Roosevelt quickly elevated him to a series of positions in the administration before finally appointing him to lead the Antitrust Division in 1937. When Jackson arrived at the Antitrust Division, he found it "almost moribund." He blamed the Division's state on the NRA and the general disinterest in antitrust enforcement over the preceding decade, which had resulted in a "pretty general suspension of antitrust law activities."[108]

Jackson immediately set about reinvigorating antitrust as a legal, policy, and political project. To begin with, he reorganized the Division to swiftly identify, investigate, and bring to trial "the most flagrant cases of antitrust violation," the ones in which "the greatest public interest is involved."[109] This effort led the Division to institute two strategic cases — one against 24 oil companies and 46 executives who had conspired to fix gas prices; another against a single company, Alcoa, that had wholly monopolized the domestic aluminum industry for over two decades — designed to establish that price-fixing and monopolization were illegal *per se*. Through these cases, Jackson took direct aim at the unworkable, pro-monopoly judicial precedents from the 1910s and 1920s, and pushed the courts to abandon them.

Jackson also went outside the confines of the Division, and made the case for antitrust enforcement to the public directly. In late 1937, Jackson gave a series of "widely noted public speeches" to farmers' associations, labor unions, business groups, and bar associations around the country, excoriating dominant corporations for "seeking to thwart the New Deal and the national economic recovery by using their monopoly powers to charge excessive prices and earn unjustifiable profits."[110] In his speeches, Jackson acknowledged the failure of the antitrust laws to "check the continuing

concentration of wealth and industrial control" over the previous three decades.[111] He blamed that failure on a combination of executive neglect and judicial misinterpretation of the antitrust laws, which had "made possible a plausible defense of almost any combination in restraint of trade."[112] To correct the botched implementation of the antitrust laws since 1890, Jackson urged that Congress undertake "[a]n unimpassioned and unrestrained study . . . of the monopoly question," and develop legislation not only to reform the antitrust laws but to "mobilize all the powers of government against monopoly."[113]

b. FDR Urges Congress to Restore America's "System of Free Enterprise"

On April 29, 1938, Jackson's public and private advocacy for a whole-of-government campaign against monopolies paid off. In a Special Message to Congress on Curbing Monopolies, President Roosevelt urged legislators to fund just such an attack on monopoly power as Jackson had been calling for. "Among us today," Roosevelt warned, "a concentration of private power without equal in history is growing." "Private enterprise is ceasing to be free enterprise." Instead, American capitalism "is becoming a cluster of private collectivisms[.]" "[M]asking itself as a system of free enterprise after the American model," he said, "it is in fact becoming a concealed cartel system after the European model." This collectivization in American industry, he explained, was "one of the primary causes" of the country's difficult recovery from the Depression and the resurgence of unemployment in 1937:

> One of the primary causes of our present difficulties lies in the disappearance of price competition in many industrial fields [and its replacement by rigid prices administered by dominant firms]. Managed industrial prices mean fewer jobs. It is no accident that in industries, like cement and steel, where prices have remained firm in the face of a falling demand, payrolls have shrunk as much as 40 and 50 per cent in recent months. Nor is it mere chance that in most competitive industries where prices adjust themselves quickly to falling demand, payrolls and employment have been far better maintained. …
>
> [W]e have some lines of business, large and small, which are genuinely competitive. Often these competitive industries must buy their basic products from monopolistic industry, thus losing, and causing the public to lose, a large part of the benefit of their own competitive policy. Furthermore, in times of recession, the practices of monopolistic industries make it difficult for business or agriculture[,] which is competitive[,] and which does not curtail production below normal needs, to find a market for its goods even at reduced prices. For at such times a large number of the [end] customers of agriculture and competitive industry are being thrown out of work by those non-competitive industries which choose to hold their prices rather than to move their goods and to employ their workers.

Ultimately, Roosevelt concluded, "[i]f private enterprise left to its own devices becomes half-regimented and half-competitive, half-slave and half-free, as it is today," then it will not be able to "adjust itself to meet the needs and demands of the country." To remedy the excessive concentration of economic power and the resulting loss of business competition at their roots, Roosevelt proposed a two-part program of stronger enforcement and legislative reform. On the one hand, he asked Congress to increase the Antitrust Division's budget by nearly 50% so it would finally have the resources to vigorously enforce the Sherman Act and the Clayton Act. On the other hand, he called on legislators to fund a "a thorough study of the concentration of economic power in American industry," "the effect of that concentration upon the decline of competition," and the "inadequacies of existing laws" to curb those twin evils. Congress quickly obliged — delivering the funds requested to the Antitrust Division and establishing the Temporary National Economic Committee (TNEC) to comprehensively investigate the state of concentration and competition in almost every sector of the nation's economy.[114]

c. Thurman Arnold Launches the Greatest Trust-Busting Campaign In American History

With this shot in the arm from the President and Congress, the Antitrust Division embarked on the boldest trust-busting campaign in American history — one that continued for over a decade and tore down cartels and monopolies across the economy. Since Jackson was appointed Solicitor General in March of 1938, the task of leading this campaign fell to another "country lawyer," a man named Thurman Arnold.

Arnold was born and raised on a ranch in Laramie, Wyoming, an Old West town of less than 5,000 people. When he turned sixteen, he was shipped off east to go to school, first to Wabash College, then to Princeton, and finally to Harvard Law School. After graduating in 1914, he worked in Chicago for a few months but was soon drafted into the Illinois National Guard to fight in World War I. When he got back from Europe, Arnold decided to go home to Laramie — which had grown to a community of 8,000 people — and practice law with his father. As the 1920s took their course, however, Arnold saw many of the local businesses he represented get bought up by "nationwide industrial combinations," which "use[d] their control over a product local enterprises had to have to force the latter to sell out at a distress price." What he saw during those years, he later wrote, was "plain murder of small business," which local lawyers like him could do nothing to stop because of the state of antitrust law in the 1920s.[115]

When Arnold was appointed to lead the Antitrust Division in 1938, he carried the wisdom of his years in Laramie into office with him — and wasted no time admiring the monopoly problem. Within a few months of taking office, Arnold began filing antitrust actions against violators at an unprecedented pace. By the end of his first year in the job, the Division had filed 1,375 complaints in 213 cases across 40 different industries. He had 185 active investigations going at the same time, and the launch of a new antitrust investigation was alone causing prices to drop by 18-33% in subject industries.[116]

In his second year, Arnold went even further. He initiated the first of several "industry-wide" investigations that probed whole industrial ecosystems and supply chains for restraints of trade, organizing inquiries on a scale the Division had never before had the resources to undertake. Asked to summarize his enforcement philosophy at the time, Arnold said it was simple: "Hit hard, hit

everyone, and hit them all at once."[117] By the end of his five-year tenure at the Antitrust Division, Arnold had brought just under half of all the antitrust cases that had ever been brought in the Sherman Act's then-53-year history.[118] Ultimately, dozens of industries were overhauled as a result of these cases, including steel, automobile, motion picture, housing, construction, tire, newsprint, shoe, potash, sulfur, phosphate, grocery, dairy, tobacco, and beet sugar, to name a few.[119]

When the United States entered World War II in 1941, "cabinet members, Department of Justice (DOJ) lawyers, and midlevel procurement officials battled to ensure that [World War II] would not repeat the mistake[s] of the First[.]"[120] Neither Arnold's campaign against restraints of trade nor the broader anti-monopoly policy of the Roosevelt Administration were set aside for war demands. Even when military brass prevailed on Congress to place a moratorium on antitrust prosecutions in war-critical industries for the duration of the conflict, the moratorium did not prohibit the Antitrust Division (or the FTC) from investigating those industries and filing new lawsuits against wrongdoers within them; it only required them to suspend litigation of those cases until war's end.

As the war raged on, Arnold turned the Antitrust Division's fire to international markets, where his investigators found a proliferation of cartel arrangements between dominant American companies and foreign syndicates controlled by Nazi Germany and Imperial Japan. In rapid-fire succession, he went after market-splitting, output-fixing, and other conspiracies between large American, German and Japanese firms across a wide range of industries, including optical goods, tungsten-carbide, electric lamps, light bulbs, phosphate fertilizers, nitrogen ammonia, chemicals and pharmaceuticals, dyestuffs and photographic supplies, synthetic rubber, toluol (a TNT component), and magnesium (a key metal for making aluminum).[121]

The FTC did not lag behind the Antitrust Division during this period. While the Justice Department went after monopolization and industry-wide conspiracies to restrain competition, the FTC initiated a prodigious stream of enforcement actions to rid the country of the various unfair practices and schemes — from basing-point and preferential-pricing systems to patent-leveraging and exclusive-contracting schemes — that dominant incumbents had been using to regiment their fields, suppress smaller rivals, and block the entry of entrepreneurs.[122] Across the board, enforcers sought remedies that required defendants not just to end the specific practices challenged but also to directly and tangibly bolster their smaller competitors. In industry after industry, dominant incumbents were forced to "grant patent licenses to all applicants, either royalty-free or with a reasonable royalty," to "furnish technical information and know-how to their small competitors," and to "divest themselves from a portion of their own business if they had not built up the capacity of their competitors within a prescribed time."[123]

3. Congress Embraces Reversing Concentration As Its Explicit Economic Policy

Between 1938 and 1941, the TNEC — which was led by members of Congress — conducted hearings and commissioned investigations into dozens of industries, producing nearly 100 reports and monographs that gave enforcers and legislators detailed information about price-fixing, monopoly control, and competition across the nation's economy. At the conclusion of its investigation in 1941, TNEC called for a legislative program of "economic restructuring" that would finally "stop the processes of concentration" and secure a "permanent decentralization" of economic power in American

society.[124] Congress heeded the call — acting vigorously through select committees, investigations, and legislation to attack consolidated industries and strengthen small businesses.

From the late 1930s through the early 1950s, it became the avowed policy of the federal government to "advanc[e] on many fronts to free small business from domination by big business."[125] Congress set the tone for this advance as early as 1936, when it enacted the Robinson-Patman Act.[126] Intended to ensure "equal rights to all and special privileges to none" in the marketing of products for resale, the Act prohibited dominant buyers from extracting preferential terms from their suppliers that could injure the competitive opportunities of their rivals.[127] It also made predatory pricing for the purpose of destroying competition — the favorite method of monopolization among chain stores — a criminal felony, punishable by up to a year in prison.

When the United States entered World War II in 1941, Rep. Wright Patman introduced and passed a resolution in the House of Representatives creating the Select Committee on Small Business to investigate the National Defense Program's treatment of small businesses and propose legislation to ensure the full utilization of small business in the war effort. Based on the Small Business Committee's investigations, in 1942, Congress passed the Small Business Mobilization Act. Consistent with the anti-monopoly vision animating the antitrust laws, the Small Business Mobilization Act authorized small businesses to cooperate in war production without fear of violating the antitrust laws and established the Smaller War Plants Corporation to finance that cooperation.[128] Relying on this Act, thousands of small, independent businesses — each with fewer than 500 employees — freely coordinated their resources to create productive capacities that rivaled the efficiency of the largest manufacturers.[129] Congress did not soon forget these achievements.

As the war drew to a close, Congress made reversing the processes of concentration and securing a permanent decentralization of economic power its explicit policy in the Surplus Property Act of 1944, as well as in other statutes designed to shape the nation's post-war economy. In the Surplus Property Act, federal agencies were instructed to distribute the government's wartime industrial plants and other productive assets with unequivocal objectives to "discourage monopolistic practices," to "strengthen and preserve the competitive position of small business concerns," to "foster the development of new independent enterprises," and to "develop the maximum of independent operators in trade, industry, and agriculture."[130] Two other statutes were passed the same year to supplement the Surplus Property Act — the War Mobilization and Reconversion Act and the Contract Settlement Act — and they pursued the same anti-monopoly objectives.[131] Under these laws, programs were soon established to "make loans to small plants pending settlement of their government contracts," "assist small businesses and veterans in obtaining surplus [government] property," and ensure "that small businesses obtained a fair share of scarce materials as they were released to civilian production."[132]

4. A Whole-of-Government Anti-Monopoly System Emerges

Ultimately, the steady stream of anti-monopoly legislation from Congress — along with the barrage of enforcement actions from the antitrust agencies — compelled the courts to abandon their *laissez-faire*-era precedents and, for the first time in history, begin to apply the antitrust laws as written. By the beginning of the 1950s, the sweeping protections of the antitrust laws — dead letters just two decades

before — had become potent safeguards against the concentration and abuse of economic power by dominant corporations.

For the first time since 1911, it was declared illegal *per se* for corporations to collude to fix prices, control output, split markets, exclude others from the market, or otherwise restrict competition between them.[133] Industry incumbents were prohibited from using exclusive contracts and tying arrangements to foreclose rivals from competing for a substantial amount of business in any market.[134] Predatory, below-cost pricing was condemned outright as a criminal violation of the antitrust laws.[135] Price discrimination — which dominant suppliers had long used to favor and entrench dominant customers at the expense of their smaller rivals in industries ranging from candy and salt to cement and steel — was held to be illegal wherever it injured the competitive position of disfavored customers in downstream resale markets.[136] Finally, it was declared illegal *per se* for a corporation to acquire, maintain, or expand a monopoly of any market — creating a far-reaching prohibition on market abuses (such as refusals-to-deal and self-preferencing) by dominant firms.[137]

When the courts flinched from applying the Sherman Act and the Clayton Act to block dominant firms from concentrating power through mergers and acquisitions,[138] Congress stepped in by passing the Celler-Kefauver Anti-Merger Act of 1950, which breathed new life into the Clayton Act's long-forgotten restrictions on this perennial "method of monopoly."[139] Administering the new law strictly over the next two decades, judges and enforcers adopted bright-line rules designed to thwart concentrative merger waves "in [their] incipiency."[140] Among other things, the court's decisions applying the Anti-Merger Act established that corporate mergers were outlawed wherever they enabled a party to eliminate a substantial competitor, gave a party control over a substantial customer or supplier for its rivals, contributed to a trend toward concentration in any market, or served to entrench a dominant incumbent.[141]

In addition to curbing the ability of large corporations to consolidate and abuse economic power during this era, Congress also moved to ensure that new and small enterprises had fair access to the capital necessary to challenge industrial incumbents. The Small Business Administration was created to facilitate access to startup and expansion capital for entrepreneurs, with an express mandate to foster competition across the economy. Regulation by the Securities and Exchange Commission created more open and honest capital markets, allowing growing challengers to raise funds from private investors on the merits. Across the board, new banking laws and regulatory policies not only curbed the power of money-center investment banks to control industry and pick winners and losers in the economy but also facilitated the proliferation of small commercial banks, credit unions, and thrift associations, which focused on serving the credit and depository needs of their local communities.

As the New Deal's antitrust and financial reforms secured a fair opportunity for small businesses to compete in the national economy, its utility programs leveled the playing field between regions and communities — allowing citizens to pursue economic opportunities from rural communities as well as major cities, from the agrarian South and Midwest as well as the industrialized East. For example, the Interstate Commerce Commission regulated the railroads to ensure they charged reasonable, non-discriminatory prices across communities, treated all shippers equally, and maintained service to small towns and midsize cities. Similarly, the Civil Aeronautics Board regulated airlines to ensure that "smaller cities maintained vital links to the national air network" and that citizens in every

community "received service roughly equal, in quality and price, to that provided to [citizens in] other comparably sized communities."[142]

Perhaps the most transformative regulatory intervention, however, came in the electric power industry. In the mid-1930s, a four-year investigation by the FTC revealed that a handful of Wall Street-controlled utility holding companies had rolled up the nation's electric power industry and systematically restricted the expansion of electric power generation and transmission capacity outside of large cities for at least a decade. Through the Public Utility Holding Company Act of 1935, the New Dealers forced the breakup of both the holding companies and their cartelistic arrangements, restructuring the industry so competition once again incentivized firms to expand electric service to new territories and customers. In 1936, Congress went further by passing the Rural Electrification Act and empowered rural people to sidestep the financier-owned electric industry altogether by extending federal loans to cooperative electric utilities.[143] Within 6 years, the percentage of farm homes that had electricity went from 11% to 50% — and almost all U.S. farms had power by 1952.[144]

5. Post-War America: A Republic of "Free, Independent, Private Enterprise"

Just before the rural economic spiral of the 1920s turned into the Great Depression of the 1930s, an Indiana politician was invited by Franklin Roosevelt to speak at the Democratic National Convention of 1928. He summarized the demands of farmers in one sentence: "[W]e do not ask paternalistic privilege for the farmer," he said. "But we do demand that the hand of privilege shall be taken out of the farmers' pockets and off the farmers' throats."[145] By the 1950s, the anti-monopoly policies and programs of the New Dealers had made good on that demand — not just for farmers, but for everyone in a burgeoning yeomanry of local grocers and pharmacists, small manufacturers and entrepreneurs, industrial workers and independent professionals.

For the first time in generations, farmers could buy their supplies from competitive markets and sell their crops in competitive markets. The Fertilizer Trust was replaced by dozens of new fertilizer manufacturers and hundreds of new fertilizer mixers and distributors, including scores of farmers' cooperatives.[146] Multiple new players entered into tractor and combine manufacturing over the post-war decades, cutting down International Harvester's dominance, and the broader farm equipment industry saw the total number of manufacturers grow from a little over 300 in 1939, to more than 1,100 in 1947 to nearly 1,500 in 1963, with a wide variety of local and regional producers forming and growing.[147] The number of substantial firms competing in pesticide manufacturing reached nearly a hundred, while thousands of independent, mostly family-owned companies flourished in the development, manufacture, and sale of crop seeds.[148] As a result of these changes, the prices paid by farmers for agricultural inputs like seeds, fertilizers, and farm equipment stayed essentially flat throughout the 1950s and 1960s — even as the quality of these inputs improved dramatically and farmers' use of them grew by leaps and bounds.[149]

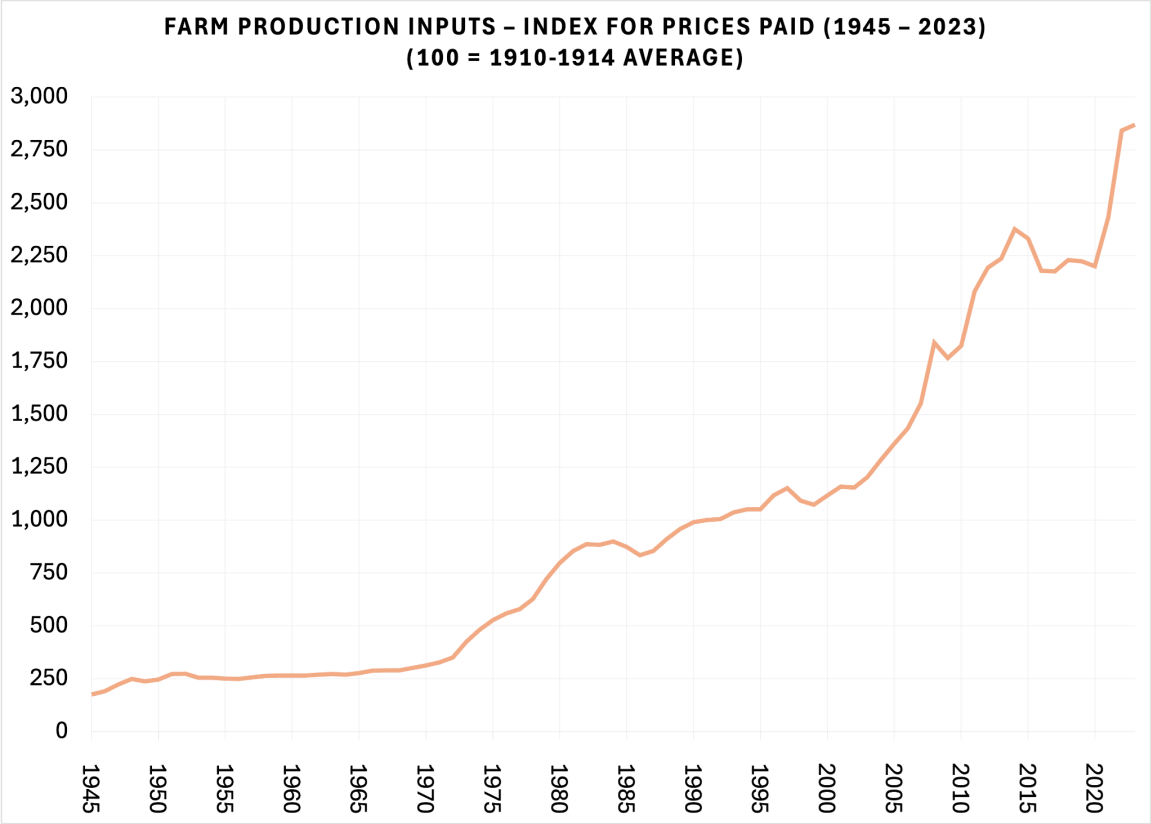

Figure 1: Farm Action analysis of USDA National Agriculture Statistics Service data. Retrieved from https://quickstats.nass.usda.gov/. Data available upon request.

A wave of new independent single-species, single-story slaughter plants were built near production areas in rural communities — ending the Meat Trust's centralization of livestock processing within large plants near terminal markets in large cities.[150] By 1963, the four-firm concentration ratio in livestock markets reached as low as 26% for cattle, 33% for hogs, 14% for chicken, and 23% for turkeys.[151] Hundreds of grain processors and merchandisers came to operate in the Midwest alone — complemented by a vibrant ecosystem of grain brokers, commission agents, and marketing cooperatives — and the four largest of them accounted for only 22% of the total volume of grain purchased in the region.[152] Competition for dairy farmers' milk grew, too, as anti-merger and anti-discrimination enforcement by the FTC facilitated the rise of dozens of "middle-tier" milk processors around the country and diminished the power of the industry's national leaders.[153] Similar antitrust enforcement in the food retailing sector allowed local grocers to flourish alongside supermarket chains.[154]

The restoration of competition in the food processing and trading sectors — along with the New Deal Farm Bill's supply management programs — served to keep prices and marketing channels for most farm products fair and open throughout the post-war era. On the one hand, supply management

programs operated to prevent runaway surpluses for a wide range of crops, shaping the national supply-demand situation to prevent the kind of persistent depression in crop prices that characterized the 1920s.[155] On the other hand, the proliferation of small and midsize meatpackers, grocers, milk processors, and grain millers — together with antitrust enforcement against exclusive and discriminatory contracting — ensured that small and midsize farmers could sell their crops and livestock on relatively open markets and get relatively equal terms for them. Ultimately, the openness of marketing channels between farmers and consumers proved good for both. For example, by 1970, fully 70% of the consumer's beef dollar went to cattle producers — and only 30% went to markups by processors and retailers.[156]

To be sure, the post-war order in American agriculture was not perfect — far from it. The most egregious of its flaws was probably its treatment of Black farmers. The New Deal Farm Bill relied on local offices, often staffed by men connected to local plantations and agribusiness owners, to administer its programs. These offices "cheated and excluded Black farmers from public benefits across the country for decades."[157] Furthermore, although Southern plantation owners were required to share federal payments with their sharecroppers and tenant farmers, they were pointedly *not* required to refrain from displacing them — leading planters to rapidly replace sharecroppers and tenant farmers with wage laborers so they could keep federal payments to themselves.[158] After the 1940s, as the Civil Rights movement gained momentum, white Southern leaders — with the help of USDA officials — weaponized the lopsided federal assistance going to planters to displace landowning Black farmers, too:

> As the civil rights movement gathered steam, assaults on black farmers intensified. By the 1950s, "any program for small, poverty-ridden farmers in the South became entangled with the civil rights movement." The founder of the Citizens' Council drew up a plan to remove 200,000 African-Americans from Mississippi by 1966 through "the tractor, the mechanical cotton picker . . . and the decline of the small independent farmers." As government-funded mechanization continued apace, "tens of thousands" of poor farmers were forced out of agriculture: they eked out an existence in the hinterlands, in shacks, without "food or adequate medical care." Black farmers who held onto their land used their independence to support civil rights workers, which often made them targets for lynch mobs and local elites. Throughout the South, USDA agents withheld loans black farmers needed to [invest in their own mechanization to keep up with white planters] — amid other discrimination — which continued after the Civil Rights Act. From 1959 to 1969, black farmers declined by over two thirds, almost triple the rate of white farmers.

Overall, between 1920 and 1970, the number of Black farmers in America declined from around 925,000 to less than 95,000.

The exploitation of poor Black farmers was unique in its ferocity, but it was also part of a piece with a broader problem: The influence of large-farm interest on the design and execution of supply-

management programs, which undermined their fairness and efficacy throughout the post-war era.[159] Because of this influence, planters in the South and agribusinesses in the Midwest and Great Plains were consistently able to reap the majority of federal payments while watering down restrictions on their output.[160] In one extreme example, large-scale corn producers successfully lobbied to eliminate corn marketing quotas in 1954, and then to eliminate corn acreage allotments and to reduce the government-purchasing price to average global prices in 1959, effectively crippling the price-support function of those purchases.[161] Promptly afterward, corn prices collapsed to early-Depression levels — where they stayed until the 1970s.[162] A similar lobbying effort was mounted by large-scale wheat producers between 1963 and 1965, leading to a similar collapse in wheat prices.[163]

Beyond the Farm Bill, there were also important blind spots in antitrust enforcement during the post-war era, particularly in the livestock sector. In the Packers and Stockyards Act of 1921 (P&S Act), Congress gave the USDA the exclusive jurisdiction to attack "unfair, unjustly discriminatory, or deceptive" practices in the meat supply chain from hoof to plate. After Congressional hearings in the 1950s revealed that the USDA had all but ignored the P&S Act's existence for the three decades before, in 1958, Congress gave the FTC concurrent jurisdiction over retail meat and poultry markets — but it allowed the USDA to retain exclusive jurisdiction over livestock markets. Unfortunately, the USDA's lassitude in enforcement did not improve much in the 1960s and 1970s. In this "regulatory vacuum," abusive business methods — like the imposition of exclusive production contracts on Southern chicken farmers by large feed-and-poultry integrators — soon took hold, festered and proliferated.[164]

For all its flaws, however, it is fair to say that the anti-monopoly policy apparatus of the post-war era brought a measure of fairness and prosperity for most farmers in America. Declining or stable prices for agricultural inputs, like fertilizer and machinery, combined with decent prices for crops to enable White farmers of all sizes to invest in their operations, leading to a "technological revolution" that ameliorated the backbreaking labor of farming and augmented the productivity of the land.[165] The increased yields often strained supply management efforts, but surpluses were still kept under a relative lid in most years, allowing prices for a variety of crops — from soybeans and wheat to hogs and cattle — to stay well above 1920s and early-Depression lows in real, inflation-adjusted dollars.[166] In this environment, a small or midsized family farm could spread its risk by growing multiple crops and incorporating livestock; with some luck, it could even generate a sustainable profit. Farm bankruptcies and foreclosures became a rarity.[167]

None of this made farming easy or banished hardship from the family farm. Indeed, it cannot be gainsaid that the number of farms declined by approximately two million between 1950 and 1970.[168] At the least, however, it made farming less susceptible to irrational booms and busts, so that success or failure did not depend on winning a market-timing lottery. At the least, it enabled small and medium-scale farms — either individually or through cooperative buying — to get inputs on equal terms with large-scale farms, so that turning a profit depended less on power and privilege and more on actual efficiency and business acumen. At the least, it allowed ordinary people who wanted to pursue farming as their trade — people without inherited wealth, people without thousand-acre plantations — to get something close to a fair shake in the agricultural marketplace.

Chapter 4. 1980s–2010s: The Return of Pro-Monopoly Government

Things began to change in the 1970s. The Nixon, Ford, and Carter administrations progressively pursued deregulatory policies that attacked the safeguards for fairness and competition in agriculture, gradually breaking down the competitive economic order inherited from the New Deal, and putting the country on a path back to the pro-monopoly farm and antitrust policies of the 1920s. Those deregulatory efforts reached their zenith in the 1980s and 1990s, when the Reagan and Clinton administrations gave the green light to rapid consolidation across the country's food system, and ultimately abandoned the supply management programs that had been critical to maintaining the independence of family farmers and the decentralization of power in agricultural production.

1. "Get Big or Get Out" Agriculture Policy Stages a Comeback

President Nixon first put this chain of events in motion in 1971 when he appointed Earl Butz to be his Secretary of Agriculture. Butz was a veteran pugilist for the interests of the corporate "agribusiness complex," having tried, and failed, to kill the New Deal Farm Bill once before as Assistant Agriculture Secretary during the Eisenhower administration.[169] He despised the New Deal's supply-management programs and the family farmers they kept on the land alike, infamously adopting "get big or big out" as his slogan.[170] A couple of years into his tenure as Secretary of Agriculture, Carol Tucker-Foreman, the head of the Consumer Federation of America, pointed out in an interview that Butz was "a spokesman for the big corporate farmers, for the food processors, and for the grocery people. He's not on the side of farmers or consumers. He's on the side of people who buy from farmers and sell to consumers."[171] An advocate for small farmers was even more blunt: "Secretary Butz is not the friend of family farmers," she said. "[H]e is their funeral director."[172]

a. Earl Butz Plunges His Pitchfork Into New Deal Agriculture Policy

One of Butz's first machinations to undermine the New Deal supply-management programs that he was supposed to administer as Secretary of Agriculture came in the form of a deal with the Soviets. In July and August of 1972, Butz's USDA turned a blind eye while the Soviet Union inked secret deals with the country's five largest grain exporters to buy 16.45 million metric tons of American wheat, corn, barley, and soybeans (with 28% coming from Cargill alone[173]) — sealing what was then considered "the largest commodity deal in history."[174] Within months, the country's grain inventories were depleted.[175] Flour mills were idled for lack of grist. Food prices rose at their fastest rate since the Civil War.[176] Seizing the moment, Earl Butz released 40 million acres — and, ultimately, all 60 million acres — that were "set aside" from planting under supply-management programs, and went around the country exhorting farmers to "plant fence row to fence row" to ease the food crisis.[177]

The result was predictable: Plantings surged. Surplus grains filled the storage bins. Prices crashed. And farmers were left holding the bag after going into debt to produce grain crops that were now worth half as much as they were at planting. Earl Butz's remedy? Plant more. Casting foreign trade as a panacea, he authorized the USDA's Commodity Credit Corporation to lend up to $750 million to the Soviet Union over 3 years to help the Soviets purchase American grains and soybeans.[178] But trade

with the communist block was not a constant. It fluctuated wildly over the course of the decade — sometimes compounding domestic shortages, sometimes allowing surpluses to build up, and ultimately causing no less than four spikes and crashes in grain and oilseed prices between 1973 and 1981.[179]

As harsh volatility returned to commodity markets for the first time since the 1920s, farmers chased the booms and dealt with the busts by taking on unprecedented amounts of debt.[180] When foreign policy decisions and changed conditions abroad — much like they did at the end of World War I 60 years before — caused the export bubble to finally burst in the early 1980s, farm incomes plunged, and those ever-growing debts turned to foreclosures and bankruptcies. Families were driven off the farm in droves, their homesteads snapped up at "cut-rate prices" by wealthy agribusiness owners, "burned to the ground, cleared, and incorporated into ever-larger corn and soy fields."[181] By the end of the decade, nearly 300,000 farms — fully one-sixth of the nation's farms — had disappeared, virtually all small farms with less than 500 acres each.[182]

b. The Wall Street Farm Bill Replaces the New Deal Farm Bill

For plunging his pitchfork into New Deal agricultural policy and giving rise to "the greatest agricultural crisis since the Depression,"[183] Butz was beloved by agribusiness interests, who hailed him "as the greatest Secretary of Agriculture in the history of the Republic."[184] This was particularly true of the largest food processing and trading conglomerates, like Cargill and Archer Daniels Midland (ADM), who were bitter enemies of the New Deal Farm Bill.[185] Since the supply-management framework of the New Deal incentivized farmers to limit their production of agricultural commodities, it necessarily limited the amount of grains available for these corporate giants to store, process, transport, and trade — placing a lid on their metastatic growth.[186] Knowing this, Cargill and its corporate brethren started trying to destroy the New Deal Farm Bill from its inception.[187]

They mostly failed in the 1940s and 1950s, with President Truman railing against their political allies as seeking a "return to the Wall Street economic dictatorship" of the 1920s and a bipartisan coalition of Republicans and Democrats rejecting them in Congress.[188] After Earl Butz took over the USDA in 1971, however, they began finding success, as Butz sabotaged the administration of the New Deal's safeguards against over-production and lobbied Congress to weaken them.[189] Although the 1973 Agriculture and Consumer Protection Act (the "1973 Farm Bill") retained the voluntary "set-aside" programs that Earl Butz was actively undermining, it hamstrung the surplus-crop-purchasing programs designed to keep prices at reasonable levels. In their place, the 1973 Farm Bill authorized the USDA to "support the income" of farmers through direct payments making up the difference between the average market price and a "target price" for each covered crop, which came to be known as "deficiency" payments.[190] Instead of setting target prices at parity levels to maintain farm household's purchasing power, however, the 1973 Act fixed target prices at 1975 parity levels and provided for their adjustment in subsequent years only by a chained index of farm production costs.[191]

The 1973 Farm Bill marked an important victory for agribusiness interests. After its passage, Butz crowed that it represented "an historic turning point in the philosophy of farm programs in the United States," signaling a shift toward an agriculture policy focused on maintaining or expanding the supply of farm products instead of managing it.[192] The 1973 Act was not a complete victory for Butz and his allies, however. Much of the authority delegated to the Secretary of Agriculture by the New Deal Farm

Bill to limit the total acreage planted and to support prices for major crops remained available as discretionary authority for the Secretary.[193] After Butz stepped down from the USDA in 1976, Cargill CEO Whitney MacMillan launched a concerted, long-term campaign to finish the job Butz had started — and remove production controls from the Farm Bill entirely.[194]

Over the 1980s and 1990s, MacMillan "organized national conferences, pushed the issue in the media, and got politicians on board."[195] He "also enlisted fellow agricultural giants to help him fund a lobbying group,"[196] and found a key ally in the CEO of ADM, Dwayne Andreas. Andreas ran ADM like an autocrat from 1970 through the late 1990s.[197] During this time, "Andreas, his family, and ADM [became] by far the largest political contributors in the country," showering millions of dollars on farm-state Congressmen and Senators, various presidential candidates, and their political parties.[198] Simultaneously, Andreas used ADM's wealth to curry favor for agribusiness interests with the news media, buying a 10% interest in one of the country's largest newspaper chains and "underwrit[ing] the TV broadcasts of the premier political-discussion programs on … ABC, CBS, NBC, and PBS" to the tune of tens of millions of dollars a year.[199] By the 1990s, Andreas was known as "the prince of political influence" in Washington,[200] and ADM was known as "America's most politically powerful corporation."[201]

During the Reagan years, Cargill and ADM — together with a coalition of large agribusiness companies — used their growing political power to consolidate the gains of the 1973 Farm Bill and defeat attempts to roll them back, particularly the popular Harkin-Gephardt Save the Family Farm Act, which would have restored mandatory crop production limits and raised commodity prices to reflect the cost of production.[202] As a result, the 1985 Food Security Act (the "1985 Farm Bill") not only continued the 1973 Act's policy framework but doubled down on it. Reflecting a "bia[s] toward large farmers who produce export crops to the detriment of the smaller domestic producer," the 1985 Farm Bill cut target commodity prices to levels near prevailing prices in glutted international markets — well below most farmers' cost of production — while providing subsidies to high-volume exporters that incentivized them to market yet more crops, exacerbating the commodity glut.[203] After the 1985 Act's passage, Minnesota's Assistant Secretary of Agriculture, Anne Kanten, slammed it as a farm bill "engineered by and for the grain trade, enabling traders to increase their profit margins by cutting the returns to producers." It took "money out of farmers' pockets, out of rural communities," she said, "and transfer[ed] it to corporate bank accounts."[204]

It was during the Clinton administration, however, that Cargill and ADM's corruption-tinged efforts attained their ultimate goal, "and the last vestiges of the New Deal Farm Bill were repealed entirely."[205] After Newt Gingrich became Speaker of the House of Representatives in 1995, the agribusiness lobby finally had the votes they needed in Congress. "[O]ver one hundred Big Ag corporations, including Cargill [and ADM], joined forces to lobby for the Federal Agricultural Improvement and Reform Act of 1996," or the "Wall Street Farm Bill," as Austin Frerick calls it.[206] The law passed Congress with bipartisan support. Barely 25 Democrats, led by Iowa Senator Tom Harkin, and just one Republican, John McCain, voted against it in the Senate. Advocates for family farmers and consumers asked President Clinton to veto the bill, but he ignored them.[207] The Wall Street Farm Bill was signed into law on April 4, 1996.[208]

c. Federal Programs Return to Subsidizing Overproduction By Agribusiness

The Wall Street Farm Bill embodied an agriculture policy only Herbert Hoover and his Food Administration cronies could love. Whereas the New Deal Farm Bill sought to promote a balance between supply and demand for agricultural products so that family farms could achieve sustainable returns, the Wall Street Farm Bill shifted federal policy almost exclusively toward incentivizing the production of a handful of commodity crops, particularly corn, soybeans, and other grains and oilseeds. As Austin Frerick has described this shift in agriculture policy:

> Under the New Deal Farm Bill, a farmer faced with low corn prices could switch to another crop or even idle a portion of farmland in exchange for financial support. The new law [the Wall Street Farm Bill] removed any motivation to conserve land. Instead, farmers were encouraged to grow corn and soy whether prices were high or low, even on the most marginal land.[209]

Although the Wall Street Farm Bill has been reauthorized and tweaked a handful of times since 1996, "the core of the law has remained the same."[210] Today, there are two major farm subsidy programs: the so-called "commodity" program under Title I, and the crop insurance program under Title XI.[211] These programs are often described as working together to provide a "farm safety net" against natural disasters and market volatility. In reality, however, they operate much like the "minimum prices" of Herbert Hoover's Food Administration in the 1910s and early 1920s — subsidizing the overproduction of commodity crops by the largest agribusiness operations while hanging beginner, small, and midsize farmers out to dry.

Under Title I of the Farm Bill, the so-called Price Loss Coverage (PLC) program makes payments to farmers when covered commodity prices drop below a statutory "reference price" (typically established based on average prices during the preceding 5 years), while the Agricultural Risk Coverage (ARC) program makes payments to farmers when their revenues from covered commodities fall below 85% of their historical average over the preceding 5 years.[212] Only producers of grains, oilseeds, and certain pulses (*e.g.*, lentils) may enroll in either program.[213] The ultimate payout from each program is calculated based on the total acreage that a farm has historically planted with eligible crops — the more acres, the higher the subsidy.

Because of this structure, the Title I programs channel their payments overwhelmingly to large grain and oilseed agribusinesses. In 2021, the top 10% of subsidy recipients received 81% of PLC payments and 77% of ARC payments — while the top 1% received 43% and 35%, respectively.[214] Across all commodity subsidy programs, over half of all payments went to non-family-owned farms and large-scale farms with over $1 million in gross cash farm income (GCFI).[215]

The Title XI program subsidizes the cost of premiums for farmers who purchase crop insurance policies from USDA-selected Approved Insurance Providers (AIPs), which generally cover natural disaster and market volatility risks. Until the mid-2010s, USDA regulations made underwriting subsidized crop insurance policies for small, multi-crop, and fruit, vegetable, and nut farms — categories which include

many small and family-scale farms — either impractical or impossible. Since then, the USDA has promulgated reforms allowing AIPs to issue policies tailored to the needs of smaller and diverse-crop farms, but AIPs have continued to cater almost exclusively to large commodity crop agribusinesses.[216]

As a result, the Title XI program today gives far more in subsidies per acre to the largest farm operators than smaller ones, and practically excludes beginner farmers, multi-crop farmers, and farmers who do not grow Title I-eligible crops altogether.[217] Between 2012 and 2019, 56% of crop insurance premium subsidies went to the largest 10% of U.S. farms by crop sales, while only 2.9% went to the bottom 50%.[218] This concentration is not attributable to large farms simply insuring more acres.[219] Over the same period, the average amount of premium subsidies per acre received by farm operations in the top 2% by crop sales ($40.54) was almost *double* the benefit received by farms between the 50th and 80th percentile and over *eight times* the benefit received by farms in the bottom 50%.[220] Across the board, almost all of the policies issued with Title XI subsidies annually cover grains, oilseeds, pulses, and other commodity crops covered by Title I programs. For example, in 2019, non-Title I crops (including fruits, vegetables, nuts, forage crops, and livestock) accounted for less than 7% of all insurance policies sold with Title XI subsidies.[221]

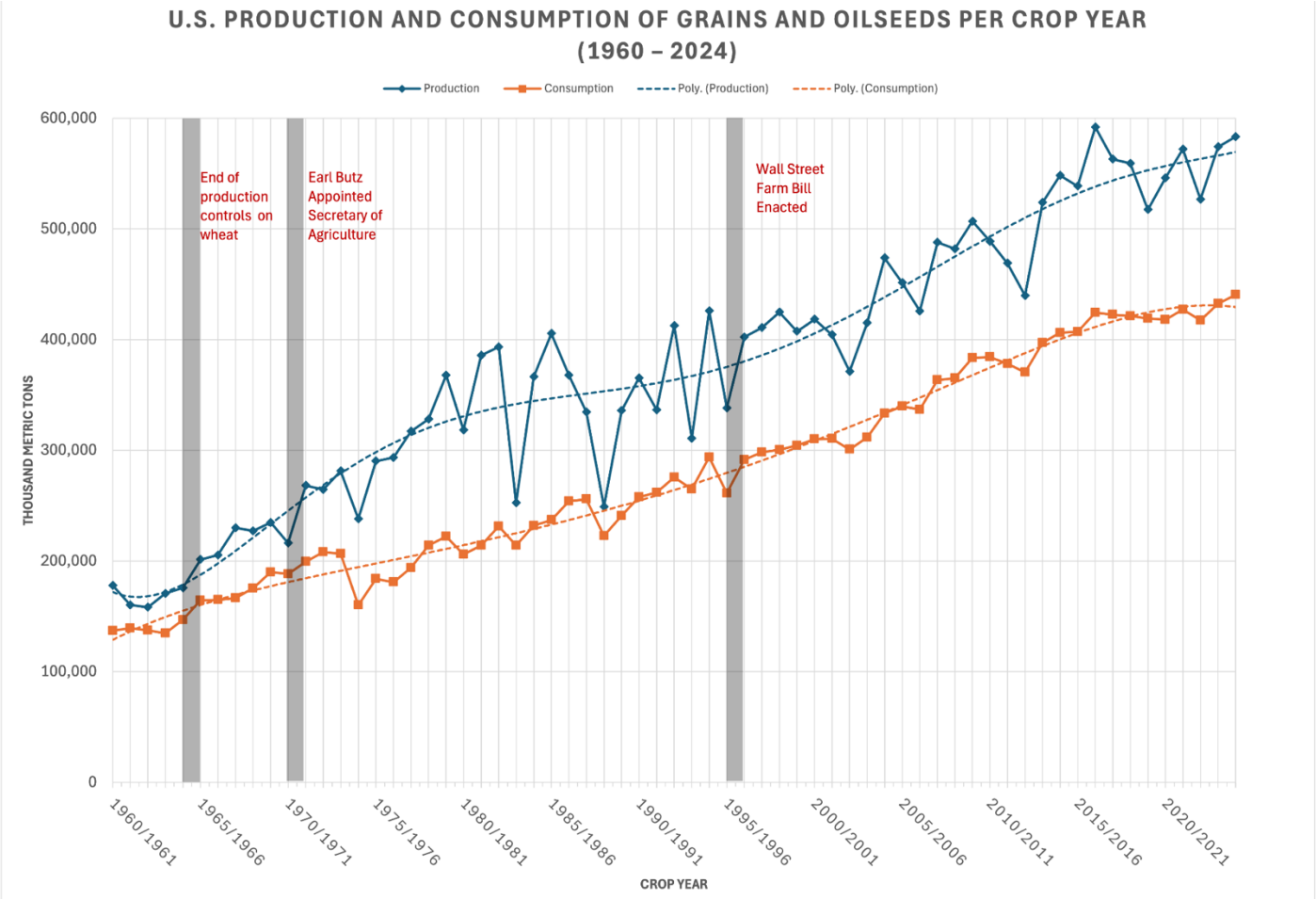

Figure 2: Farm Action analysis of USDA National Agriculture Statistics Service data. Retrieved from https://quickstats.nass.usda.gov/. Data available upon request.

d. Overproduction Causes Commodity Prices to Fall to Century Lows

By heavily subsidizing the planting of a small number of commodity crops by the largest agribusiness operators, the Wall Street Farm Bill's programs have induced chronic overproduction of corn, soybeans, and other grain and oilseed crops, causing a seemingly endless depression in commodity prices.[222] Indeed, since the 1990s, domestic prices for these crops have been depressed to their lowest levels since the turn of the 20th Century in real, inflation-adjusted dollars.[223]

As they did in the 1920s, chronically depressed prices have become their own incentive to expand production for the farm operators with the means to do so, as they have tried to make up in volume what they are losing in price.[224] For example, here is how a Bunge executive and the owner of a 3,000-acre agribusiness described the response of large farm operators to record low grain prices in the mid-2010s:

> Bunge's Mr. Schroder said that the oversupply problem could ease if U.S. farmers respond to persistently low grain prices by planting fewer acres, and producing less grain.
>
> But many farmers, trudging through the deepest farm-economy slump since the 1980s, are *doing the opposite*. Many are focused on boosting crop yields to combat low prices. That strategy could keep domestic stockpiles elevated, holding down prices and continuing farmers' dependence on crowded export markets.
>
> "The producer only has one choice with price levels where they're at, and that's to try to outrun this low commodity situation by producing as many bushels he can," said Matt Bennett, 43, who farms 3,000 acres in Windsor, Ill. "If things don't change, they're going to continue to get worse."[225]

While this outproduce-the-slump strategy may provide some short-term advantage for a 3,000-acre agribusiness, it is not a feasible — let alone an effective — one for the vast majority of farmers, who have struggled to invest in their farms amidst a commodity price depression that has kept them from making sustainable returns on existing operations. As a shift back to *laissez-faire* antitrust policy took place in the 1980s as well, this struggle has been exacerbated — much like it was in the 1920s — by a rising tide of monopoly power in the industries that sell farm inputs and buy farm products, leaving farmers' profit margins squeezed from both ends.

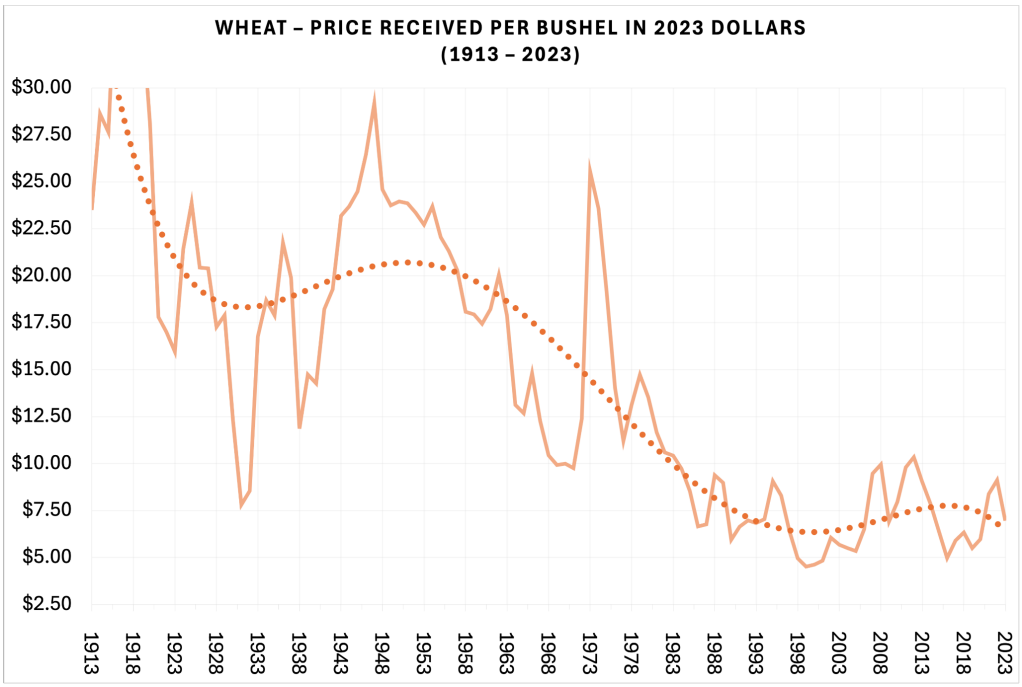

Figure 3: Price received per bushel of wheat in 2023 dollars.

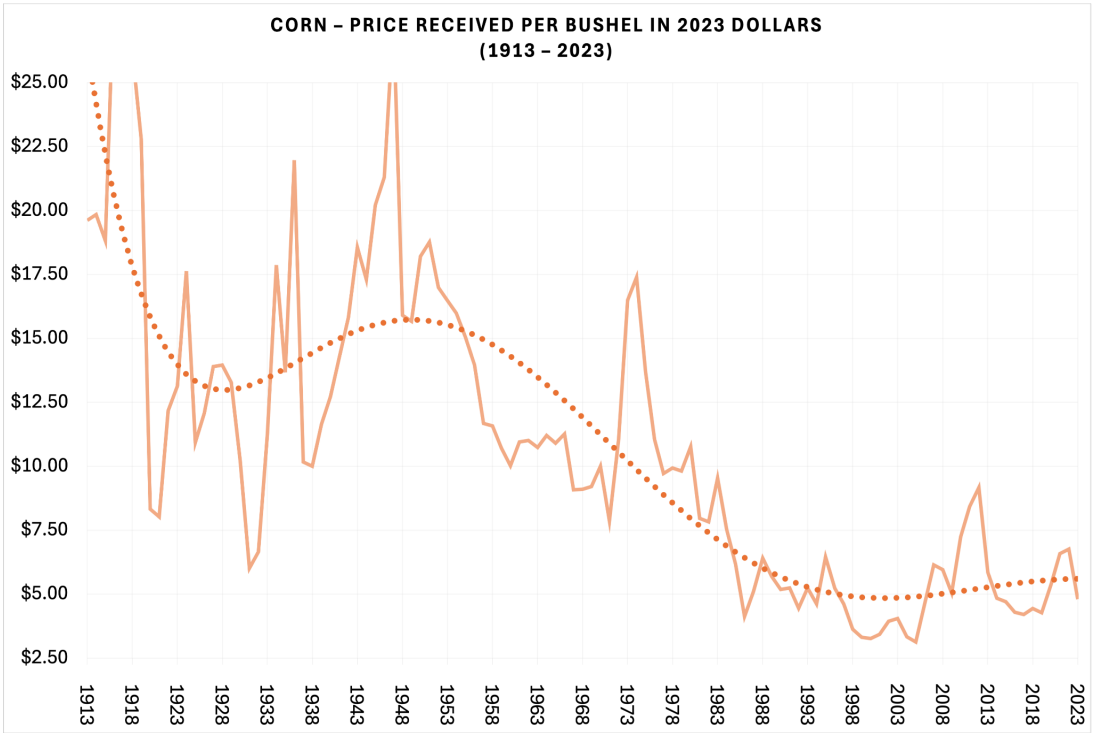

Figure 4: Price received per bushel of corn in 2023 dollars.

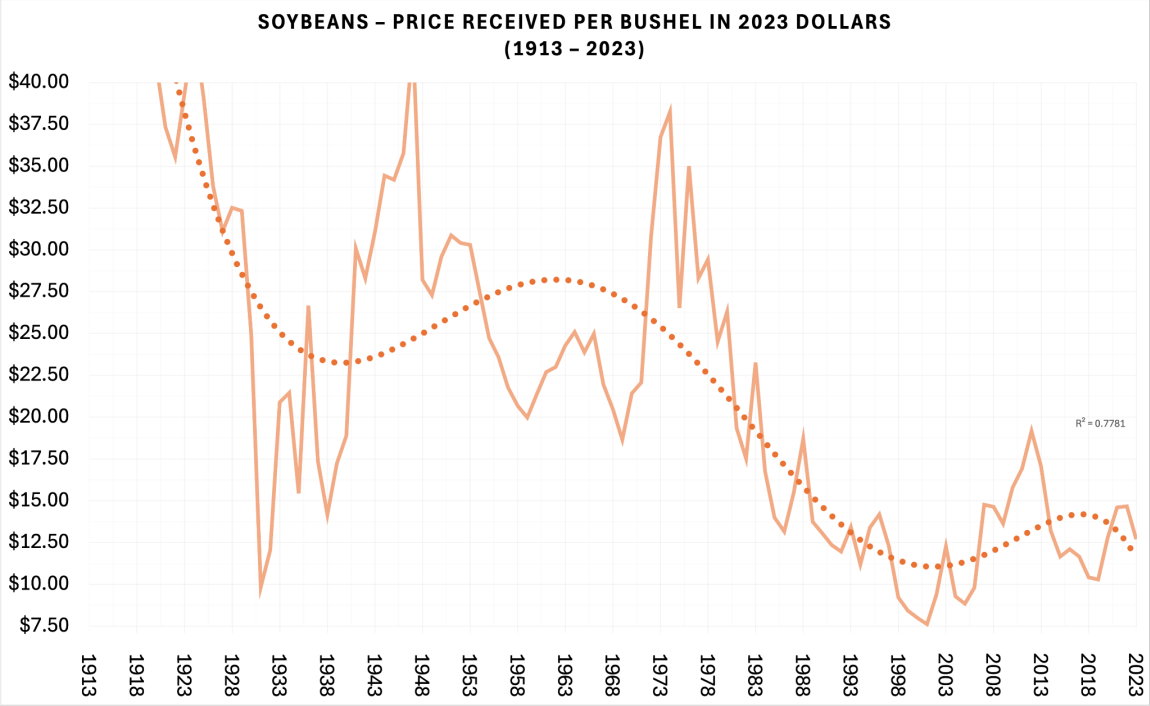

Figure 5: Price received per bushel of soybeans in 2023 dollars.

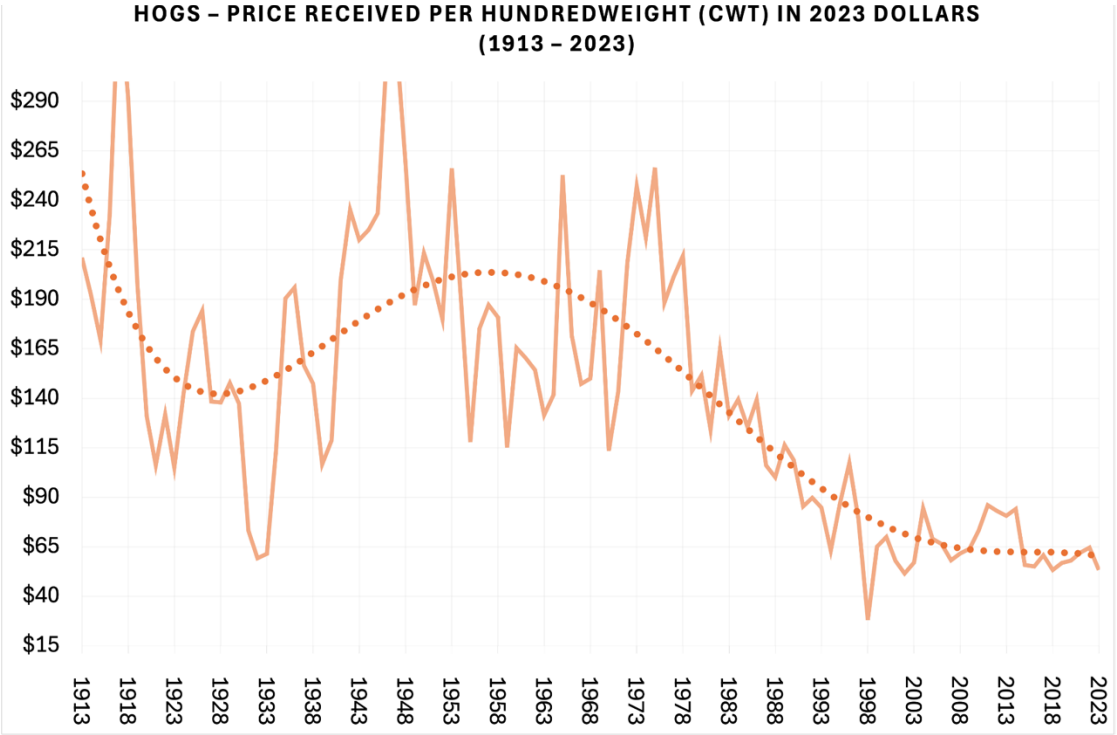

Figure 6: Price received per hundredweight of hogs.

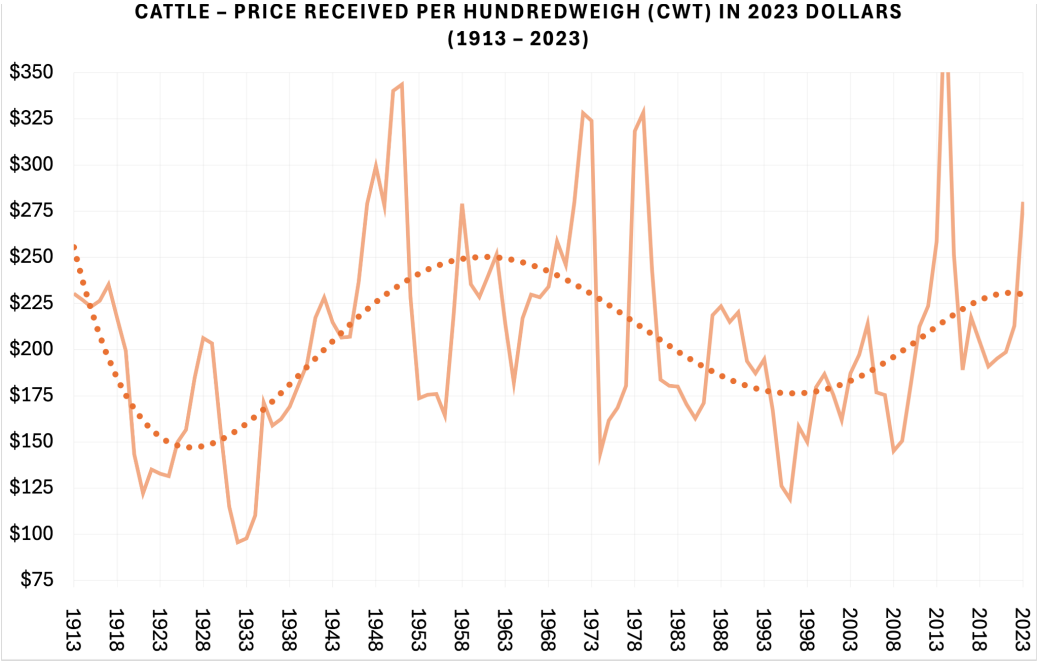

Figure 7: Price received per hundredweight of cattle.

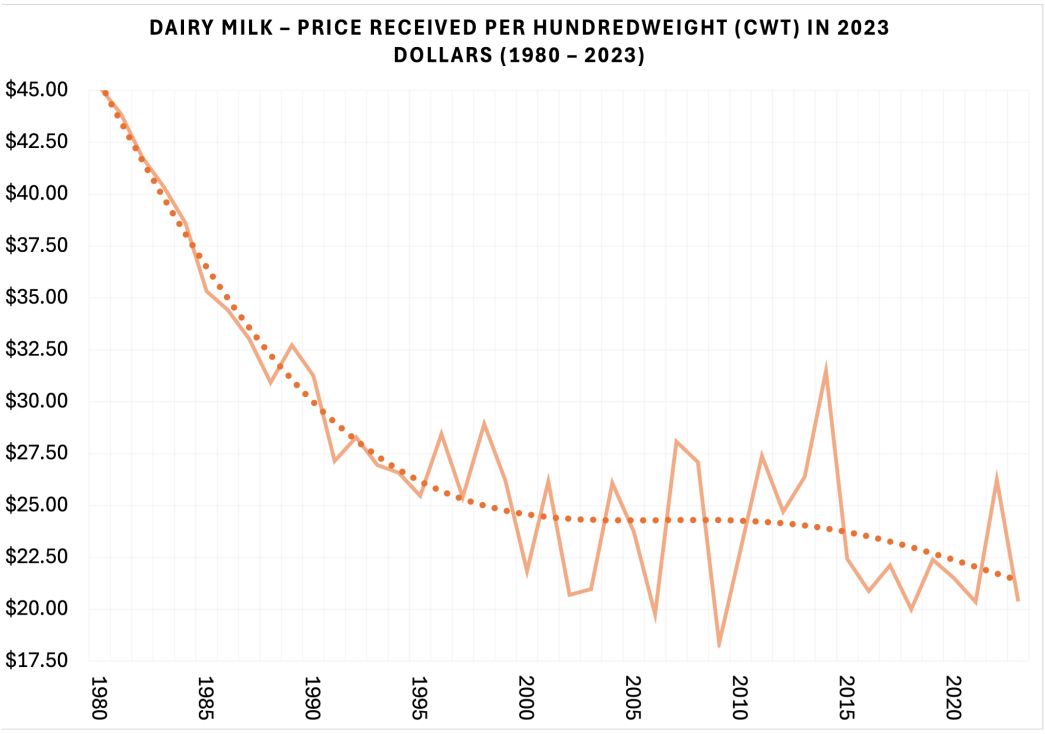

Figure 8: Price received per hundredweight of milk.

Figures 3-8: Farm Action analysis of USDA National Agriculture Statistics Service data. Retrieved from https://quickstats.nass.usda.gov/. Data available upon request.

2. *Laissez-Faire* Antitrust Policy Returns Under the Guise of "Consumer Welfare"

By the start of the 1980s, the other guardrail on the concentration of economic power in agriculture — strong antitrust enforcement — was also being dismantled. The shift back to *laissez-faire* antitrust began in the Carter Administration. In 1977, President Carter's DOJ effectively suspended enforcement of the antitrust laws prohibiting discriminatory pricing in general trade, particularly the Robinson-Patman Act.[226] A year later, the Carter administration successfully lobbied Congress to pass the Airline Deregulation Act of 1978, which Carter's Civil Aeronautics Board (CAB) then — contrary to congressional intent — seized as a vehicle to permit airlines to consolidate, discriminate between ticket buyers, and cut service to small towns.[227] By 1980, President Carter had extended similar deregulation to the railroads. Over the complaints of farmers, marketing cooperatives, and small and midsize brokers and merchandisers of agricultural products, he signed the Staggers Act into law, permitting railroads to give preferential terms and prices to favored (large) shippers for the first time since the Interstate Commerce Act of 1887.[228] The Staggers Act even encouraged railroads to enter secret, long-term contracts with shippers, allowing those with the greatest buying power to formalize and entrench their preferential access to the nation's rail network.[229]

However, the monopolistic designs of corporate giants and their financiers were not fully unleashed upon the agricultural sector until the onset of the Reagan administration. This did not necessarily reflect the preferences of conservative voters. Indeed, during the 1980 presidential election campaign, the harmful effects of President Carter's deregulatory policies on small towns, farmers, and small businesses often provided fodder for conservative attacks on the President.[230] Following in that vein, the Heritage Foundation's Mandate for Leadership — which was published just after Reagan won — slammed the outgoing Carter administration for allowing transportation utilities to give "special discounts" and "secret rebates" to "large corporations and large unions," calling such discrimination "contrary to basic American precepts of justice."[231] As President Reagan took power, however, he placed a group of neoliberal academics and economists in charge of his administration's antitrust policy. They, it turned out, had a very different view of antitrust enforcement than many of the new president's conservative supporters.[232]

a. The Eggheads Take Over the Antitrust Division

During the Carter-to-Reagan transition, two influential scholars in the so-called "Chicago School" of antitrust thought — law professor Richard Posner and economist George Stigler — advised the incoming Reagan Administration on antitrust policy.[233] The Chicago School was (and remains) an intellectual movement premised on "a series of neoclassical economic theories about how markets work" that simply assume markets are "robust and self-correcting" in the face of abuse and therefore "systematically bias against [antitrust] intervention."[234] Based on these overly simplistic models of the real world, Posner and Stigler believed antitrust law should be "prune[d]" of its prohibitions on price discrimination, exclusive dealing, vertical and conglomerate mergers, and other monopolistic and unfair business methods, and "confin[ed]" solely to smoking-gun price-fixing schemes and extremely large horizontal mergers.[235]

Posner and Stigler realized, however, that any attempt to repeal or narrow the antitrust laws outright would be unpopular with the public and find little support in Congress.[236] So, instead of pursuing

statutory changes, they recommended that Reagan "throttle back on antitrust enforcement" through the more surreptitious methods of the administrative state.[237] If the President appointed a true Chicago School believer to lead the DOJ's Antitrust Division, the two academics argued, he could simply stop bringing cases against price discrimination and exclusive dealing, promulgate enforcement guidelines that restrict what mergers the Division would challenge to large horizontals, and intervene in cases brought by the FTC and private plaintiffs to cow the courts into following what the Chicago School considered "sound antitrust principles."[238]

Reagan followed Posner and Stigler's recommendations. Shortly after they penned their transition memorandum, he appointed Bill Baxter — a Stanford professor and Chicago School "zealot" — to be Assistant Attorney General in charge of the Antitrust Division.[239] Per antitrust researcher Matthew Stoller:

Baxter was a Stanford professor, but also a total zealot in favor of getting rid of traditional constraints on monopolists. Though he was charged with enforcing the laws as written, he simply refused to do that. He called Supreme Court decisions mandating strong antitrust rules "rubbish" and "wacko," and circulated a memo in the department calling one such precedent "idiocy." He empowered economists at DOJ to veto cases, and these economists quickly became known as "case killers." All of this caused blowback in Congress, but as predicted by Stigler and Posner, conservative Senator Strom Thurmond among others prevented Congress from checking Baxter.[240]

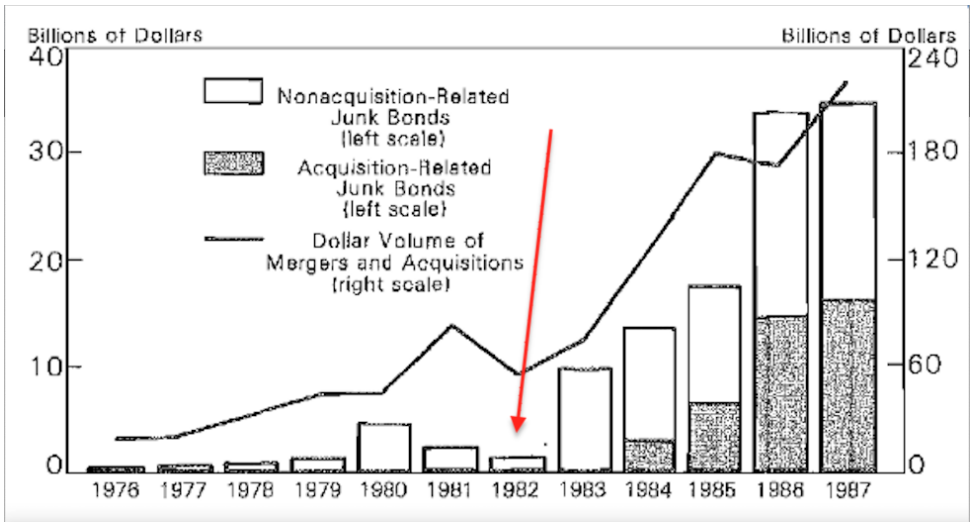

Figure 9: Matt Stoller, Antitrust Guidelines and Overthrowing a Corrupt Priesthood, The BIG Newsletter (July 22, 2023). https://www.thebignewsletter.com/p/antitrust-guidelines-and-overthrowing

By the end of his three-year tenure, Baxter had structurally curtailed the Division's ability to bring enforcement actions and challenged the very "purpose of antitrust enforcement."[241] The most significant action of Baxter's tenure came in 1982, when he led the Antitrust Division to issue new "Merger Guidelines" that, in practice, committed the Division not to take action against the vast

majority of illegal mergers and acquisitions — giving corporate giants wide latitude to restructure their industries through roll-ups of competitors, suppliers, customers, and related businesses.[242] As Figure 9 shows, Baxter's decision to foist this policy of non-enforcement on the Antitrust Division had an immediate catalytic effect on merger activity across the economy.

The waves of mergers and acquisitions unleashed by Baxter's guidelines did not stop in the 1980s. Subsequent administrations — including the Clinton, Bush, Obama, and Trump administrations — continued and expanded the non-enforcement regime established by Baxter, enabling successive merger waves "to consolidate nearly every nook and cranny of American commerce."[243]

b. The Courts Embrace the Fig Leaf of "Consumer Welfare"

Even in crippling antitrust enforcement through the less visible levers of the administrative state, Baxter and his fellow-travelers in the Chicago School still needed some legitimate-seeming justification for what they were doing. They found that fig leaf in the work of Robert Bork, whose 1978 book, *The Antitrust Paradox,* claimed that Congress intended the antitrust laws to function solely as a "consumer welfare prescription."[244] Since the legislative purpose of the antitrust laws was only to protect and maximize consumer welfare, Bork reasoned, anticompetitive and monopolistic practices that violate the text of the antitrust laws should only be proscribed where enforcers also prove that they cause quantifiable harm to consumers. It is widely acknowledged today that Bork's argument was "profound nonsense" and that the consumer-welfare framework he proposed flatly contradicted both the language and purposes of the antitrust laws.[245] Nonetheless, Bork's ideas took hold — and soon became the go-to justification for judges and bureaucrats seeking to water down the mid-century regime's restrictions on the growth of monopoly power.

A year after *The Antitrust Paradox* was published, Justice Lewis Powell directly quoted the book in a Supreme Court opinion saying that "Congress designed the Sherman Act" simply "as a 'consumer welfare prescription.'"[246] Before President Nixon nominated him to the high court in 1971, Powell was a well-connected corporate lawyer and tobacco executive who had penned an influential "blueprint" for the U.S Chamber of Commerce on how to roll back the New Deal.[247] In that vein, lifting Bork's ideas from academia into the current of antitrust jurisprudence proved a masterstroke.

On the one hand, it enabled corporate defendants to (once again) make a plausible defense of almost any practice challenged under the antitrust laws. Since markets are complex, dynamic ecosystems, it is practically never possible to conclusively determine what effect a single business practice has had — or might in the future have — on product prices or product output, let alone on more nebulous phenomena like product innovation or quality.[248] Because of this indeterminacy, deep-pocketed defendants in antitrust cases can almost always produce some economic theory or model to suggest that a challenged practice has not led, or will not lead, to quantifiable consumer harm in the form of higher prices, lower output, or reduced quality. For the same reason, when enforcers put forth their own economic models suggesting the opposite, defendants are almost always able to raise any number of technical disputes — shrouding antitrust proceedings in "chronic epistemological doubt and uncertainty."[249]

On the other hand, this "doubt and uncertainty" gave judges and enforcers an excuse to clip antitrust's wings. For example, in the spirit of Robert Bork's consumer-welfare framework, the 1982 Merger Guidelines restricted the Antitrust Division's enforcement of Section 7 of the Clayton Act to mergers and acquisitions that "create or enhance . . . the ability of one or more firms profitably to maintain [consumer] prices above competitive levels[.]"[250] Many lower court judges went along.[251] So did subsequent administrations.[252] And the rest was history. Since predictions about a merger's future effect on consumer prices are inherently contestable and indeterminate, this shift turned Section 7 into mostly a dead letter.[253] By the 1990s, it functionally prohibited little beyond the most egregious mergers to monopoly or near-monopoly — and sometimes not even those.[254]

Similar plays took place across the antitrust landscape. Using thin reasoning about the potential welfare effects of corporate conduct — often based on simplistic Chicago School economic theories — as justification, a new pro-monopoly majority on the Supreme Court proceeded to relax the strict midcentury prohibitions on exclusive contracts,[255] discriminatory and predatory pricing,[256] anti-competitive collusion,[257] vertical restraints on suppliers or distributors,[258] and even monopolization itself.[259] Reinterpreted through the looking glass of consumer welfare, "a once-populist and progressive law against exploitation [became] the law for exploiters."[260]

In Focus: The Atrophy of the Packers and Stockyards Act

Running alongside these changes in the interpretation and enforcement of the primary antitrust laws, starting in the 1980s, a combination of judicial activism and administrative neglect turned the Packers & Stockyards Act into a practical nullity. Beginning with a 1985 decision by the Eighth Circuit, judges began "reach[ing] beyond the Act's clear and unambiguous text" to hold that conduct only violates the Act if it "injures, or is likely to injure, competition" in relevant markets.[261] Ignoring the words Congress passed, several other Circuit Courts followed suit — relying on hazy (and substantively wrong) claims about the "chief evil" the Act was passed to address, its so-called "antitrust ancestry," and assorted "policy considerations" to require proof of market-wide anticompetitive harm.[262] In the wake of these decisions, farmers and enforcers could only bring claims under the Packers & Stockyards Act if they could plead and prove that a processor's conduct harmed competition in relevant markets. As courts applied this requirement within the prevailing consumer-welfare paradigm, it soon became an impossibly high bar to clear — requiring plaintiffs to prove not only that a packer's practices "arbitrarily decreas[e] prices paid to sellers" in livestock markets, but also that their "likely effect" is also to "increase resale prices" to consumers in downstream markets.[263] Acquiescing in this judicial nullification of the P&S Act, the USDA essentially halted all enforcement of the Act by the time of the George W. Bush Administration.

3. Conclusion

"Spurred by lax antitrust enforcement and burgeoning laissez-faire dogma under Democratic and Republican administrations alike," an "epic corporate merger and consolidation movement" has consumed the U.S. economy since the 1980s.[264] The value of corporate mergers amounted to $1.4

trillion in the 1980s, exploded to $11 trillion in the 1990s, and continued at an even faster pace in the 2000s.[265] Today, thousands of large corporate mergers worth trillions of dollars occur every year without facing any real threat of challenge. In 2021, for example, the number of mergers reported to the FTC under the Hart-Scott-Rodino Act reached a 20-year high of over 3,500, while the value of corporate transactions reached over $2.5 trillion.[266] Corporations are reportedly exploiting a "once-in-a-generation opportunity to make acquisitions and consolidate power," according to the Harvard Business Review,[267] fueling what commentators have dubbed the "seventh great [merger] wave" in American economic history.[268]

"Behind these aggregate dollar amounts," according to antitrust scholar James Brock, "has been a cumulative succession of ever-larger mega-mergers combining the biggest firms in one major field after another, aggrandizing concentration of economic decision-making throughout the economy."[269] Perhaps nowhere has this process of "aggrandizing concentration" been taken to greater extremes than in the agriculture sector. Coming out of the farm crisis of the 1980s, producers found themselves facing rapid consolidation toward oligopoly in essentially all of the industries that sell farm inputs and buy farm outputs. Because of the twin policy changes described above — the return of "Get Big or Get Out" agriculture policy and the abandonment of strict antitrust prohibitions on anticompetitive and monopolistic conduct — economic power in America's agriculture system grew more concentrated over the next two decades than perhaps ever before.

Today, farmers are "sandwich[ed] between a monopoly-controlled input sector and a monopoly-controlled output sector."[270] As we detail in the chapters below, actual monopolies — in the legal sense of the word meaning a single firm with the power to exclude competition and control prices in a given market[271] — have taken over the manufacture and sale of nitrogen, phosphate, and potash fertilizers, seeds for various crops and integrated pesticides, tractors and combines and their repairs. Among the various industries that consume agricultural products, tight oligopolies of three or four firms — often operating in collusive ways that mirror the old trusts — have become entrenched at the national level, typically with just one or two firms dominating the procurement of crops and livestock in each region and locality of the country. Altogether, roughly three dozen corporations now effectively set the terms of trade and lines of development for every major aspect of our food and agriculture system — deciding who gets to farm, how they farm, what food gets produced and sold, and how much we all have to pay for it.

Seventy years ago, when the country faced a similarly dangerous concentration of economic power in the hands of would-be corporate masters, the FTC issued a stark warning to the nation: "Either this country is going down the road to collectivism," it said, "or it must stand and fight for competition as the protector of all that is embodied in free enterprise."[272] Until the recent appointments of Chair Lina Khan to the FTC and Assistant Attorney General Jonathan Kanter to the Antitrust Division, this warning had been forgotten in high places. For over four decades, administration after administration — Democratic and Republican alike — had ignored the letter and spirit of the nation's antitrust laws and let monopolization run amok. Now, like our forebears did on the eve of World War II, we face a time for choosing.

Part 2: The State of Competition in America's Farming System Today

Chapter 1. Agricultural Inputs

The Seed and Pesticide Sector

1. Background

Conventionally, farmers, researchers, and commercial enterprises bred varieties of crop seeds with different characteristics through cross-fertilization. In the 1990s, a new method for modifying crop seeds to obtain specific plant characteristics was commercialized: genetic modification. Transgenic seeds are seeds that have been genetically modified to contain certain desirable traits that are expressed either in the plant's agronomic performance (*e.g.*, its tolerance to herbicides and resistance to insects) or in the characteristics of the plant's output — its leaves, fruits, vegetables, and so forth. The first generation of transgenic seeds typically contained a single modified trait, but transgenic seeds containing multiple or "stacked" traits were rapidly introduced in the 2000s.

Transgenic seeds are developed and produced in roughly three stages. First, transgenic traits are developed through genomics research and the application of genetic transformation technologies. Then, the trait is introgressed into seed germplasm to create a traited seed, which is grown out and tested in developmental breeding programs. When a traited seed proves satisfactory, it is released into the environment under regulatory supervision until it receives approval from the USDA, the Food and Drug Administration, and the Environmental Protection Agency for commercialization.

A pesticide is a chemical used to kill or control a "pest" — a disease, weed, insect, or other unwanted organism. The large majority of pesticides sold in the United States are used for crop protection. Crop-protection products fall into three main categories: (1) herbicides, which target unwanted plants or weeds; (2) insecticides, which target insect infestations (including nematicides, which target nematodes (roundworms)); and (3) fungicides, which target fungal diseases. A crop-protection product contains at least one active ingredient, which is the chemical substance that kills or controls the targeted pest. Active ingredients are combined with inert components such as water, adjuvants, surfactants, and, in some cases, other active ingredients to formulate finished crop-protection products. Each active ingredient has what is referred to as a "mode of action," which is the chemical and biological sequence of events that causes a pesticide to kill or control the targeted pest.

Crop-protection product manufacturers create, market, and sell crop-protection products. They may synthesize the active ingredients for their formulated products in their own facilities or purchase the active ingredients from other chemical manufacturers. In general, these manufacturers sell to distributors that, in turn, sell to (and in some cases are integrated with) retail outlets dispersed across the country. In the industry, this path to market is referred to as the traditional distribution channel or just the "channel."

2. Concentration, Consolidation, and Integration

Today, the seed and agrochemicals sector is dominated by four multinational firms — Bayer, Corteva, ChemChina, and BASF — that are fast-evolving into all-purpose agriculture biotechnology conglomerates. The consolidation of power over biological farm inputs in the "Big Four" is the direct product of a series of mergers in the late 2010s. The U.S. chemical and biotechnology firms Dow and Dupont merged in 2017 and later that year spun off into three companies, one of which was an agriculture-focused firm named Corteva. In 2018, ChemChina acquired Syngenta (Switzerland), and Bayer (Germany) acquired Monsanto (U.S.). At the Justice Department's request, Bayer divested some of Monsanto's seed divisions to BASF (Germany), and Dupont divested some of its pesticide assets to FMC Corporation (U.S.), but the transactions were consummated in substantially the form anticipated by the companies. When the dust settled, what had been known as the "Big Six" had consolidated into the "Big Four:" Bayer, Corteva, and ChemChina became the agriculture biotechnology industry's undisputed global leaders, with BASF as an additional significant — though smaller and less vertically integrated — player.[273]

This spate of mergers enabled these four multinationals to consolidate a preponderant share of sales in a large number of seed and pesticide markets. Globally, Corteva, Bayer, and ChemChina gained control over an estimated 50-60% of seed and agrochemicals sales.[274] By 2020, around 40% of the global seed market was controlled by Bayer (23%) and Corteva (17%), while ChemChina and BASF rounded out the top four spots, with 7% and 4% of sales worldwide, respectively.[275] The global agrochemical market saw even greater concentration, with ChemChina (24.6%), Bayer (16%), BASF (11.3%), and Corteva (10.4%) controlling over 62% of sales.[276] In the United States, the 2017-2018 mergers gave the four largest firms control over approximately 70% of the soybean seed market, 80% of the corn seed market, and 90% of the cotton seed market[277] and consolidated almost the entirety of the domestic crop-protection business (85-90%) within the 10 largest firms.[278] In seed genetics, Bayer-Monsanto and BASF alone now likely hold around 90% of trait acres for corn, soybeans, and cotton in the United States.[279]

In other key U.S. crops, a 2023 USDA report found that market share concentration among major players is "likely to be high in canola, sugar beet, and alfalfa seed, for which GM traits are popular, and probably lower in markets where conventional seed varieties predominate and where public-sector varieties and farmer-saved seed continue to be widely used (*e.g.*, for wheat and other small grains, peanuts, and dry beans)."[280] The USDA report goes on to say that "the market for vegetable seeds appears to be dominated by private varieties but is quite diverse across species. Large seed-chemical companies like Bayer and Syngenta have significant investments in proprietary vegetable seeds, but there are also a number of midsized companies (including several Dutch companies) that have a significant presence in U.S. and global seed markets for specific vegetables."[281]

Consolidation in the seed industry is a relatively new phenomenon. The four largest seed firms accounted for no more than 21% of the global market as recently as 1994.[282] In the 1960s, there were more than 70 substantial pesticide manufacturers in the United States, and the majority of the market remained in the hands of small firms through the 1980s.[283] After the Supreme Court ruled that genetically modified seeds could receive patent protection in 1980, however, that began to change.[284] Major biotech companies developed strong incentives both to enter the seed market — where they

could develop and license new patented genetically-modified seeds — and to "consolidate patent portfolios" and thereby avoid patent infringement litigation.[285] Aided by the loosening of merger enforcement under the Reagan and Clinton administrations, they pursued these incentives through aggressive M&A strategies.[286] The result was an explosion of biotechnology acquisitions in the seed market that transformed the seed and pesticide industries.

Between the 1980s and the early 2000s, the predecessor firms to today's Big Four acquired the vast majority of conventional and hybrid seed-breeding companies — locking in the bulk of the biotechnological intellectual property related to their seeds and germplasm.[287] One study notes that "by 2002, 95% of patents originally held by seed or small ag-biotech firms had been acquired by large chemical or multinational corporations."[288] That these were calculated acquisitions for control is suggested by the significant price premiums that acquiring firms paid for their targets, which frequently exceeded three times annual sales.[289] As observers at the time noted, these premiums suggested an expectation that the purchase-price premiums would be recouped at higher-than-prevailing rates of profit in the future.[290] Over the same time period, the Big Six also negotiated exclusive contracts with agriculture universities to access their germplasm and also obtained germplasm from a variety of international seed collections.[291]

Professor Phil Howard has maintained a powerful chart visualizing consolidation in the seed industry between 1996 and 2022 that illustrates the vast web of acquisitions by large companies over decades.[292] As the United Nations Conference on Trade and Development (UNCTAD) noted:

> [A]grochemical giants went on a buying spree in [] plant biotechnology and seed . . . . [B]etween 1995 and 1998 approximately 68 seed companies were acquired by or entered into joint ventures with a handful of large multinational companies. This trend became more apparent in the late 1990s and early 2000s, when the largest agrochemical and biotechnology companies reached out to envelop virtually all the largest seed firms in North America. Similarly, small ag-biotech firms became acquisition targets by the new agronomic system giants.[293]

Simultaneously, "the large trait development companies wanted to control their channel to market and, thus, set upon a strategy to acquire many privately-owned branded seed marketing and distribution companies."[294] Between 2010 and 2015 alone, the number of companies engaged in the retail marketing of corn and soybean seeds to farmers dropped from 150 to 85.[295] In parallel with the consolidation in seed distribution, there has been substantial consolidation in pesticide distribution. Today, just 7 distributors account for approximately 80% or more of all sales of crop-protection products in the United States, while the top 17 account for over 94%.[296]

3. Unfair and Exclusionary Conduct

As a result of these maneuvers, since the late 2010s, CR4 ratios have reached over 75% across major seed groups,[297] and the Big Four have essentially perfected a corner on the critical intellectual property and germplasm necessary to research, develop, and market new seeds and pesticides. According to the USDA's 2023 *Concentration and Competition in U.S. Agribusiness* report, 58% of all Plant Variety Protection Certificates (PVPCs) issued by the USDA and all patents for new crop varieties and closely

related innovations issued by the USPTO between 1976 and 2021 are now controlled by the three largest seed companies — Bayer, Corteva, and ChemChina-Syngenta.[298]

This control means that the Big Four can exercise exclusionary power, not only by handicapping the efforts of independent competitors to market their products, but also by gatekeeping their access to the patent-walled technologies and cultivars they need to develop new products in the first place.[299] While little public information is available regarding the Big Four's licensing fees and practices, some licensees have reportedly been required to use licensed traits in a minimum number of their seed products, while others have been prohibited from collaborating with certain competitors of their licensors.[300] Moreover, the Big Four (particularly Monsanto before Bayer acquired it) have been known to aggressively litigate to protect their exclusive licensing arrangements and target farmers who, knowingly or unknowingly, plant seeds with patented traits on their fields — forcing farmers to buy their patented seeds from one planting season to the next just to avoid liability.[301]

The commercialization of full patent-protected transgenic seeds in the 1990s created another avenue for the largest seed-chemical firms to consolidate market control: tying, bundling, and exclusive dealing.[302] Patented seeds were initially bundled with other inputs to protect profits in agrochemical divisions. By bundling patented GMO crops with pesticides engineered to avoid harming them, these companies found they could compel farmers to purchase both halves of an interdependent seed and pesticide package.[303] For example, Monsanto required farmers who purchased its herbicide-tolerant transgenic seeds to use its proprietary glyphosate herbicide rather than a generic.[304]

Since the mid-2010s, the business model and M&A strategies of the Big Four have shifted to more effectively leverage their control over transgenic traits, transgenic seeds, and crop protection chemicals. As a report by ETC Group (formerly RAFI) explained in 2022, "[t]he new business model" seems to be "vertical integration under the rubric of farm management services[.]"[305] Instead of selling seeds plus a linked herbicide (*e.g.*, Roundup-Ready corn seeds and Roundup, in the case of Bayer), the dominant incumbents have taken to "selling (the promise of) high-yielding, weed-free, bug-free fields."[306] The products and services for sale increasingly include "data-driven input recommendations by a company-linked consultant/agronomist" platform, "modeling of potential profits based on predicted weather," application of "soil sampling via in-field sensors," and even "field-scouting via drone."[307] The acquisition of data and capabilities related to those products has, in turn, become a focal point of the Big Four's corporate transactions and joint venture activity. For example, Monsanto acquired The Climate Corporation in 2013, Syngenta acquired The Cropio Group in 2019, and Corteva acquired Symborg in 2022.[308] Meanwhile, in 2021, Bayer entered a joint partnership agreement with Microsoft to co-develop the "go-forward infrastructure for digital farming solutions and data science capabilities."[309]

This combination of market control, vertical integration, and IP and data consolidation in the seed and pesticide sector has given rise to exotic supply arrangements mirroring the complex contracts that poultry, cattle, and hog farmers are increasingly subject to in livestock markets. Seed companies are beginning to experiment with risk-sharing agreements, instead of flat rates for agricultural inputs, allowing them to claim portions of farmers' profits if their products exceed expectations.[310] These contract structures give seed companies unprecedented access to information about their customers' operations and profitability. Conversely, the systems that seed companies use to set benchmark

performance levels are largely a "black box" to farmers, leaving farmers to negotiate for inputs from a position of deep information asymmetry —increasingly without alternative suppliers to turn to.[311]

4. Harms to Farmers and Communities

Against this backdrop, seed prices for genetically-modified seeds have "risen sharply" in recent decades, driven in large part by "the market power that firms derive from their [intellectual property rights] over new, commercially viable crop varieties."[312] Indeed, over the past 20 years, the price of commodity-crop seeds has risen faster than the price for any other farm input — and those price increases have dramatically outpaced yield increases over the same period.[313] Consolidation in the industry has also likely resulted in less R&D expenditure, reflecting less need for innovation and fewer choices for farmers when seeking to source seeds.[314] Reflecting on these dynamics, a Deloitte report on the agrochemicals industry recently predicted that "'capturing' rather than 'selling' value might more likely describe the strategic maneuvers that [sector incumbents] make" going forward.[315]

As the Big Four also aggressively protect their IP rights, they are imposing more restrictions on how seed is used and exchanged, including for seed saving and research purposes. These restrictions affect conventional and organic agriculture alike by making a large pool of plant genetics inaccessible to public researchers, farmers, and independent breeders. That, in turn, limits the diversity of seed in our landscapes and marketplace and further weakens our food security.

The Fertilizer Sector

1. Background

Modern agriculture relies on external inputs of three major plant nutrients — nitrogen (N), phosphorus (P_2O_5), and potassium (K_2O) — through the application of synthetic fertilizers. Each nutrient plays a different role in promoting healthy plant development. Nitrogen improves the growth and yield of crops. Phosphorus promotes root growth. Potassium helps build strong plant cell walls and promotes flowering and fruiting. Farmers can apply fertilizers in single-nutrient form, in the form of binary nutrient compounds, or in the form of nitrogen-phosphorus-potassium blends that provide a mixture of nutrients, depending on the soil, crop, and other characteristics of each farm.

2. Fertilizer Production

Generally, the production of synthetic fertilizers involves three main stages: First, the raw materials that are required to produce each nutrient are mined or collected. Second, these raw materials are refined or synthesized into various kinds of fertilizer. Finally, various fertilizers are often mixed to produce blends of nutrients tailored to regional and customer demand. The two main categories of fertilizers are single-nutrient ("straight") fertilizers and multi-nutrient ("mixed") fertilizers. In the straight category, the most commonly used nitrogen-based fertilizers are ammonia (A), urea (U), and ammonium nitrate (AN), the latter two of which are often combined into liquid UAN solution for agricultural use.[316] Normal and Triple Superphosphates (NSP and TSP), along with superphosphoric acid (SPA), are the main types of straight phosphorus-based fertilizers, while muriate of potash (MOP) and sulfate of potash (SOP) are the main potassium-based fertilizers.[317] In the multi-nutrient category, there are two major kinds of two-nutrient ("binary") compound fertilizers — monoammonium phosphate (MAP) and diammonium phosphate (DAP) — as well as a variety of three-nutrient (N-P-K) mixtures of straight and binary fertilizers.[318]

Each type of fertilizer requires different raw inputs and is produced through different chemical and industrial processes.[319] Nitrogen fertilizers are produced by capturing nitrogen from the air and combining it with hydrogen from natural gas (or other sources) to create ammonia, the feedstock for all other nitrogen fertilizer products.[320] Phosphorus fertilizers come from phosphate rock, deposits of which are mined, converted into phosphoric acid or elemental phosphorus, and then refined into superphosphates (TSP and NSP) and related compounds.[321] More broadly, phosphoric acid is the feedstock for most fertilizer compounds. It can be combined with ammonia and granulated to produce DAP and MAP, or evaporated to produce superphosphoric acid (SPA), which can then be converted into liquid and granulated fertilizer.[322] Potassium fertilizers are created by mining or manufacturing various kinds of potassium salts (collectively known as "potash") and refining them into muriate of potash (MOP) or reacting them with sulfuric acid to create sulfate of potash (SOP).[323]

3. Fertilizer Distribution

After fertilizer products are manufactured, they are sold to wholesalers (*e.g.*, Gavilon, ADM, and Koch), agricultural retail chains (*e.g.*, Nutrien Ag Solutions, Helena, and Growmark), cooperatives

(*e.g.*, CHS), and independent farm retailers. The fertilizer business is seasonal. In the Midwest, where farms predominantly raise grain crops, demand for fertilizer spikes sharply for a 6-8 week period stretching from just before until just after Spring planting (and to a lesser extent after Fall harvest) but otherwise stays low.[324] On the West Coast, where fruit, vegetable, and nut crops predominate, the fertilizer application period is more prolonged, running roughly from March through July in tandem with the growing seasons for the various types of trees and plants involved.

In both cases, fertilizers are not delivered to end-users evenly throughout the year.[325] Rather, manufacturers spend most of the year filling storage facilities with fertilizer inventories so that they can be available when demand hits.[326] Shortly before planting/growing season starts, those inventories are depleted rapidly — usually in a matter of weeks — through "fill" deliveries to distributors, who then distribute their stocks of fertilizers to their farmer-customers for immediate application.[327] After the fertilizer season is over, retailers, wholesalers, and co-ops designate their "fill" requirements to fertilizer manufacturers for the next planting/growing season, and the cycle repeats.[328] Historically, some producers sold fertilizers directly to farmers, but that option is generally unavailable today except for the largest industrial agriculture operations.

The transportation and storage of fertilizer materials is costly and requires access to specialized equipment and facilities. Properly handled, fertilizer materials can be shipped over long distances and stored for long periods of time without loss. However, the chemical composition of fertilizer materials means they can be flammable, corrosive, poisonous (if ingested), and otherwise hazardous.[329] Improper handling can lead not only to product degradation, but also to catastrophic fires and environmental contamination.[330] To mitigate these risks, fertilizer materials must generally be shipped and stored in moisture-sealed, temperature-controlled environments that are well-ventilated but also leak-proof.[331] Naturally, this raises fertilizer logistics costs and limits the range of logistics providers that can be used.[332] More broadly, since fertilizers and fertilizer inputs are high-weight/low-value commodities, logistical costs can add significantly to delivered prices and limit the geographic area from which buyers can source their fertilizer supplies.[333]

Inside the United States, most fertilizers are transported from production sites and port terminals by rail, truck, pipeline, water vessel, or some combination thereof.[334] Certain mineral inputs and single-nutrient fertilizers are often transported by gas or slurry pipeline — specifically ammonia and phosphate rock, respectively. Pipeline and river barge (in that order) are the lowest-cost methods for intermediate and long-haul movement of fertilizer materials domestically, with barge freight clocking in at over 30% cheaper than rail freight (the next least-expensive option) in the case of ammonia, for example.[335] Where waterway and pipeline transport are unavailable, fertilizer materials are transported primarily by rail to storage facilities near consumption sites, then by truck for the "last mile" to plants, retail facilities, and farms, as the case may be.[336]

Against this backdrop, the geographic markets for fertilizer minerals and wholesale fertilizer products are shaped by the location of their sites of production or importation, and the access that those sites provide to economical transportation networks. Generally speaking, fertilizer imports arriving through the Port of New Orleans — assuming they have competitive access to marine terminals and river vessels — can be efficiently transloaded onto barges and tugged up the Mississippi River network, allowing them to penetrate the Midwest markets along its banks.[337] In contrast, imports arriving

through seaports on the East and West Coasts must rely on high-cost rail service to move inland, which limits their ability to sell their ocean-shipped inventories competitively beyond the coastal states.[338] Across the board, for both domestic and import-product shippers, transporting fertilizers by rail across the Rocky Mountains is difficult, both because of cost and because of time and weather impediments.[339]

4. Anti-Monopoly Policy And The Old Fertilizer Trust

Historically, the global fertilizer industry has been characterized by cartels, state-backed monopolies, and interlocking ownership arrangements.[340] State ownership of potash and phosphate rock deposits, mines, and refineries is common abroad.[341] So is ownership by Eastern European oligarchs.[342] Described as infected with a "corporate sociology of collusion," the global fertilizer industry has a history of cartels tracing back to the 1880s.[343] As a report by the American Antitrust Institute explained in 2013:

> A 1949 report by the Federal Trade Commission (FTC), for example, documents cartels in nitrogen, phosphorus, and potash from before World War I to just after World War II. Connor identifies 83 known hard-core international fertilizer cartel episodes over the period 1902 to 2010, comprising 20 percent of primary industry cartels and 12 percent of identified international cartels. Twenty fertilizer cartels were detected from 1990-2010. Numerous conditions make the fertilizer industry conducive to cartelization, for individual nutrients and all three nutrients together. These factors include: inelastic demand, high barriers to entry, easy explicit and tacit communication between members, and corporate and government control of limited reserves. Observed sustained high profit margins, excess capacity, and the concomitant movement of nitrogen, phosphorus, and potash prices are also consistent with cartel behavior.[344]

The American fertilizer industry has not been immune to such corruption. Since the early 1900s, associations of U.S. fertilizer producers have repeatedly been formed for the ostensible purpose of export coordination under the Webb-Pomerene Act, only to be caught fixing prices, throttling output, and suppressing independent firms domestically and forced to disband by the Antitrust Agencies.[345] Before World War II, corporate mergers exacerbated these collusive tendencies by facilitating extreme consolidation in the industry. By 1939, two companies controlled over 90% of the country's synthetic nitrogen output, three companies controlled 85% of its raw potash and potassium fertilizer output, and six companies controlled most of its phosphate rock and phosphorus fertilizer output.[346] Working primarily through export cartels organized under the Webb-Pomerene Act, these incumbents cut deals with foreign syndicates, such as I.G. Farben in Germany and Imperial Chemical in Japan, to limit fertilizer imports; prevented independent firms from accessing fertilizer raw materials; and repeatedly buried innovative fertilizer compounds (such as TSP, SPA, and UAN solution) instead of commercializing them, to avoid rendering their existing products and plants obsolete.[347]

After the outbreak of World War II, enforcers and legislators launched a pitched attack on the concentrated power of this oligopoly, then known as the "Fertilizer Trust." The DOJ and FTC initiated antitrust lawsuits to dissolve the incumbents' export cartels and sever the collusive agreements they had inked with foreign syndicates.[348] After the War, U.S. military occupation brought trust-busting to

Germany and Japan, breaking up the foreign syndicates that had gate-kept American access to foreign fertilizers. By the 1950s, international producers of raw materials and fertilizer products were actively competing for the U.S. market, empowering both farmers and small fertilizer manufacturers to reduce their reliance on the domestic oligopoly for supplies.

On the home front, the federal government built 10 new synthetic nitrogen plants to support munitions production during the war.[349] Toward the end of the war, these plants were converted to civilian fertilizer production and sold to nascent competitors of the synthetic nitrogen duopoly.[350] As those competitors succeeded, others followed them, building their own ammonia and urea plants.[351] By the late-1950s, there were at least 17 major producers of synthetic nitrogen fertilizers in the United States.[352] With strong antitrust protections against unfair and predatory methods of competition in place, that number swelled over the next two decades, reaching 56 in 1980.[353]

In the phosphate industry, federal financing was provided to help 13 farmers' cooperatives build dozens of new superphosphate plants in direct competition with the "Big Six" phosphate fertilizer producers. The Tennessee Valley Authority (TVA) joined the fray as well, filling pent-up demand among farmers for better fertilizers by building its own state-of-the-art nitrogen and phosphorus fertilizer plants and commercializing a plethora of less costly and more potent fertilizer compounds and solutions.[354] Simultaneously, the TVA innovated new fertilizer production technologies that reduced the need for high-cost inputs, like coal and phosphate rock, and shared them with the industry's independent firms to strengthen their competitive position.[355] As a result of these efforts, by the 1950s, nearly 100 companies were operating over 200 superphosphate plants, and over 600 firms were operating 978 fertilizer-mixing plants around the country.[356] As the number of independent phosphatic fertilizer producers grew, new operators also entered into phosphate-rock mining to supply them, cultivating long-neglected deposits in the Mountain states, including Idaho and Utah.[357]

In contrast to the Big Two and Big Six of the nitrogen and phosphate industries, the potash industry's Big Three were all younger firms. The first geological survey of domestic potash deposits was undertaken in the late 1920s. The Big Three entered potash operations one after the other between 1932 and 1936, each building modern mining and refining facilities to exploit newly discovered potash deposits on federal lands near Carlsbad, New Mexico.[358] Their entry displaced an earlier duopoly in domestic potash production and provided strong competition for the European potash syndicates, as their advanced facilities produced more concentrated muriate of potash at a lower cost.[359] Nonetheless, in 1938, federal officials sought to promote even more competition by permitting an independent potash mine to open on the Salt Lake in Utah.[360] In the decade after the war's end, four additional firms received leases to launch potash mining and refining operations on federal lands.[361] Exploration of the vast potash deposits in Saskatchewan, Canada, which began in the 1950s, ultimately gave rise to several more firms.[362] By 1976, 15 substantial potash firms were operating in the United States and Canada, each with sufficient scale to generate adequate returns on the large capital investments required to build potash mines and refineries, but none holding an undue share of the continent's output.

These anti-monopoly policies of the mid-century era, which sought to cultivate the maximum number of viable competitors in each segment of the fertilizer industry, yielded rich dividends for America's farmers and consumers. Domestic production of all three fertilizer nutrients consistently met or

exceeded demand, even as fertilizer consumption grew rapidly. Innovation flourished across the fertilizer supply chain, and particularly at the fertilizer mixing and application stages.[363] The percentage of the nation's farms using fertilizer nearly doubled between 1939 and the 1970s.[364] Total fertilizer consumption grew from 7.91 million tons in the 1938-39 crop year to 20.99 million tons in 1950-51 — to 39.37 million by 1969-70.[365] Through it all, production growth continually outpaced demand, and fertilizer prices remained stable or declined,[366] and efforts to raise them by cartelization were vigilantly resisted by the DOJ and the FTC.[367] The price for a ton of anhydrous ammonia fell more than 50% between 1957 and 1969, while the prices for MOP, N-P-K, and TSP fertilizers declined by 10-to-20% each.[368] By 1969, the average farmer spent less than 7% of their annual revenue on fertilizer ($1,131 out of $16,705) — and received $3-5 in higher crop yield for every $1 they spent.[369]

5. The Rise of the "Big Three": CF, Mosaic, and Nutrien

That all began to change starting in the 1980s. Over that decade, the Province of Saskatchewan rolled up the private Canadian potash miners into a public company and then re-privatized them as one dominant firm, The Potash Corporation of Saskatchewan ("PotashCorp" or "PCS").[370] On the domestic front, depressed commodity prices led to depressed fertilizer prices, particularly between 1981 and 1986. The price squeeze was exacerbated by Canadian and Eastern European producers, who dumped fertilizers on the American market at below-cost prices well into the 1990s.[371] At the same time, mid-century plants were aging, and old mineral reserves were getting depleted, requiring domestic fertilizer producers to make new capital investments in facilities and mines to stay in the game. Instead of responding to these challenges by making the necessary investments, the fertilizer industry took advantage of the atrophy of antitrust enforcement under the Reagan and Clinton administrations to consolidate into even more monopolized form.

a. Consolidating the Domestic Industry Through Mergers and Acquisitions

In 1980, 56 firms produced nitrogen ammonia in the United States, and none of them controlled more than 10% of national capacity.[372] At the same time, around 25 companies were mining phosphate rock, and 14 were extracting potash, with no single firm controlling an outsize share of either mineral's output.[373] By the end of the decade, less than 30 nitrogen, around 15 phosphate rock, and only eight potash firms remained in the United States.[374]

Over the course of the 1990s, consolidation sped up. By 1998, six dominant companies (Farmland, PotashCorp, Terra, CF Industries, Union Chemical, and Koch Industries) controlled over two-thirds (68%) of U.S. nitrogen capacity.[375] Almost all phosphate rock output (88%) was consolidated in just six firms (IMC Global, CF Industries, Cargill, PotashCorp, Agrifos, and Nu-Gulf), four of which were also dominant nitrogen companies.[376] Vertical integration made a comeback, too, with IMC gaining control over one-third (36%) of domestic phosphate fertilizer output, Cargill (15%) and CF Industries (12%) consolidating another one-sixth each, and the remaining third of the nation's phosphatic fertilizer output being made up almost entirely by companies with integrated mines.[377] In the potash industry, two companies operating in New Mexico's Carlsbad deposits (IMC and Mississippi Chemical) once again controlled around 85% of domestic potash and potassium-fertilizer output,[378] just like in the 1930s — although by 1998, that output had fallen to a trickle.[379] In reality, the overwhelming majority of America's potassium supply was being imported from a Canadian oligopoly composed of Agrium,

IMC, and PotashCorp — the last of which, notably, had also inked a "marketing arrangement" with Mississippi Chemical under which it was assigned to sell most U.S.-produced potash on global markets.[380]

A series of mega-mergers in the 2000s and 2010s added the final burst of consolidation to the fertilizer sector, giving each nutrient segment its current monopolized shape. In 2000, Agrium — then one of the "Big Three" Canadian potash producers and a large agricultural retailer — became one of the domestic nitrogen industry's major players by acquiring Union Chemical's plants.[381] In 2003, Koch acquired most of Farmland's nitrogen assets to become the largest U.S. ammonia producer at the time.[382] That same year, IMC and Cargill Crop Nutrition merged to form The Mosaic Company as a Cargill-controlled subsidiary, creating the world's second-largest phosphate-rock producer and the largest manufacturer of phosphate and potassium fertilizers.[383] In 2010, CF bought another major nitrogen company, Terra Industries, consolidating over one-half of the nation's nitrogen urea capacity and nearly 40% of its ammonia capacity — beating Koch out of the top spot in the nitrogen sector.[384]

By 2012, only thirteen nitrogen ammonia producers were left in the United States.[385] Only six companies continued to mine phosphate rock in the country,[386] and only three (Mosaic and Intrepid) were producing any potash.[387] Almost all potash (87%) and potassium fertilizer (+90%) consumption was being imported from Canada, where production was controlled by PotashCorp, Mosaic, and Agrium.[388] Four companies — CF, Koch, PotashCorp, and Agrium, in descending order — represented over 75% of domestic nitrogen ammonia production.[389] Three companies — Mosaic, PotashCorp, and CF, also in descending order — controlled approximately 90% of the country's output of both phosphate rock and phosphoric acid.[390]

In 2014, Mosaic acquired CF's phosphate fertilizer assets, gaining control over more than half of the U.S. phosphate rock capacity[391] and fully three-quarters of the total North American phosphatic fertilizer output.[392] Two years later (2016), PotashCorp achieved a similarly preponderant position in the potash industry by inking a "merger of equals" with Agrium.[393] The combined firm — renamed Nutrien — became the largest fertilizer manufacturer in the world, with two-thirds of North American potash fertilizer capacity, 30% of the continent's nitrogen fertilizer capacity, and 25% of its phosphate fertilizer capacity.[394] Nutrien's capitalization ($36 billion) more than doubled the capitalization of its nearest competitors on the global stage, Mosaic ($13 billion) and CF ($13 billion), and dwarfed almost all others.[395]

b. Sidelining Foreign Competition Through Lobbying and Ownership Interlocks

From this point on, the world's phosphorus and potash markets have been characterized by duopolies operating alongside a few smaller, higher-cost fringe firms. The global phosphorus duopoly is comprised of Mosaic and its global network of subsidiaries and affiliates,[396] on the one hand, and a state-backed monopoly in Morocco — Office Chérifien des Phosphates (OCP) — on the other. Mosaic and its affiliates account for approximately one-half of the world's phosphorus trade, while OCP makes around one-half of phosphoric acid, one-third of phosphate rock, and one-quarter of phosphatic fertilizer sales globally.[397] The potash duopoly is composed of a Canadian export cartel, *Canpotex,* made up of Nutrien and Mosaic, and a Russian cabal, made up of two potash companies, Uralkali and

Belaruskali, rooted in the former Soviet Union.[398] Nutrien and Mosaic split *Canpotex* sales roughly 60-40 between them,[399] and they collectively export around one-half of the world's potash fertilizer trade. The Russian cabal typically accounts for between a quarter and a third of global potash trade, while the remainder is supplied by a handful of fringe producers, including Israel Chemical Company (ICL), K+S of Germany, and Arab Potash of Jordan.[400]

At this moment, none of the major foreign players in potassium, phosphorus, and nitrogen production are significant competitors at any level of the U.S. market. In 2021, the Commerce Department responded to petitions filed by Mosaic in 2020 by imposing "countervailing duties" on imports of phosphate fertilizers from Morocco and Russia, which will remain in effect until 2026 unless earlier repealed.[401] A few months after these duties were imposed, Russia restricted its nitrogen fertilizer exports.[402] The following year, Russia — with support from Belarus — invaded Ukraine.[403] Russian ammonia exports to the world — which relied on a Ukrainian pipeline to get to shipping ports on the Black Sea — were promptly shut off.[404] Simultaneously, the United States and the European Union imposed financial sanctions on Russia and Belarus, possibly hampering (though not prohibiting) exports of potash and nitrogen from the two countries.[405] Several other countries — including Egypt, Turkey, and China — impose ongoing restrictions on exports of certain nitrogen and phosphate products, and Chinese phosphates remain subject to Section 301 tariffs originally imposed by the Trump administration.[406]

Most of the output of other nations in a position to export fertilizer materials to the United States is controlled by Nutrien, Mosaic, and CF Industries. Phosphate rock and fertilizer production in Saudi Arabia, Brazil, Paraguay, and Peru is mostly controlled by Mosaic.[407] Nearly 95% of Canada's nitrogen ammonia capacity and 100% of its urea capacity are owned by Nutrien, CF, Koch, and Yara, with Nutrien controlling nearly 45% and CF controlling another 25-30% of each.[408] At the same time, Nutrien, Koch, and CF control over 70% of the ammonia and 49% of the urea capacity of Trinidad and Tobago off the northern coast of South America[409] and buy the natural gas to support their local plants from Trinidad's government, which owns the remainder of the Caribbean nation's nitrogen capacity.[410] Finally, although Indian and Chinese regulators forced PotashCorp to divest its ownership interests in Jordan's Arab Potash, Israel's ICL, and Chile's SQM as a condition of approving its 2016 merger with Agrium,[411] the potash output of those countries has long been dedicated mostly to Indian and Chinese buyers under long-term contracts — so they have little relevance to the U.S. market.[412]

c. Capturing U.S. Fertilizer Markets

As a result of these developments, today, each of the major macronutrient industries is dominated by a single monopolistic corporation. Mosaic reigns over the American phosphate market. As of 2021, Mosaic produces over 64% of the phosphate rock mined in the United States[413] and around 80% of the phosphate fertilizers manufactured in North America.[414] Either directly or through its subsidiaries and affiliates, Mosaic has been estimated to control over 90% of phosphate-fertilizer sales to U.S. farmers.[415] Over in the nitrogen sector, CF Industries is in command. In 2021, CF captured an estimated 80% of ammonia, 56% of urea, and 52% of UAN fertilizer sales made to American farmers.[416] Without counting its plants in Canada and Trinidad, CF's output that year amounted to approximately 56% of domestic ammonia and 39% of domestic urea production.[417] Finally, Nutrien has taken charge of the North American potash market as the leading member of a duopoly with Mosaic. Nutrien

produces between 55% and 60% of the potash mined in North America annually and controls an estimated 40% of potassium-fertilizer sales across the continent (in Canada and the United States together), while Mosaic produces 35% of North America's potash output and controls an estimated 35% of the continent's potassium fertilizer sales.[418]

6. The "Big Three" Control Prices & Exclude Competition

The consolidation of control over fertilizer inputs and fertilizer sales in the hands of Nutrien, Mosaic, and CF Industries (the "**Big Three**") has given these dominant incumbents the monopoly power to dictate outcomes in U.S. fertilizer markets, restraining competition by existing and would-be participants in fertilizer production and distribution. Because of the Big Three's massive advantages in total capacity over existing and potential rivals in their respective nutrient domains, they can single-handedly change the fundamentals of national and regional fertilizer markets — controlling price levels at their discretion.[419] Simultaneously, at least four structural features give the Big Three the power to exclude fair competition from U.S. fertilizer markets, making their present dominance all but unchallengeable for all or substantially all existing and potential fertilizer producers.

a. The "Big Three" Have the Power to Control Fertilizer Prices

It is widely acknowledged in the fertilizer sector today — by retailers, wholesalers, and producers — that CF, Mosaic, and Nutrien are the "price leaders" for nitrogen, phosphate, and potassium fertilizers in U.S. markets, respectively.[420] Nutrien appears to collect market intelligence and exercise price leadership for the fertilizer industry as a whole — with its publicly advertised retail prices serving as a signal for competing fertilizer producers and distributors to follow.[421] Across all geographic markets for plant macronutrients in the United States, neither importers nor competing domestic producers have the ability or the incentive to challenge the Big Three's price-setting.[422]

As of January 2024, CF Industries has the nameplate capacity to produce more than 10.4 million tons of ammonia and nearly 6.9 million tons of urea each year.[423] That is more than double the North American capacity of its nearest competitors, Nutrien, whose U.S. and Canada plants can produce just over 4.9 million tons of ammonia and four million tons of urea annually. It is more than triple the onshore capacity of the next largest producer, Koch Industries, which is 3.3 million tons of ammonia and 2.5 million tons of urea per year. and nearly *nine times* the North American capacity of Yara US, which comes in fourth place with an annual capacity of 1.4 million tons of ammonia and 1.1 million tons of urea.[424]

In theory, Nutrien — whose global capacity exceeds 7 million tons of ammonia and 4.5 million tons of urea annually[425] — could challenge CF's dominance in the U.S. market, but Nutrien's capabilities are not as strategically organized.[426] About a third of Nutrien's ammonia capacity is in Argentina and Trinidad, where it primarily serves Nutrien's extensive farm retail operations in Brazil and industrial users in South America.[427] Another third or so of Nutrien's ammonia capacity is in Western Canada's Alberta Province, where it primarily serves the Canadian market.[428] The last third consists of six plants scattered between the Pacific Northwest (Washington), the Texas Panhandle, the Midwest (Ohio and Missouri), and the Southeast (Georgia).

In contrast, CF Industries has more than five million tons of nameplate ammonia capacity concentrated in Donaldsonville and Waggaman, Louisiana, right on the Mississippi River, just north of the Port of the New Orleans — with on-site access to a deep-water docking facility, rail and truck loading terminals, and the 2,000-mile NuStar ammonia pipeline, which can quickly transport ammonia to 10 terminals and shipping points in the Midwest.[429] Two more of CF's plants, with an additional 2.5 million tons of ammonia capacity, have attached ports on tributaries of the Mississippi River in Missouri and Oklahoma.[430] Taken together, the strategic location and sheer size of these four nitrogen complexes mean that CF can readily shift as much as half of the nation's ammonia and urea output from the domestic market to the offshore market and vice versa any time it wants — and can do so using the two lowest-cost fertilizer transportation options available: pipeline and water vessel.[431]

In the potash industry, Nutrien and Mosaic occupy an even more advantageous position. As mentioned above, Nutrien and Mosaic jointly own the Canadian export company Canpotex and are required to market, sell, and distribute Canadian-origin potash to offshore buyers exclusively through Canpotex.[432] Although the two companies are supposed to use Canpotex solely to coordinate their sales of Canadian potash to buyers outside of Canada and the United States, that coordination inevitably shapes their activities — and, by extension, the supply of potash — in North America.

Canpotex is not an arm's-length distributor for either Nutrien or Mosaic.[433] It is a controlled subsidiary of both companies that owns and operates the logistical assets necessary to move Canadian potash from production sites in Saskatchewan Province to overseas markets.[434] Nutrien and Mosaic use Canpotex to sell millions of tons of potash to international buyers on term and spot contracts at mutually agreed-upon prices every year.[435] In recent years, those offshore sales have typically accounted for 50–66% of Nutrien's, and 40-60% of Mosaic's, annual potash sales in tonnes.[436] By enabling Nutrien and Mosaic to coordinate how much of their potash capacity — which, again, constitutes around 90% of total North American capacity — to dedicate to the offshore market, Canpotex empowers the two companies to fix and manipulate the supply of potash fertilizers available to North American buyers at their discretion.[437]

Finally, in the phosphates industry, Mosaic and Nutrien's power to shape the U.S. phosphates market is enhanced by the strategic concentration of their mines and plants in Florida, Louisiana, and North Carolina.[438] From their facilities in those states, the two companies have streamlined access to the Port of Tampa, where Mosaic owns three marine terminals, and to the port facility in Morehead City, NC, which is owned by Nutrien, and to the Port of New Orleans.[439] With this proximity to deep-water ports, Mosaic and Nutrien can easily redirect their phosphate fertilizer output — representing over 90% of U.S. capacity — from the domestic market to the export market and vice versa, thereby steering prices in the United States to suit their interests.[440]

As with CF in the nitrogen market, Nutrien could, in theory, play something of a spoiler to Mosaic's dominance in the phosphate market. As of 2021, Nutrien controls around 20% of North American phosphoric acid and DAP/MAP production capacity.[441] "Structurally," however, Nutrien's "business model" makes it an "unreliable sourc[e] of supply for distributors" in the United States.[442] To begin with, Nutrien prioritizes shipments of phosphate fertilizers to its own sprawling network of farm retail outlets around the globe. Moreover, since closing its MAP/DAP production facility in Redwater, Alberta, in 2019, Nutrien has dedicated much of the output of its remaining North American

phosphate facilities (located in Aurora, North Carolina, and White Plains, Florida), to serving customers in Canada, where it faces more limited competition for phosphate sales.[443]

In the face of the Big Three's expansive market power, growing evidence suggests that rival fertilizer producers now simply wait on the Big Three to set the industry price level in the weeks before planting/growing season, let the Big Three take what sales they want from the market, and then offer slightly lower or higher prices to customers as necessary to capture the remainder.[444] For example, in the nitrogen industry, this is how representatives of two large fertilizer importers, Gavilon and IRM, described CF's power to set UAN prices to the International Trade Commission (ITC) recently:

> MS. WESSEL [counsel for Gavilon]: . . . [U]nequivocally, they [CF] are the price leader. You know for Gavilon, they are the ones who set the price in the summer fill season, and then everything else is derived from that price-setting behavior. . . .
>
> MS. JONES [supervisory investigator for ITC]: But, I mean, why doesn't somebody challenge them on that? I mean, why isn't some other firm the first one out to set the price for the summer fill season?
>
> MR. MCMULLIN: This is Brooke McMullin from IRM. Because of the volume and impact they have on the market. *We have been sitting on our hands for the last four weeks waiting for CF to come out because none of our customers will make a decision until they have a signal from CF on what they're going to do. They're concerned that if they make a decision, that CF will undercut their price, whatever it is.*[445]

In the phosphate industry, market surveys by the ITC have found that Mosaic sets prevailing market prices across U.S. geographic markets,[446] that importers typically oversell those prices,[447] and that remaining domestic producers — mainly Simplot and Nutrien — direct their output mostly into their own farm-retail chains and, in Nutrien's case, to Canadian markets instead of American ones.[448]

A similar dynamic is playing out in the potash industry. On the one hand, the principal U.S. rival of the potash duopoly, Intrepid Potash, has long acknowledged that "as a small producer, domestic pricing of our potash is influenced principally by the price established by our competitors."[449] Therefore, like the phosphate importers, Intrepid has historically sold its potassium fertilizers at higher than prevailing market prices to customers that Nutrien and Mosaic cannot or will not serve from their Saskatchewan mines due to prohibitive transport costs.[450] On the other hand, K+S — a large German potash firm which in 2016 opened the first new potash mine in Saskatchewan in decades — appears to have decided to direct the majority of its Bethune facility's two million ton capacity toward offshore buyers and minimize head-to-head competition with Nutrien and Mosaic in the North American agricultural market. Indeed, just before Bethune opened in 2016, K+S CFO Burkhard Lohr made clear that the company did not intend to sell more than 500,000 tons of potassium fertilizer into the U.S. market (or about 5% of total domestic consumption), and would follow a "disciplined supply strategy" that "mirror[s] the one practiced for years by [Agrium, PotashCorp, and Mosaic] aimed at supporting prices."[451]

b. The "Big Three" Can Deprive Rivals of Access to Fertilizer Inputs

The Big Three's control over fertilizer prices in the United States is maintained by a deep moat of entry barriers created by their control over fertilizer inputs and distribution channels. To begin with, the industry's incumbents own the overwhelming majority of the high-grade potash and phosphate rock reserves in North America that can be mined economically.[452] As a result, opening a greenfield mine in the United States would require substantial at-risk expenditures on exploration, large up-front capital outlays for construction, and years of lead time before production can start.[453] There is relatively limited know-how and talent outside of the industry incumbents to successfully execute such a project.[454] Even if a nascent company were to succeed in finding reserves and opening a mine for phosphate rock or potash salts, it is unclear who the company would sell its raw minerals to: There are only five potassium fertilizer producers (Nutrien, Mosaic, K+S, Intrepid, and Compass) and four phosphate fertilizer producers (Mosaic, Nutrien, J.R. Simplot, and Itafos) left in North America, and all of them have their own mines for the mineral inputs they need.[455]

On the flipside, if an upstart firm were to open a new phosphate or potassium fertilizer plant, it is unclear where that firm could source the mineral inputs or even secondary feedstocks (*e.g.*, phosphoric acid) it needs to manufacture fertilizer products. Before the last non-integrated phosphate fertilizer plants were sold to Mosaic in 2014, there was substantial evidence that Mosaic and PotashCorp (Nutrien's predecessor) had refused to sell phosphate rock or phosphoric acid to smaller, non-integrated phosphate fertilizer manufacturers in the United States — forcing them to source rock all the way from Morocco's OCP.[456] As this refusal to deal gave Mosaic and PotashCorp a prohibitive cost advantage over their non-integrated rivals, it deprived those rivals of a fair opportunity to compete.[457] A new entrant into fertilizer production today would face a similar challenge in procuring mineral and feedstock inputs at a competitive price.[458]

Only three firms other than Mosaic and Nutrien currently mine potash in North America: K+S in Saskatchewan, Intrepid Potash in New Mexico, and Compass Minerals in Utah. All three have on-site refining plants and sell finished potassium fertilizers; none has been reported to sell raw potash on the open market.[459] Similarly, only three firms other than Mosaic and Nutrien currently mine phosphate rock in North America: Bayer, Itafos, and J.R. Simplot.[460] Bayer uses all of its phosphate rock output to manufacture phosphorus trichloride, which it then uses to produce glyphosate-based herbicide.[461] Itafos is not truly independent, as 100% of its MAP output is committed to Nutrien under a long-term offtake agreement.[462] All five have integrated plants at or near their phosphate rock mines, which consume all of their output.[463] None of them appears to sell any phosphate rock or phosphoric acid to rival producers or even competing merchant wholesalers (such as Koch) — with at least one concerted refusal to deal being reported to USDA as recently as 2022.[464]

c. The "Big Three" Foreclose Rivals from Competing for Fertilizer Sales

Even if an innovative new entrant into fertilizer production were to find a way to source raw materials and manufacture its product at a competitive cost, they would still face yet another challenge: Finding a fair distribution outlet for their product, and transportation and storage vessels to get that product to market. Before merging with PotashCorp in 2016, Agrium spent the previous two decades rolling up agricultural retail and distribution firms around the world.[465] In the year before the 2016 Agrium-

PotashCorp merger closed alone, Agrium acquired outlets generating more than $500 million in annual farm-retail sales.[466] Just before the merger was consummated in 2017, analysts observed that the two companies had accumulated "unusually flush coffers" amid "an agriculture downturn." The CEO of Agrium — who would go on to become the CEO of Nutrien — signaled that a priority for the combined firm would be to use its "$5 billion dollar warchest" to "consolidate the fragmented U.S. farm retail sector."[467] Since then, Nutrien has continued Agrium's retail acquisition spree by buying major chains across Australia, Brazil, and the United States, including 23 farm retail groups in 2023 alone.[468]

Today, Nutrien is the largest farm retailer in America, with more than 1,500 stores spread out across 45 states capturing more than 20% of agricultural retail sales nationwide, and another 500 stores in Europe, South America, and Australia.[469] As of 2023, a "significant majority" of the fertilizer sold in Nutrien's retail outlets in America and Canada is sourced from Nutrien's own production.[470] Another major farm retailer, J.R. Simplot — which has accumulated over 6% of national sales through its own string of acquisitions in recent years[471] — also mines phosphate rock and manufactures its own phosphate fertilizers.[472] A similar situation has developed in the nitrogen industry, where CF has sold the nation's largest nitrogen fertilizer wholesaler, CHS, an 11% ownership interest in its domestic nitrogen plants,[473] and granted CHS a guaranteed supply of up to 1.1 million tons of urea and 580,000 tons of UAN solution every year.[474] The remainder of the Big Seven agricultural retailers — the retailers which, together with Nutrien and J.R. Simplot, control nearly 70% of all crop input sales made every year — are large chains that depend on friendly relations with the dominant fertilizer producers to obtain adequate inventories of crop nutrients.[475]

These exclusionary relationships have made it substantially harder for nascent fertilizer producers to break into the market. In recent years, the USDA has received detailed complaints from several upstart fertilizer manufacturers about how the Big Three have used exclusionary long-term supply contracts to foreclose competition for critical retail outlets, or imposed large minimum order requirements on retailers to effectively prevent them from diversifying their supplier bases.[476] The Big Three also reportedly offer special discounts based on customer category and account size, rebates based on volume targets, and even "incentive payments" to lock-in fertilizer purchasers — none of which appear to have much relation to production efficiency.[477] For example, even large merchant wholesalers such as Gavilon, IRM, and others have recently complained that CF Industries has used sweetheart long-term supply agreements to foreclose competition for the business of "two of the market's biggest nitrogen buyers," Mosaic and CHS, and push them to "shelv[e] plans for greenfield nitrogen plants."[478] Small producers and farmers have also reported that non-integrated retail outlets simply fear retaliation from the dominant fertilizer producers, particularly in the form of having their fertilizer supply "allocation" reduced or cut off from one season to the next.[479]

d. The "Big Three" Exclude Rivals From Fertilizer Logistics Channels

Beyond customer foreclosure, rivals of the Big Three must also contend with being squeezed out of critical logistics channels for each type of fertilizer. The seasonality of the fertilizer business and the high-weight/low-value nature of fertilizer commodities make access to pipeline, rail, and water transport capacity, along with storage facilities within consumption regions, a must.[480] Since long-haul and intermediate shipping takes time and fertilizer season is short, access to storage facilities within high-consumption regions — not just at production sites — is highly advantageous. While exact

information on the availability of the specialized transportation vessels and storage facilities required to bring fertilizer to market is difficult to track down, industry reports and available data suggest that a critical portion of those vessels and facilities are now either owned, leased, or subject to influence by the Big Three.

In the potash industry, freight rail is the only cost-effective way to ship fertilizers from Saskatchewan to ocean ports on the Atlantic and Pacific coasts, inland ports on the Great Lakes, and landlocked regions of the United States like the Midwest and Mountain West. On the flipside, transport by lake vessel from the port of Thunder Bay on Lake Ontario is often the cheapest way to get fertilizer from Western Canada to New York and other parts of the Eastern United States. However, Nutrien, Mosaic, and their jointly-owned exporting subsidiary, Canpotex, appear to own or control substantially all of the marine terminals equipped for handling dry bulk fertilizer to which Saskatchewan products could feasibly be shipped. They also appear to own or control a predominant share of the potash-specialty railcars that must be used to competitively haul potassium fertilizers, and have confidential long-term contracts with Canadian Pacific (CP) — one of only two Class 1 railroads in Canada — that allow them to "hook and haul" their special railcar fleets to CP locomotives in "unit trains" up to 205 cars (or 9,635 feet) in length, and up to 23,575 tons in weight.[481]

For comparison, in 2023, the average CP train hauled cars from multiple shippers, was only 7,609 feet long, and weighed less than 9,000 pounds.[482] Allowing Nutrien and Mosaic to assemble exceptionally long and heavy trains likely reduces operating costs for CP and, by extension, freight costs for the potash duopoly but simultaneously undermines train availability and service reliability for other shippers on the same lines.[483] Overall, Nutrien and Mosaic appear to have substantial leverage over CP, with their potash traffic alone accounting for between 10% and 15% of CP's bulk freight business and over 5% of CP's total freight revenue.[484] Although an exact measure of the transport foreclosure effects that these arrangements might have on would-be independent potash producers is difficult to derive, it is telling that when K+S Group — a large 125-year-old German potash firm — built the first new Saskatchewan potash mine (Bethune) in more than four decades between 2012 and 2017, it felt the need to build its own marine terminal at Port Moody on the Pacific Ocean, acquire its own fleet of specialty railcars from the National Steel Car Company, and sign an exclusive long-term agreement with Canadian Pacific to ship all of its Bethune potash.[485]

Similar transport foreclosure dynamics are likely at play in the nitrogen and phosphates industries. This is most evident in the case of ammonia, which can only be transported by pipeline or special refrigerated barges and tank railcars.[486] Pipeline transportation is by far the cheapest, safest, and fastest way to move large quantities of ammonia. The next best method to ship ammonia within the United States (by cost) is a river or sea barge towed by tugboat, followed by rail as a distant third.[487] All three methods of transport are substantially foreclosed by the dominant nitrogen incumbents.

There is only one ammonia pipeline system in the United States, and it is owned and operated by NuStar Energy. The NuStar Ammonia Pipeline originates in the Louisiana Delta area.[488] From there, it carries ammonia north through Louisiana and Arkansas into Missouri, where, at the City of Hermann, it splits into two branches, one of which goes east into Illinois and Indiana, and another which continues north into Iowa and then turns west into Nebraska.[489] All of the operating injection points on the NuStar Pipeline are owned by CF (four), Koch (three), and Mosaic (two), except two,

which are owned by Dow Chemical and NuStar itself.[490] All or nearly all operating delivery points on the pipeline are owned by CF and Koch.[491] While a nitrogen entrant could, in theory, ask NuStar to build a new injection or delivery point for its plants, NuStar has argued that it is under no obligation to honor such requests, and has allegedly engaged in unfair and unreasonable practices to extort millions of dollars from smaller operators who have made such requests.[492]

There are approximately 40 river barges equipped to transport ammonia on the nation's waterways.[493] All or nearly all of them appear to be owned and operated by two companies, Kirby Inland Marine and Southern Towing, which have historically had close relationships with CF and Koch, respectively.[494] Further, there is a limited number of barge terminals (around 30) on the Mississippi, Illinois, and Ohio rivers capable of storing and distributing ammonia.[495] The available information suggests that CF, Mosaic, Koch, and Trammo own all or substantially all of those ammonia-capable river terminals.[496] Outside of inland waterways, as of 2011, only two U.S.-flagged tanker ships were available that could be used to transport ammonia coastwise (including across the Great Lakes).[497] Since then, it appears that only two more Jones Act ammonia barges have entered service, one with Nutrien and the other with Mosaic.[498]

Remarkably, even the rail channel for ammonia shipping is substantially foreclosed, specifically due to the unavailability of ammonia-grade tank cars. Ammonia is shipped as a liquified compressed gas that is simultaneously corrosive, flammable and toxic (if inhaled). Therefore, it must be freighted in tank cars that meet special design and fitting specifications, which are different from those required for cars hauling other hazardous materials (such as flammable liquids).[499] Two decades ago, the Surface Transportation Board estimated there were approximately 5,000 tank cars in service nationwide that met these ammonia-specific requirements and stated that this "pool" of ammonia cars "appears to be fully utilized."[500] Today, industry analysts estimate that only 3,500 such cars remain,[501] and the latest available data suggests CF alone leases around 1,100 of them.[502] Since railroads do not typically own or provide tank cars, an ammonia shipper must provide its own high-specification tanker fleet[503] — yet few ammonia tank cars appear available for lease today.

Across the board, regardless of the type of fertilizer, there is a problem with concentrated control over storage facilities. USDA staff have received reports that three companies control around 90% of the leasable fertilizer storage capacity in the Midwest.[504] This is consistent with the available data, which suggests that independent fertilizer storage capacity is scarce, not just in the Midwest, but around the country.[505] Outside the facilities owned by the incumbent fertilizer producers, storage facilities for bulk and liquid fertilizers in the Midwest and along the Mississippi River appear to be predominantly controlled by three wholesalers: Koch, Gavilon, and ADM. While large midwestern fertilizer buyers such as CHS and Growmark have some storage terminals available for lease by third parties, most agricultural retailers only have enough storage for their own fertilizer inventories, and farmers own little to no fertilizer storage capacity at all. On the coasts, it appears that a substantial majority of the ammonia and UAN terminals on the West Coast are owned by Yara-US and IRM; on the East Coast, by Yara-US and Gavilon; and by Koch and Helm on the Gulf Coast.[506]

Ultimately, while exact figures are hard to pin down, it is indicative that when K+S entered the North American potash market, it felt compelled to sign an exclusive agreement with Koch to market, store, and distribute its potassium fertilizers in the United States — in significant part due to the lack of

free warehousing capacity.[507] More broadly, staff reports of the International Trade Commission have recently found that "[t]he overall availability of specialized transportation and storage capacity in the United States serves as a constraint on the amount of UAN that can be produced or delivered," and that the lack of independent storage capacity impedes even Mosaic's ability to market its phosphate fertilizers west of the Mississippi River.[508]

e. The "Big Three" Have the Power to Destroy Nascent Rivals

The last barrier to entry into the fertilizer sector is the sheer economic power of the Big Three, which they can wield to unilaterally shift market conditions to disadvantage and suppress smaller rivals. As explained above, the dominant firms have concentrated their production sites in locations that enable them to readily shift supplies from export markets to domestic markets and vice versa, thereby changing the fundamentals of fertilizer supply and demand in the United States at their discretion. They have also marshaled the logistics networks and financial capacities to position and sell supplies at cut-rate prices in any geographic market in North America where a new or maverick competitor is challenging their dominance, allowing them to "destroy [the] economics" of nascent rivals.[509]

By making the balance of fertilizer supply and demand unpredictable throughout the United States, the concentration of economic power in the Big Three makes it near-prohibitively difficult to plan and finance investments in new fertilizer capacity.[510] Using conventional technology, nitrogen ammonia plants typically cost over $500 million and take 3-5 years to build; the same goes for conventional potash and phosphate mining and processing facilities.[511] After spending that time and money, however, a company could find itself in a very different supply and demand environment from the one that inspired its investment — based purely on the decisions of the dominant incumbent (CF, Nutrien, or Mosaic) in its industry.[512] As Atlas Agro, which is a fertilizer upstart building a zero-carbon nitrogen plant in the Pacific Northwest with federal support, recently explained in response to a USDA request for information about concentration in the fertilizer sector:

> The incumbent producers have large balance sheets and are able to credibly threaten to expand capacity, which will reduce market prices for everyone all else equal. The incumbents further have a network of plants and terminals and the ability to optimize sales across the continent and into exports. These networks combined with high costs of logistics mean incumbents can steer price differences in different micro-markets, for example selling more and depressing prices near a new-built plant whilst reaping higher prices further away from the plant.
>
> The combination of the large investments of time and capital involved, the relatively low through-cycle returns of the nitrogen fertilizer industry, and the ability of the incumbents to destroy new project economics through construction and/or logistics optimization means it is difficult to attract new capacity.[513]

All of these factors conspire to "create an atmosphere that is unwelcoming to new producers" of fertilizers and fertilizer inputs.[514] Banks are reportedly refusing to finance new fertilizer producers unless they seal long-term offtake agreements with customers before construction of their plants has even started.[515] Investors are reportedly unwilling to shoulder even the relatively small initial

research and/or exploration costs (between $1 million and $15 million) of new ventures in the fertilizer sector — leaving upstarts with highly promising reserves and innovative methods of production to beg the USDA for government largesse.[516] Overall, dozens of would-be fertilizer producers have walked away from projects to build greenfield plants before ever getting started in recent years[517] — while others have exited the field just a handful of years after building plants worth billions of dollars.

Take, for example, the cases of OCI Global and Dyno Nobel. Until last year, these were North America's fourth- and fifth-largest ammonia producers, respectively, each with an annual capacity of around 1.1 million tons. Both entered the American fertilizer market less than a decade ago. In 2016, Dyno Nobel opened one of the first new onshore ammonia plants since the 1990s in Waggaman, Louisiana. That plant cost over $1 billion to build and had an annual capacity of 800,000 tons.[518] The next year, OCI opened its 915,000-ton plant in Wever, Iowa, after spending more than $3 billion and receiving over $550 million in state and federal subsidies.[519] These plants were two of the "most efficient ammonia production facilities in North America," and their locations gave them tremendous freight advantages over most — if not all — rival producers, including CF, in getting their fertilizers to Midwestern markets.[520] Each of the two plants was built with an expected lifetime of more than 40 years.[521]

Less than a decade later, however, both Dyno Nobel and OCI Global have agreed to sell their nascent plants to CF Industries and Koch Industries, respectively, for cash prices that amount to *less than the cost of building each plant* in real (inflation-adjusted) dollars.[522] When the Waggaman sale closed this past December, Dyno Nobel was all but sidelined as a nitrogen fertilizer competitor. It was left with only two small plants in the Pacific Northwest, which could only produce about 200,000 tons of urea every year, and its independence was compromised by a long-term supply agreement providing that CF would sell Dyno Nobel up to 200,000 tons of ammonia per year at below-market prices.[523] The closing of the OCI-Koch deal in September of 2024 means that there will be no nitrogen fertilizer producers with an annual capacity of 1 million tons in North America other than CF (~10.5 million tons of ammonia, ~6.9 million tons urea), Nutrien (~4.9 million tons of ammonia, ~4.0 million tons of urea), Koch (~3.3 million tons of ammonia, ~ 2.5 million tons of urea), and Yara-US (~1.4 million tons of ammonia, ~1.1 million tons of urea).[524]

7. Harms to Farmers and Communities

Since the Big Three consolidated monopoly power over their respective segments of the fertilizer sector in the 1990s, they have raised fertilizer prices, cut fertilizer output, and reduced the quality and selection of fertilizer products available in the United States. Beyond price and output effects, the Big Three's domination of the fertilizer sector has allowed them to cut their research-and-development (R&D) spending to the bone and suppress the commercialization of innovative fertilizer manufacturing technologies and fertilizer end-products across the industry. The resulting harms to farm incomes, community well-being, and environmental health have been severe.

a. Higher Prices

Since the 1980s, each wave of consolidation in the industry has been accompanied by fertilizer prices rising to a new, higher focal point. According to the Bureau of Labor Statistics, the annual price index

for fertilizer materials was, on average, approximately 6% higher between 1980 and 1989 than it was in 1976. After industry consolidation sped up in the early and mid-1990s, the index rose to an average of 72.8% above 1976 levels in each year between 1995 and 1999 — even as the price of natural gas declined to historic lows. Since the industry tightened into an oligopoly in the mid-2000s, the price of fertilizer has risen to dramatically higher focal points without any basis in marginal production costs.

In each year between 2007 and 2020, the average annual price index for fertilizer materials has hovered around double — and in some years, even triple — what it was in 1999.[525] Overall, a trendline analysis of the industry-recognized Green Markets Weekly North America Fertilizer Price Index — which is constructed using benchmark U.S. prices of nitrogen, potassium, and phosphate fertilizers weighted by annual demand — shows fertilizer prices increasing by over 300% between 2002 and 2007, averaging between 400% and 500% of 2002 levels in the 2010s, and settling at around 500-600% of 2002 levels in the 2020s. For comparison, the real cost of energy, raw materials, and other inputs for the production of agricultural chemicals (a category that includes both fertilizers and pesticides) declined by 20-30% during the 1990s and remained in that depressed range through 2019, when it started dipping even lower — reaching more than 40% below 1990 levels in 2021 and 2022.[526]

The aftermath of the COVID-19 pandemic demonstrated just how extortionate fertilizer prices can truly get under the monopolistic control of CF, Mosaic, and Nutrien. In 2021, the wholesale fertilizer price index increased by more than 60% compared to 2020 levels.[527] Nitrogen fertilizer prices increased 95%, while potassium fertilizer prices increased 70%.[528] In 2022, wholesale fertilizer prices reached even higher — averaging 132% higher than 2020 levels. One Northeast Indiana farmer described the price increases he saw in 2022 in a letter to the USDA:

> I farm in Northeast Indiana, in Allen County, and have been farming for over 52 years. I have never in my lifetime seen fertilizer prices increase as they have this year. AP fertilizer for the 2021 crop cost $565.00/Ton and this year the same fertilizer is costing me $1,135.00/Ton… My urea nitrogen was $395/Ton last year and it has risen to $1,165.00/Ton this year, which is nearly 2 times as high. Potash last year cost me $399.00/Ton and it is now $940.00/Ton, which makes it 2.36 times higher. Anhydrous Ammonia (NH3) cost $498.00 last year and has now jumped up to $1,680.00/Ton, that makes NH3 3.37 times higher than last planting season. UAN-28 nitrogen last year cost $209.00/Ton and it has sky rocketed to $698.00/Ton, which makes it 3.34 times higher…[529]

At the time, the fertilizer incumbents claimed that these price hikes were attributable to supply chain shocks that increased their input costs. [530] But their own course-of-business documents refute these claims. In 2021, Nutrien's gross manufacturing profit margin was up 669% from 2020, while its cost of goods sold had increased by only 58%. The same year, CF Industries' cost of sales increased by 125%, but its gross margin increased by more than double that percentage (298%). Notably, Yara's 2021 annual report expressly attributed the 76% increase in its U.S. earnings before interest, taxes, depreciation, and amortization (EBITDA) over 2020 levels to "high production margins in North America and slightly higher deliveries" — and then admitted that "increased price transparency can

challenge fertilizer premiums."[531] These trends of dramatic profit expansion continued in 2022 — with Mosaic improving on its 2021 profits by 120%, Nutrien by 142%, and CF by a whopping 212%.

When Farm Action analyzed the movement of fertilizer prices in 2021, it found that producers seemed to move prices in tandem. Their price changes were not tied to demand or cost or any other legitimate business factor, but simply to the variation in grain prices.[532] "[W]hat actually appears to drive fertilizer prices," Farm Action concluded, "is a collusive calculation" based on "the farmers' ability to pay" and "the maximum profit which can be extracted from [them]."[533] And, indeed, the fertilizer monopolists have enjoyed market-beating profit margins for nearly two decades now. On average, Mosaic and Nutrien (PotashCorp before 2016) have reported an annual profit margin (EBITDA) of over 30% between 2010 and 2024. Over the same period, CF reported an even more eye-popping annual EBITDA margin of 42.5%.[534] For comparison, as of March 2024, the average company in the Agricultural Inputs sector of the S&P 500 (of which CF, Mosaic, and Nutrien are part) has an EBITDA margin of 13-16%.[535]

b. Chronic Shortages

The high price of fertilizers over the past decade and a half is a product of calculated efforts by CF, Mosaic, and Nutrien to cut industry capacity and engineer a chronic shortage of fertilizer supplies in U.S. markets. As Commissioner Johanson of the International Trade Commission has found, both Mosaic and Nutrien have followed a "playbook" in recent years of acquiring or merging with competitors and then closing down their "redundant" potash and phosphate plants.[536] Over the same period, CF appears to have followed a different, though just as anti-competitive, playbook of predatory pricing and bait-and-switch expansion announcements.

In Nutrien's case, less than a year after its formation out of the PotashCorp-Agrium merger in 2018, the combined firm shut down two of its predecessors' five phosphate plants (Redwater and Geismar).[537] At the same time, Nutrien permanently shut down one (New Brunswick)[538] and temporarily mothballed three (Allan, Vanscoy, and Lanigan) of its predecessor's seven potash mining and refining facilities.[539] A few months later, Nutrien returned Allan and Lanigan to operation, but it kept Vanscoy offline until 2020[540] — when the facility was finally reopened with nearly half the operational capacity it had before the Agrium-PotashCorp merger.[541]

Similarly, after Mosaic acquired CF's phosphate business in 2014, it promptly scrapped plans to build a new billion-dollar phosphate fertilizer plant in Ona, Florida, claiming that the manufacturing and mining facilities it had acquired from CF — Plant City and South Pasture — would be adequate substitutes.[542] Those claims soon proved hollow: Mosaic "idled" the Plant City facility in 2017 and permanently shut it down in 2019. In 2018, Mosaic also "idled" the South Pasture facility. It has remained idle ever since, even as phosphate fertilizer prices have risen to unprecedented heights.[543] On the potash side of Mosaic's business, around the same time that Nutrien paused operations at its Allan, Vanscoy, and Lanigan mines in 2019, Mosaic shut down its Colonsay mine.[544] Mosaic later reopened Colonsay in June 2021, but this was accompanied by permanent shutdowns of the K1 and K2 shafts at its Esterhazy mine complex.[545]

There is no evidence that any of the facilities shuttered by Mosaic and Nutrien were unprofitable. To the contrary, at least three of the facilities shuttered by Nutrien — New Brunswick, Vanscoy, and Redwater — were subjects of extensive capital investments in the years leading up to the Agrium-PotashCorp merger, making them more efficient. PotashCorp invested $2.2 billion to build the New Brunswick facility from the ground up between 2008 and 2014.[546] Its 1.8 million tonnes of potash capacity only came online in 2015.[547] Over roughly the same period, Agrium invested over $2.3 billion to nearly double Vanscoy's operational capacity, with production from the expansion also commencing in 2015.[548] That same year, Agrium also spent around $200 million on a major turnaround project at Redwater.[549] On the phosphate side, just before selling Plant City to Mosaic, CF had upgraded the facility with state-of-the-art technology for producing sulfur-enhanced phosphate fertilizers, like Mosaic's MicroEssentials SZ.[550]

While CF has — so far — refrained from acquiring nitrogen plants just to shut them down, it has used other tools to constrict the growth of industry capacity. For example, importers have recently complained that, after the summer fill season is over in the Midwest, CF periodically "dumps" UAN solution and other nitrogen fertilizers on the West Coast at "clearance" prices to suppress their market penetration.[551] In response, CF executives have stated that their perceived "clearance" prices are actually a function of the unusually "favorable" freight rates that CF receives from Burlington Northern and Union Pacific on unit trains and individual cars going from CF's plant in Verdigris, Oklahoma, to California.[552] Bait-and-switch expansion announcements appear to be another tactic that CF — along with Koch — have embraced as a way to dissuade new firms from entering the nitrogen sector.[553]

Altogether, these dynamics have left U.S. fertilizer markets in a state of near-permanent scarcity. For each macronutrient, domestic industry capacity is lower today than it was in the 1970s. In 1975, U.S. plants produced approximately 12.3 million metric tons of fixed nitrogen, 12.9 million metric tons of fixed phosphorus, and 2.3 million metric tons of fixed potassium for use in fertilizers. Between 1975 and 2015, domestic consumption of fixed nitrogen per crop year went up by more than half (from approximately 7.8 million metric tons in 1975 to 11.8 million in 2015), and the consumption of phosphate and potash fertilizers remained roughly constant.[554] Production, however, plummeted over the same period, reaching approximately 8.4 million metric tons of fixed nitrogen, 7.7 million metric tons of fixed phosphorus, and just 0.7 million metric tons of fixed potassium in 2015.[555] Since then, domestic production (less exports, in the case of phosphates) has consistently trailed domestic consumption of each fertilizer nutrient — even as prices have broken records.

c. Worse Fertilizers and Worse Services

The harms of monopolization in the fertilizer sector strike deeper than price and output, however, as the Big Three have used their strangleholds on the potash, phosphorus, and nitrogen industries to degrade the quality of their products and services. The Big Three now reportedly deal with retailers and farmers less like business enterprises competing for sales and more like government bureaucrats in a centrally-planned economy, requiring customers to convey their "requirements" and then making supply "allocation" decisions in their sole discretion. Some have complained to the USDA that "[t]he level of service we receive from these bigger 3 companies [CF, Mosaic, and Nutrien] is a lot worse than what we used to receive when there were more companies to choose from."[556] Others have described

how the consolidation of plants and their acquisition by successive firms over the past decade have led to disinvestment in plant maintenance and upgrades, various operational delays, and restrictions on the availability of different kinds of fertilizers.[557]

In one particularly pernicious manifestation of the loss of competition, there is substantial evidence that the Big Three — like the old Fertilizer Trust — have intentionally reduced the availability of high-potency fertilizers in favor of lower-potency ones, which are more profitable for the fertilizer giants. For example, the Illinois Corn Growers Association recently complained to the USDA that triple superphosphates (TSPs), super phosphoric acid (SPA), and other non-ammoniated (*i.e.*, straight) phosphatic fertilizers have virtually disappeared from local markets in recent years:

> Non-ammoniated phosphatic fertilizers, like triple superphosphate, are not produced widely by domestic firms, but are available for import. … Farmers' inability to access non-ammoniated phosphatic (P) fertilizers, such as triple superphosphate, and the resulting forced reliance on ammoniated P fertilizers such as monoammonium phosphate (MAP) and diammonium phosphate (DAP), have contributed to negative environmental outcomes related to drinking water contamination, eutrophication of the Gulf of Mexico, and a host of related water quality problems across the country. The nitrogen (N) component of MAP and DAP fertilizers, which can amount to anywhere from 11 to 36 lbs of N per acre at the rates commonly applied in Illinois, is widely recognized by farmers as easily lost and, as such, many farmers do not factor the N in MAP and DAP into their calculations for N fertilizer requirement for their crops. Most farmers in Illinois do not want or need the N fertilizer present in MAP and DAP. In recent years, the Illinois Corn Growers Association has asked for alternatives to non-ammoniated P fertilizers, but the fertilizer industry has not yet made a competitively priced product readily available to us.[558]

The disappearance of TSP and SPA fertilizers from midwestern markets is a tell-tale sign that real competition has been smothered in the domestic phosphate industry, because SPA and TSP fertilizers are necessarily more input-intensive — and therefore more difficult and less profitable — to manufacture than DAP or MAP.[559] Since SPA is the primary feedstock for all other phosphatic fertilizer compounds, selling SPA as a final product results in the highest ratio of phosphate-rock inputs to fertilizer-product outputs. In contrast, processing SPA further into MAP or DAP allows the manufacturer to "stretch" their supply of raw phosphate rock into a larger amount of final product.[560] Moreover, TSP is produced at a substantially slower rate than MAP/DAP, requires either higher-grade phosphate rock or higher-purity phosphoric acid than MAP/DAP, and generally costs more than MAP/DAP to process, store, and transport. Starting in the early 1970s, these factors — combined with a decline in the purity of the phosphate rock generated by many Florida mines — made TSP production less attractive for consolidating fertilizer manufacturers.

These manufacturing difficulties were not unsolvable, however, and demand for TSP and other straight, high-potency phosphatic fertilizers among farmers was likely high enough to make

manufacturing them profitable. Indeed, during the immediate post-war decades, vigorous competition had spurred phosphate rock miners and phosphate fertilizer manufacturers to cure similar purity and input-material problems through investments in facilities and technology. As a Farmland Industries' agronomist explained in a 1989 analysis of these issues: "[I]mprovements in processing technology now allow producers to successfully deal with impurity levels that would have caused major production problems in the past," and "[c]ontinued development and refinement of more effective processing technology is likely to offset many future problems associated with declining phosphate rock quality."[561]

In the wake of industry consolidation over the 1980s and 1990s, however, such investments in "development and refinement" all but disappeared. A 1998 report by the ITC observed that the U.S. fertilizer industry was characterized by a "relatively low" — even "minimal" — level of research and development (R&D) spending.[562] That did not change with time. A 2011 USDA study estimated that the entire U.S. fertilizer industry had spent just $19 million on R&D in 2006, an amount equal to approximately 0.25% of net industry sales and less than half of what the fertilizer industry was estimated to spend on R&D in 1984 in nominal dollars.[563] In explaining these anemic R&D figures, the USDA noted that "the oligopoly structure of the fertilizer industry may reduce the competitive pressure on firms to innovate." In the absence of vigorous competition, the report went on, the industry "may lack incentives to develop [and produce] more efficient fertilizers" because they can "capture a greater share of applied nutrients for plant growth," and "result in increased crop yields" for farmers, "*without a corresponding increase in nutrient use or even reduced farm demand (and industry revenue) for fertilizers.*"[564]

d. Suppressed Innovation and Lost Community Wealth

Finally, perhaps the most tragic consequence of the concentration of power in the fertilizer sector has been its effect on our communities. As the USDA explained in its 2011 report, "improvements in fertilizer formulations and application methods could have significant economic benefits to farmers as well as provide environmental benefits."[565] Instead of realizing those benefits, however, farmers and rural communities have suffered ever-growing harms — to their pocketbooks, their environment, and their prosperity — as the Big Three have stifled innovation to entrench their power against challengers, keep fertilizer production consolidated in their handful of mega-plants, and suppress technologies that could disrupt their fixed capital investments and business plans. Farmers pay for this monopolistic conduct in higher prices for worse fertilizers. Rural communities pay for it in the dangerous pollution spewed by the Big Three's mega-plants into their air and water, in the destruction that such pollution causes to their environmental resources, and in the high risk of cancer, heavy metal poisoning, and other illness that ensues from the Big Three's reckless conduct.[566]

A good example of how the Big Three suppress innovation comes from the industry's reaction to a small-scale, point-of-use ammonia production technology recently developed by the Department of Energy's National Energy Technology Laboratory (NETL).[567] As NETL has explained in regulatory comments to the USDA, since 2020, it has developed the technology to enable modular, distributed — including on-farm — ammonia production using renewable energy.[568] The implementation of this technology could significantly reduce transportation costs, improve production efficiency, and cut carbon dioxide emissions from ammonia manufacturing.[569] Furthermore, as NETL has explained, this

technology could enable farms across the country to "hav[e] a local or possibly their own on-premises production of green ammonia, replacing the centralized, energy-intensive and GHG [greenhouse gas] producing Haber-Bosch process (HB) with a decarbonized solution at scale."[570]

The Haber-Bosch process is the traditional process for manufacturing ammonia. It has been the industry's mainstay since 1913 when it was invented by chemists Fritz Haber and Carl Bosch.[571] This process "requires high temperatures and extreme operating pressures that necessitate long conception times, high risk, and capital-intensive investment to build new production [plants]."[572] As a result, the Haber-Bosch process is "antithetical to the distributed, small-scale nature of Natural Gas (NG) and renewable energy sources currently coming onto the grid," particularly in that "[it] does not lend itself to quick start/stop production."[573] NETL's new technology, by contrast, readily overcomes these problems:

> NETL's microwave (MW) technology team has demonstrated how the application of MW fields can accelerate NH3 [ammonia] synthesis at reduced temperature/pressure allowing for a quick start/stop process capable of load following renewable energy sources to generate NH3 production at scale and more efficiently. This can lead to rapid deployment of NH3-producing systems, distributed for local needs that can match current energy production on demand and be scalable for specific fertilizer need. At the same time, our system could also be deployed at existing industrial NH3 plants to increase energy efficiency and decarbonization while adding more versatile supply to the marketplace.[574]

This technology is "shovel-ready," according to NETL. It has already "demonstrated performance that is superior to current processes" in that "it can operate under far milder operating conditions … with lower capex [capital expenditure] requirements."[575] With adequate funding and a willing industry partner, NETL says it can prove the viability of its technology "at scale and at an existing production facility within 18 months" and have a "prototype" for distributed ammonia production ready "in a maximum of 3 years."[576] There is one major impediment to the further development and implementation of NETL's innovative new technology, however, according to NETL: Incumbent "ammonia producers" are wedded to "large centralized production" and not "inclined to change their plant processes" — and there are few "market newcomer[s]" with "alternative business model[s]" available for NETL to partner with.[577]

The Farm Machinery Sector

1. Introduction

Farmers require large agricultural machinery, like tractors, to complete every stage of the farming cycle: soil preparation, seeding/planting, crop management, and harvesting. This equipment represents a huge capital investment for farmers, with a single piece often costing hundreds of thousands of dollars. Controlling when and how a tractor is maintained and, if necessary, repaired is a business imperative for farmers. A tractor failure can cause delays in planting, tending, or harvesting — any of which can severely impact a farm's seasonal output and economic viability. Over the past two decades, however, the two dominant tractor manufacturers — Deere & Co. and CNH Industrial — have increasingly designed their tractors purposefully to deprive farmers of that control.

2. Concentration, Consolidation, and Integration

Deere & Co. is the largest farm machinery corporation in America, selling as much machinery as its eight next largest competitors combined.[578] The majority of agricultural machinery sales in the United States are made by four companies: Deere & Co. (37.07%), CNH (13.98%), AGCO (7.35%), and MTD Products (2.4%).[579] Deere's dominance is even more pronounced in the submarkets for large tractors and combines, where it makes 53% and 60% of domestic sales, respectively.[580] CNH places a distant second, with 35% of the U.S. tractor market and 30% of the U.S. combine market, while AGCO places an even more distant third, with 7% of each. These are highly concentrated markets by any measure: The HHI value exceeds 4,100 for the North American large-tractor market, and 4,600 for the combine market.[581]

In the early 1900s, more than 160 tractor companies sold their machines around the world to meet the growing demand for large farm machinery. By 1930, consolidation had left only seven full-line farm equipment companies: John Deere, International Harvester, Case, Oliver, Allis-Chalmers, Minneapolis-Moline, and Massey-Harris. Competition increased from the late 1930s and remained elevated through the early 1970s. More than 1,000 manufacturers of farm equipment entered the industry, with a large number of local and regional firms, and even the capital-intensive "full-line" segment saw a continuous churn of entries and exits.[582] A key feature in the rise of local manufacturers in particular was the economic regulation of railroads, which enabled small factories to source steel inputs at competitive freight rates.[583] In the 1980s, the deregulation of railroad pricing and the relaxation of antitrust controls on corporate mergers drove a re-consolidation in the industry. Case and International Harvester joined forces in the mid-1980s, around the same time that New Holland and Ford merged to become Ford New Holland. Then, those companies all came together in 1999 to become CNH. Meanwhile, AGCO emerged in 1990, and soon went on to absorb Allis-Chalmers, Minneapolis-Moline, and Massey-Ferguson.[584]

In addition to manufacturer consolidation, Deere and CNH have pushed consolidation among their dealership owners to eliminate local competition for sales, repairs, and other dealer services. While dealerships are nominally independent of manufacturers, both Deere and CNH exercise substantial control over these firms and derive profits from their operations. Starting in the early 2000s, Deere

began mandating that dealerships sell their products exclusively and pressuring dealerships to consolidate. For example, in a series of meetings in Louisville, Kentucky, in the summer of 2002, Deere representatives told dealers they should plan on a future in which they would either be a buyer or a seller.[585] One former owner of a dealership in Virginia reported that, in 2002, he began receiving letters, emails, and visits from Deere representatives almost monthly, urging him to either acquire another dealer or cash out.[586] CNH and AGCO followed Deere's lead.

Deere's strategy worked. In 1996, there were a total of 3,400 Deere dealership locations. By 2007, that number had decreased to 2,984. By 2021, only 1,544 remained, and over 1,400 of those dealerships were owned by a "Big Dealer" with five or more dealerships under their control. Very few single-location dealerships remain.[587] While Deere now has the most consolidated dealership network by far, it has not been alone in pursuing this strategy. As of 2018, 53% of Case IH (a CNH subsidiary) stores, 32% of AGCO stores, 21% of New Holland (another CNH subsidiary) stores, and 13% of Kubota stores are owned by Big Dealers.[588]

3. Unfair and Exclusionary Conduct[589]

Starting around 2000, Deere began equipping tractors with central computers called Engine Control Units (ECUs), which use proprietary firmware and controller area networks including 100s of sensors to determine how—and if—the tractor functions.[590] When an ECU notices an error — whatever it may be — it can put the machine into "limp mode," which disables most of the tractor's functionality until the error code is cleared. To recover functionality, a farmer must first diagnose the error code; second, fix the underlying problem, and, finally, "re-calibrate" the ECU to "clear" the error. Because of how manufacturers have designed their tractors, each of these steps can now only be done using manufacturer-controlled software and tools.

Simultaneously, Deere provided the required software and repair tools only to their licensed dealers and made them inaccessible to farmers and independent repair shops. They have also used End User License Agreements to prohibit farmers and independent technicians from interacting with tractor software. CNH and AGCO have followed Deere's lead on the technology and licensing fronts. As these actions by manufacturers have foreclosed independent mechanic shops from the repairs market for newer-model tractors and combines, many have left the field, and those who remain often work exclusively on older models. As a result, farmers are increasingly dependent on manufacturers' dealer networks for repairs — which have themselves consolidated as detailed above, with the result of competition being eliminated in many regions of the country.[591] For example, as of 2022, all of the John Deere dealerships in the State of Montana are owned by three corporations.[592]

By the mid-2010s, efforts to require the major tractor manufacturers to make their repair manuals and tools available to farmers and independent mechanics on fair and reasonable terms through legislation were underway in dozens of states. To ward off these efforts, in 2018, tractor manufacturers — led by Deere — promised to make comprehensive tractor repair software and tools available to the public on "fair and reasonable terms" by 2021. The trick worked. State legislators shelved their bills and decided to take a wait-and-see approach.

Trusting Deere and CNH, however, turned out to be a mistake. When 2021 came, no customer repair tools had been made widely available, either directly from manufacturers or through their dealerships. After investigative reporters publicized the tractor manufacturers' mendacity, Deere responded to the backlash by making a customer repair tool — the so-called "Customer Service Advisor" (CSA) — available for purchase on its website. Marketed as a subscription service that costs thousands of dollars a year, CSA gave purchasers access to a handful of manuals; for thousands more dollars, tractor owners could also buy a "dongle" — essentially a laptop with a unique connector — that could be hooked to a tractor for minimal diagnostic and calibration capabilities. Farmers who tried both CSA and its dongle found they were expensive, useless, and prone to malfunctioning.

Fed up with manufacturers' empty promises, farmers turned to lawsuits. In January of 2022, Deere was hit with a slew of private antitrust actions from farmers around the country. Two months later, a nationwide coalition of farmers' organizations (including Farm Action) petitioned the FTC to open an antitrust investigation into Deere's repair restrictions. As the year went on, the private suits were consolidated into one class action, and Deere filed its answer to the consolidated complaint in December. Conveniently, just a month later, Deere signed a non-binding Memorandum of Understanding (MOU) with the American Farm Bureau Federation — another agribusiness front group — with yet more hot-air promises of voluntary disclosure. Remarkably, the MOU explicitly stated that even Deere's non-binding promises would not include "divulg[ing] . . . proprietary or confidential information" — which is exactly what any repair tool, software, or documentation that Deere has shared exclusively with its dealers is.[593]

4. Harms to Farmers and Communities

The cost of dealership repair services often ranges from $150 to $200 per hour, with additional charges for travel and parts.[594] If a technician travels to a farm multiple times because they do not complete a repair properly, the farmer is often charged for the additional labor and travel. Moreover, in using licensed dealers, farmers frequently endure undertrained and overworked technicians, incorrectly performed or incomplete repairs, and extensive waits for technicians during the time-critical harvest season. In recent 10-K disclosures regarding the risks they face from Right to Repair legislation, dealers have all but admitted that repair restrictions enable them to charge supra-competitive prices for their services.[595] When a tractor breaks down, a farmer's livelihood is on the line. This creates an emergency that, absent competition in repair markets, can be exploited to extract rents. By designing tractors with software-driven breakdowns that can only be repaired by their own dealers, Deere and CNH have the power to do just that.

The reason Deere and CNH have been so resistant to quitting repair restraints is quite simple: Monopolizing the aftermarkets for tractor repairs and parts is profitable. Indeed, replacement parts and repair services are now three to six times more profitable for Deere and its dealers than sales of original machinery.[596] The repair segment of Deere's business is also growing faster. Between 2013 and 2019, Deere's annual parts sales grew by 22% while its total agricultural equipment sales shrank by 19%. By 2020, sales of "parts and maintenance services" accounted for one-fifth of Deere's total revenue, and Deere was projecting that, over the next 2 years, it would contribute 50 basis points in added profits.[597] Significantly, although dealerships receive most of the direct revenue from the sale of repair services, Deere and other manufacturers typically finance the cost for farmers and make

money on loan fees and interest — which in recent years has accounted for a full third of Deere's profits.[598]

These are profits extracted from farmers' bottom lines. Indeed, U.S. P.I.R.G. estimates that passing agricultural Right to Repair legislation would save farmers approximately $4.2 billion per year.[599] However, the losses arising from manufacturer-imposed repair restrictions are not limited to the cost of dealer services. Jared Wilson, a farmer near Butler, Missouri, blew a mechanical valve on a Deere fertilizer spreader, a malfunction that threw the equipment into "limp mode" until the error codes in the software could be resolved by a Deere-authorized technician. Wilson was forced to haul the machine to the dealer, where it sat for 32 days. He estimated he lost $30,000 to $60,000 because he was unable to use the equipment. Had he been able to access the parts and diagnostic tools he needed, Jared said, he could have repaired the equipment himself in a fraction of the time.[600]

Chapter 2. Processing and Trading

The Grain and Oilseed Sector

1. Background

a. Production and Consumption

Grain crops have always been a mainstay of American agriculture. Oilseeds joined grains as staple crops in the early 20th century. Today, the major U.S. grain crops are corn, wheat, rice, sorghum, and barley. Grain crops are split between "food" grains, which are grown primarily for use in human food, and "coarse" grains, which are grown primarily for livestock consumption but can also be processed into a variety of food, fuel, and industrial products.[601] The principal food grain produced in the United States is wheat, with rice coming in as a distant second by both volume and acres of production.[602] Corn is the predominant coarse grain, accounting for nearly 95% of annual U.S. feed-grain production, while soybeans are the country's predominant oilseed crop, accounting for about 90% of annual U.S. oilseed production.[603] For simplicity of exposition, we focus our analysis of competition in the grain and oilseed sector on these three major crops.

b. Wheat[604]

Wheat is grown primarily in the Great Plains region, stretching from northern Texas through Montana, along the Mississippi River in the Midwest, in the Mid-Atlantic region, and, on a smaller scale, in the Pacific Northwest. The planting of wheat is typically rotated with that of other cereals (particularly oats and barley) and certain oilseeds (such as sunflower, canola, and soybean) to reduce insect and plant disease problems and to improve soil conservation. The wheat varieties sown in the United States fall into three general categories: (1) winter wheat, (2) spring wheat, and (3) durum wheat.

Winter wheat varieties are sown in the fall, go into dormancy when cold weather arrives, enter their growth phase in the spring, and are harvested in the summer. Winter wheat production represents nearly 70% of total U.S. production, on average, according to the USDA's Economic Research Service. In contrast, spring and durum wheat varieties are typically planted as soon as soil conditions permit between mid-March and May and are harvested in the late summer or fall of the same year. Spring wheat typically constitutes about 25–30% of total U.S. wheat production or between 340 million and 600 million out of around 2-2.5 billion bushels total. Durum wheat is the smallest of the three major wheat categories and typically accounts for less than 75 million bushels or 2-5% of total U.S. wheat production. These three general categories can be disaggregated further into five major variety classes — Hard Red Winter, Hard Red Spring, Soft Red Winter, White, and Durum — which have different end uses and tend to be region-specific in production.

The two "hard" classes of wheat are distinguished by relatively high protein and gluten content, which are critical qualities for bread flour.[605] Hard Red Winter (HRW) wheat accounts for about 40% of total

U.S. wheat production and is grown primarily in the Great Plains (northern Texas through Montana). HRW is used by wheat millers to create all kinds of flour, but primarily bread flour. Hard Red Spring (HRS) wheat accounts for about 25% of production and is grown primarily in the Northern Plains (North Dakota, Montana, Minnesota, and South Dakota). While the protein level in HRW wheat tends to vary from season to season, HRS wheat is more consistent. In years when the protein level in either hard-wheat crop (HRW or HRS) is lower than normal, wheat millers frequently purchase the other hard class to "blend-up" the average protein level in their flour. When the protein levels in the two crops are relatively equal, however, HRW wheat and HRS wheat can be effective substitutes.

In contrast, the "soft" classes of wheat have relatively low protein content, which makes them unsuitable for bread flour milling. Soft Red Winter (SRW) wheat typically accounts for about 15–20% of total production and is grown primarily in States along the Mississippi River and in the Mid-Atlantic region on the East Coast. Flour produced from milling-grade SRW is used for cakes, pastries, crackers, and snack foods. White wheat (in both winter and spring varieties) accounts for 12-17% of total U.S. production and is grown in Washington, Oregon, Idaho, Michigan, and New York. Its flour is used for breakfast cereals, noodle products, crackers, donuts, and crusted white breads. Finally, there is Durum wheat, which accounts for 2-5% of total production and is grown primarily in North Dakota and Montana. Durum wheat is used in semolina and pasta production.

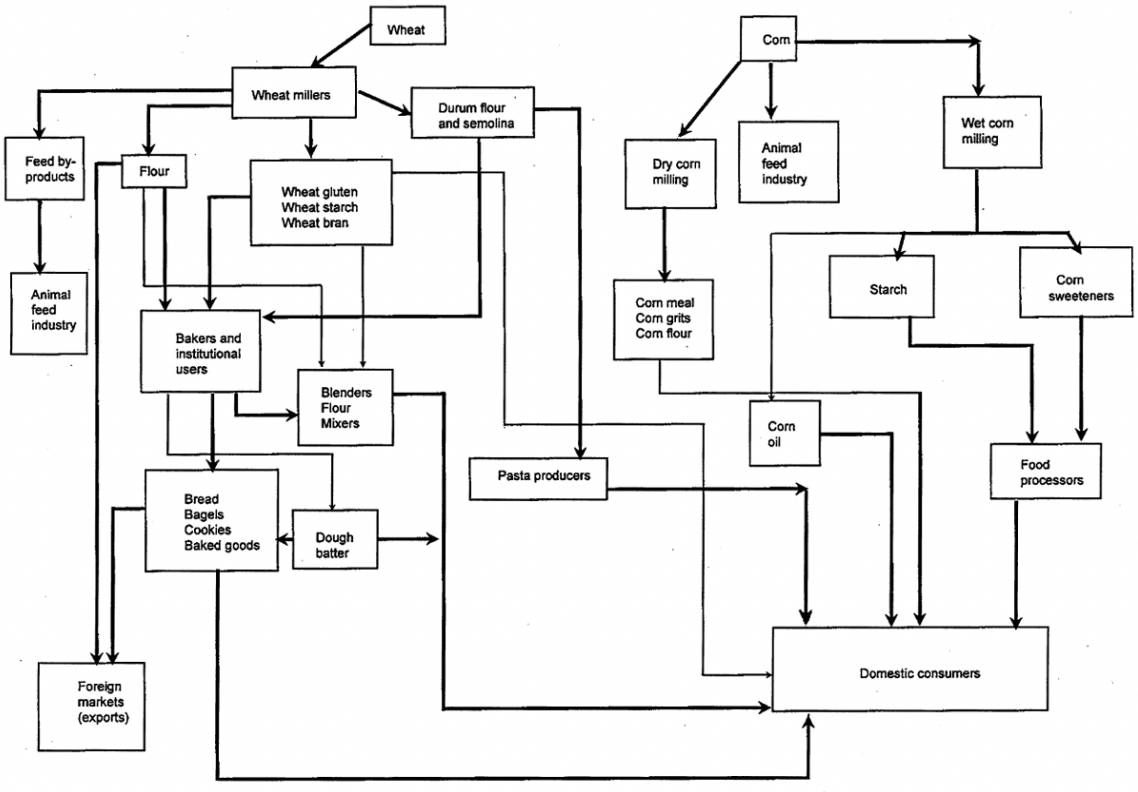

Figure 10: "Grain: Structure of the U.S. industry." Source: USITC Industry & Trade Summary - Grain (Cereals). September 2000. https://www.usitc.gov/publications/other/pub3350.pdf

In general, all wheat (except for wheat grown expressly for seed for planting) is planted with the expectation that it will end up being milled into flour or meal and used in human food products, although often an eighth or more of each year's crop ends up being fed to livestock. Small amounts of wheat are also purchased by some food processors and industrial users. Typically, wheat is diverted to animal feed production when it does not meet the protein level requirements of the wheat millers available to the farmer. Protein content levels are frequently specified in contracts in both domestic and international transactions for wheat. Accordingly, millers usually need specific and constant protein levels, depending on their customers' demands. In all cases, the byproducts of wheat milling — such as bran (the outer seed coat of a wheat kernel), shorts (more inward layers of the seed coat that contain some starchy or floury components), and middlings (an intermediate product that combines bran and shorts) — are used to produce animal feeds.

c. Corn[606]

Corn is grown in almost every state, but production is concentrated in the Heartland region, stretching from the Great Plains eastward through Ohio. Iowa and Illinois are the top two corn-producing states, and they typically account for about one-third of the U.S. crop. Historically, corn was grown in rotation with soybeans and wheat in a complementary pattern; since the late 1990s, however, farms in the Corn Belt states have gradually shifted to corn and soybeans only.

The grain kernel is the part of the plant normally used in food, feed, or fuel production; however, parts of the entire above ground plant are often used to make animal forage or silage as well. Overall, there are seven corn groups or types based on kernel characteristics: Dent, Flint, Flour, Sweet, Pop, Waxy, and Pod corn. Yellow Dent corn is by far the most important type of corn produced in the United States, accounting for over 90% of American corn production.[607] Dent corn is high in starch content, dry, and bland (not sweet). Dent corn is primarily used to make livestock feed, ethanol fuel, and sweeteners such as high fructose corn syrup, with fringe amounts also being used for cornmeal and as an ingredient in beer and whiskey mash bills.

Outside of mainstay Yellow Dent varieties, special, high-oil Dent corn varieties are raised almost exclusively for use in livestock feed. Other special varieties of corn (including "high extractable starch" (HES) and "high total fermentables" (HTF) varieties) have been developed for use in ethanol production.[608] Flour corn varieties are, as the name suggests, used primarily to make corn flour, while Sweet corn is the type sold as a vegetable to food processors, retail grocers, and distributors.

Overall, today, around 40% of the typical U.S. corn crop goes to animal feed manufacturing. Another 10-20% is exported to foreign markets by grain merchandisers. The rest is mostly processed by "wet-milling" firms and then transferred to third-party or integrated plants for conversion into ethanol (30-40%), high-fructose corn syrup, glucose, and dextrose (~5-6%), starch (~1-2%), and beverage and industrial alcohols (~1-2%). Only 1-2% of the typical corn crop is used to make cereal, corn flour, corn grits, corn meal, and brewery grits, which are manufactured by the corn "dry-milling" industry.[609]

d. Soybeans[610]

Soybean production is primarily concentrated in the region with the highest yields — the Midwest. Today, more than 80% of U.S. soybean acreage is concentrated in the Midwest, with the top three soybean-producing states alone — Illinois, Iowa, and Minnesota — typically accounting for around 40% of total U.S. soybean output. The remaining 20% of U.S. soybean acreage is distributed mostly between the Mississippi Delta and the Mid-Atlantic region. Most U.S. soybeans are planted in May or early June and harvested in late September or October.

Soybeans are the seeds of an annual plant that requires 75 to 175 days to mature after emergence, depending on the variety of the soybean and the growing conditions. A soybean yields, on average, by weight, 18% oil, 79% meal, and 3% miscellaneous byproducts, including waste. After harvest, soybeans can either be used whole in animal feed or processed into soybean meal and soybean oil in a process called "crushing." The soybean hull is removed, and the soybean is processed into flakes and soaked in a solvent to extract its oil. The leftover flakes are then made into soybean meal. One bushel of soybeans yields around 44 pounds of soybean meal and 11 pounds of oil. The soybean meal is used exclusively as livestock feed, while the soybean oil can be converted into biofuels, vegetable oil for human consumption, and various industrial materials.

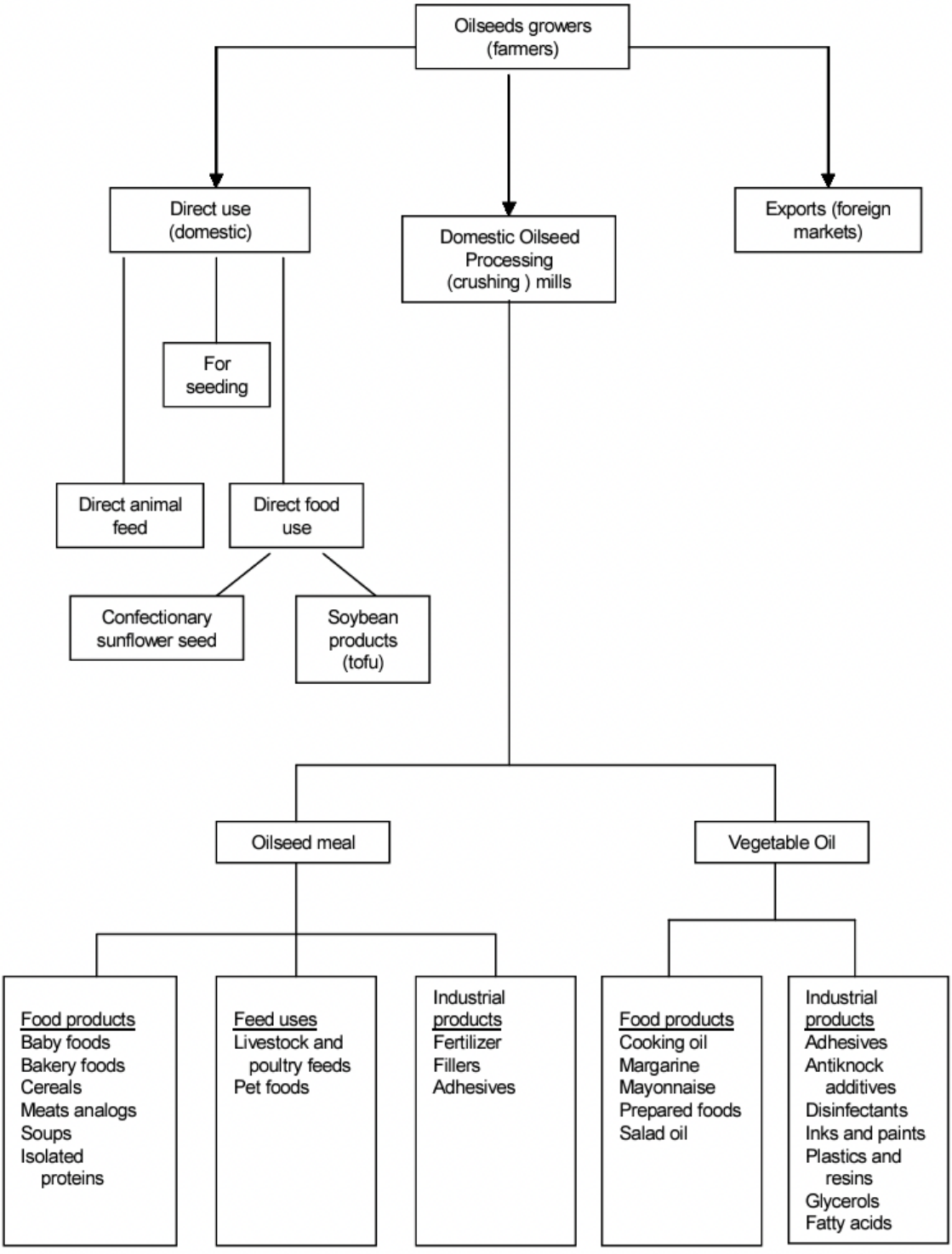

Figure 11: "Oilseeds: Structure of U.S. industry" Source: USITC Industry & Trade Summary - Oilseeds. February 2003. https://www.usitc.gov/publications/332/pub3576.pdf

In recent years, a little over half (~52%) of the typical U.S. soybean crop has been crushed by domestic soybean processors to produce soybean meal and soybean oil; a little under half (~46%) has been exported whole to foreign markets by grain merchandisers; and a residual amount (~1-2%) has been used directly in animal feed. As of 2021-2022, around 40% of U.S.-produced soybean oil has been used for biofuels, with further growth expected due to the expansion of renewable diesel and jet fuel production. Since cattle are less tolerant of soybean meal's high protein content, soybean meal is generally used to manufacture swine and poultry feeds.[611]

2. Distribution and Marketing Channels

After harvest, farmers can sell their grain and oilseed crops to one of three categories of buyers: (1) end users, (2) merchandisers, and (3) independent elevators. End users purchase crops from farmers and process them into various usable products. This category principally includes wet corn mills, soybean crushing plants, flour (wheat) mills, ethanol plants, and animal feed mills. Merchandisers act as intermediaries between farmers and end users. They operate a mix of country, rail, river, or port elevators that enable them to purchase, store, market, and ship out grain and oilseed crops to buyers in domestic or international markets.[612] Technically, independent elevators are intermediaries as well. What distinguishes them from merchandisers is that they operate only so-called "country" elevators, which lack cost-competitive access to navigable rivers and railway networks and, therefore, cannot competitively market their inventories to buyers outside their local regions.

The geographic market for a farmer's grain or oilseed crop tends to be "very localized."[613] Because grains and oilseeds are bulk, high-weight/low-value commodities, transportation costs are relatively high and increase with every additional mile the farmer must haul their crop to reach a buyer, cutting significantly into profits. As a result, the distance a farmer is willing to haul their crop is largely determined by the offering price of the second-closest potential purchaser and whether that price would cover the extra cost of shipping to them.[614] On the flipside, elevators and other grain and oilseed purchasing facilities, such as mills and plants, typically source crops only from farms located in proximate "draw areas," which they delineate primarily based on transportation time and cost.[615]

For most grain and oilseed farmers, their crop's first stop in the distribution chain will usually be a country elevator, which may be independent or affiliated with a merchandiser. Country elevators are the most common type of elevator. They serve as grain collection and buying points in rural communities, offering a variety of transportation, storage, and payment terms to their suppliers. They can also provide services like grain storage, drying, and conditioning. Upon aggregating sufficient inventories, or when market prices are most attractive, country elevators sell their grains or oilseeds to nearby end users or to nearby rail or river elevators, where they can be stored, aggregated, marketed, and later transported by train or barge to more distant domestic users or port elevators for export.[616] River, train, and port elevators are the critical marketing and distribution nodes in the grain

and oilseed trade, as they are the only facilities with competitive access to long- and intermediate-haul transport.

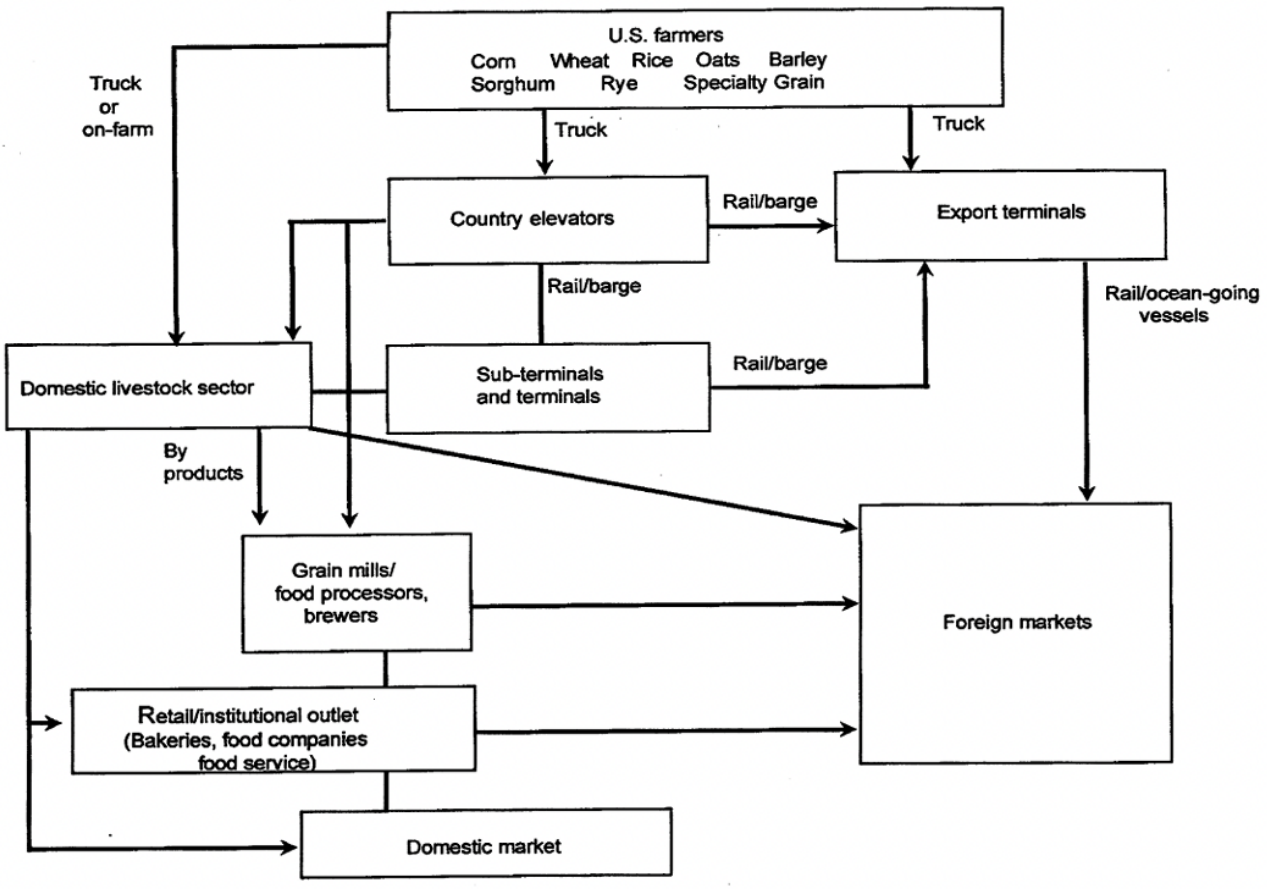

Figure 12: "U.S. grain: Channels of distribution" Source: USITC Industry & Trade Summary - Grain (Cereals). September 2000. https://www.usitc.gov/publications/other/pub3350.pdf

River elevators can receive crops by rail or truck and load them onto barges for freight to down-river destinations. They are primarily located on the Mississippi River and Columbia-Snake River systems, which flow down to the Center Gulf and Pacific Northwest port regions, respectively. River elevators typically purchase crops from farmers and country elevators within their draw areas and sell most of their inventories to downstream port elevators, with small amounts being marketed to domestic end-users located along navigable rivers as well.[617] The Chicago Board of Trade has designated many river elevators as "delivery points" where grains and oilseeds can be delivered and stored to honor futures contracts.

Train elevators are generally divided into "subterminal" and "terminal" categories. A terminal elevator receives most of its grain from other elevators and loads it out either for on-site consumption (*e.g.*, if the elevator is at a mill) or for short-haul delivery to end users or other elevators nearby.[618] In contrast, a subterminal elevator is designed to aggregate large quantities of grains from nearby farmers and elevators, then efficiently load them onto unit trains for shuttle delivery to distant elevators in domestic consumption centers and port regions. As a result, subterminal elevators can market their inventories over much wider overland geographies than country elevators.[619]

If grains or oilseeds are headed for export, their final U.S. stop is a port elevator, where specialized equipment is used to transfer them onto ocean vessels for shipment to foreign ports. There are no substitutes for port elevators when it comes to loading bulk grains onto ships.[620] Port elevators typically procure grain and oilseed inventories from river and rail elevators — although some port elevators also buy relatively small quantities directly from nearby farmers and country elevators — and market them to international buyers. Generally, port elevators are owned by large merchandisers and (in one or two cases) large processors of grains and soybeans, which operate them exclusively to originate, store, and transload their own crops.[621] Port-elevator owners do not typically offer their grain storage and handling services to competitors for export or import.

In this context, independent country elevators do not effectively compete with merchandisers in bidding for farmers' grain and oilseed crops. Since the deregulation of railroads in the 1980s, it has become common for railway companies to give special discounts and preferential services to larger merchandisers who operate high-capacity sub-terminals, while rationing services and raising prices for other, smaller grain shipper[622]s. Thus, independent elevator operators are generally incapable of selling their inventories to distant end-users at competitive prices. Practically, independent elevators' are restricted to marketing their inventories to the river and sub-terminal elevators in their local areas, which are owned by merchandisers, and to the end-user plants and facilities in those areas, which the independent elevators must compete against merchandisers to supply.

These constraints on independent elevators' market reach mean they have little room — and less incentive — to outbid a local merchandiser when procuring grain and oilseed crops from farmers. Doing so would not only risk antagonizing a potential customer, but also potentially raise the independent operator's procurement costs above those of the merchandiser — making it harder for the elevator either to resell the crops to the merchandiser at a profit, or to compete against the merchandiser for sales to end users. Because of these dynamics, in a recent lawsuit against two major merchandisers (Bunge and CBG), the DOJ alleged that unaffiliated country elevators frequently cannot offer meaningful competition to merchandisers when it comes to the prices offered to farmers.[623]

3. Transaction and Pricing Methods

Grain and oilseed farmers have three basic transaction methods available to them: (1) a cash transaction under which a given quantity is sold for immediate delivery at the current market price; (2) a forward marketing contract, in which quantity and price terms are set prior to delivery from the field or storage facility; and (3) a price later marketing contract, which provides for immediate delivery at a price to be determined at a later date.[624]

Marketing contracts cover around one-fifth of total corn and soybean sales.[625] Large grain and oilseed farms are more likely to use marketing contracts, with 60% of large corn/soybean producers (with at least $1 million in sales) marketing some portion of their crop under contract in 2016, compared to only 20% of small corn/soybean producers (with less than $350,000 in sales).[626] Specialized varieties of grain and oilseed crops (high-oil corn, organic soybeans, durum wheat, etc.) are almost always grown under contract.[627] Overall, about 20-25% of corn and soybean farmers use marketing contracts, and those who do sell around 40% of their production under contract, on average.[628]

Marketing contracts are typically arranged prior to harvest and sometimes before planting (the latter being common with respect to specialty grain and oilseed varieties), but usually no more than one marketing year ahead of time. Although they can be idiosyncratic, marketing contracts generally include six key terms: (1) the quality (or grade) of grain or oilseed delivered or to be delivered; (2) the date by which delivery is to be completed; (3) the location for delivery; (4) the quantity being contracted (5) the price or formula to be used in determining the net price; and (6) price adjustments if the farmer is unable to meet the specified grade, deliver the required quantity on time, or satisfy other conditions of the contract.[629]

In price later contracts, the ultimate price received by the farmer may be determined by reference to the local cash market price on a day selected at the farmer's discretion. If that is the case, the contract will typically provide for an elevator service charge to be deducted from the total purchase price based on the number of days the crop is held. Alternatively, the contract price may be pegged to the futures market price quoted by the Chicago Board of Trade on a date to be selected by the farmer minus a previously agreed upon "basis" amount (a predicted difference between the futures price for the crop and its local cash price). In those types of contracts, there are typically no service charges. Some contracts also include minimum and maximum price terms, and premiums for certain quality attributes.

4. Anti-Monopoly Policy and the Old Grain Trade Oligopoly

Emerging out of World War II, the global grain trade was primarily the domain of four highly private firms: Cargill, Continental, Bunge, Louis Dreyfus, and Andre Garnac. Cargill and Continental handled about 40-50% of the world's international grain shipments; Bunge handled another 20%; and Louis Dreyfus and Andre came in fourth and fifth place with around 10% each.[630] Cook Industries joined the five majors in the 1960s, and together, this old "Big Six" group made about 85% of U.S. grain export sales for the next decade.[631] Peavey was another major player, though primarily in the wheat trade and flour milling business.[632] Each (with the exception of Andre) operated a fairly integrated logistical chain hauling grains from farming communities in the interior to export terminals on the coasts to foreign markets around the world.

Before the 1970s, however, the power of this grain-exporting oligopoly was held in relative check by three critical policies. First, the New Deal's supply management programs — together with restrictions on grain imports and international controls on grain price fluctuations — stabilized grain prices both at home and around the world,[633] limiting the opportunities for market arbitrage and manipulation by the Big Six. Second, antitrust laws were enforced to preserve competitive

opportunities for new and small traders — like Cook Industries — to enter the grain trade and compete for supplies and sales on a level playing field. In particular, the mid-century antitrust regime effectively restrained the dominant grain traders from either merging with each other or acquiring their major suppliers or customers. It also prohibited them from signing exclusive contracts with grain originators, processors, and logistics providers or otherwise seeking to close off the channels of grain merchandising to others — keeping them open for upstart and small traders.

Third and finally, the utility regulation of railroads ensured equal access to rail freight for all shippers. By requiring railroads to charge only "reasonable" rates and prohibiting them from "unjustly discriminating" between shippers, economic regulation of the rail network by the Interstate Commerce Commission served to heighten competition for farmers' grain and oilseed crops in two important ways. On the one hand, it gave small-to-midsize grain handlers access to the same freight rate schedules as large grain handlers, enabling a wide range of merchandisers — including brokers, marketing cooperatives, and commission agents — to buy grains and oilseeds from farmers and ship them to end buyers around the country at competitive prices. On the other hand, it prevented large shippers like the Big Six from using their leverage to extract discriminatory discounts or preferential treatment from railroads — which railroads would have had to make up by charging higher prices and providing worse service to smaller shippers. By ensuring fair and equal access to the nation's rail network in these ways, economic regulation allowed the maximum number of merchandisers to compete on the merits of farmers' crops and end-users' needs.

In this context, although the Big Six held a privileged position in the grain export trade during the post-war decades, their dominance did not extend far beyond that trade — leaving the domestic merchandising and processing industries dynamic and competitive from the 1940s well into the 1970s. The soybean crushing industry, for example, saw only "low to moderate" concentration and grew rapidly during the 1950s and 1960s, as strict enforcement of anti-merger laws compelled the "[l]arger firms" in the industry to expand "by internal investment of capital, rather than by acquisition or merger."[634] The corn wet milling industry consisted of less than a dozen firms through the 1950s. In the 1960s, the industry was "rocked by the entry of three outsiders" leading to "severe price competition" and innovation in corn processing methods and products.[635] Wheat milling was the least concentrated of all the major grain and oilseed processing industries, with the four largest millers capturing a little over a third of industry sales as late as 1977.[636]

Importantly, over the 1950s and 1960s, competition for farmers' grain and oilseed crops was even more keen in the Midwest, where most such crops were produced. As a comprehensive study by Iowa State University's agriculture extension station found in 1967, concentration in grain procurement among processors and merchandisers (the latter defined as grain trading companies that purchased more than 50% of their volume from elevators as opposed to directly from farmers) in the Midwest declined substantially throughout the 1950s. By the 1960s, more than 300 processors and merchandisers — in addition to hundreds of marketing cooperatives, private country elevators, and grain brokers — were operating in the Midwest, and the four largest accounted for less than 22% of the total volume of grain purchased in the region.[637]

5. The Rise of the "ABCDs": From Grain Traders to System Integrators

The weakening of New Deal supply management programs, coupled with the liberalization of trade restrictions on agricultural commodities, dramatically increased the volatility of grain and oilseed markets throughout the 1970s.[638] This created new opportunities for dominant grain trading firms to "use their enormous size to manipulate the marketplace and to maximize profit at the expense of the farmer and consumer alike."[639] In 1980, the Staggers Act further enhanced the ability of large grain and oilseed trading incumbents to leverage their size for unfair advantage by deregulating railroads. For the first time since the turn of the 20th century, the largest merchandisers and processors were allowed to extract sweetheart freight contracts from railroad companies, subjecting smaller rivals — including brokers, independent country elevators, and farmer marketing cooperatives — to structural transportation handicaps.[640] Perhaps the most important policy shift, however, came in 1982, when the Reagan administration signaled its intent to dramatically retrench enforcement of the antitrust laws against corporate mergers, acquisitions, and joint ventures by publishing the 1982 Merger Guidelines.[641]

Almost immediately after the 1982 Merger Guidelines were published, a handful of financially powerful firms unleashed a wave of horizontal and vertical consolidation that completely transformed the grain and oilseed sector by the end of the 20th century.[642] At the merchandising level, three companies — Archer Daniels Midland (ADM), Cargill and, after it was acquired by ConAgra in 1982, Peavey — used serial acquisitions to eliminate rival merchandisers, acquire strategic networks of country, subterminal, river, and port elevators, and consolidate power over various grain marketing channels. Upstream from merchandising, they entered joint ventures with some of the largest grain cooperatives — like Cenex-Harvest States (now CHS), GROWMARK, and AGRI Industries — to mutually operate grain elevators and secure dedicated supplies of grains and oilseeds. Downstream from merchandising, the troika of ADM, Cargill, and ConAgra — plus Bunge — went on an acquisition spree that dramatically concentrated every major grain and oilseed processing industry. In describing the motives behind these downstream acquisitions, a prominent observer explained that the grain traders were primarily seeking to "turn their commodity business into an ingredient business so they are not price takers in a commodity market but *price setters in an ingredients market*."[643]

The acquisition and joint-venture mania did not stop at the water's edge. For example, in the 1980s, ADM formed a joint venture with eleven German, French, Dutch, Canadian, and U.S. cooperatives (including CHS) to acquire A.C. Toepfer, one of Europe's largest grain trading and processing firms. In the 1990s, ADM entered another joint venture — this time with its supposed rival Tate & Lyle — to acquire wet corn mills in Slovakia, Bulgaria, Hungary, and Turkey.[644] Over the same period, Bunge used both acquisitions and internal expansion to become South America's largest originator, processor, and exporter of soybeans, with control over 25-30% of Brazilian and Argentine soybean crushing capacity by the 2000s.[645] Meanwhile, although Dreyfus retreated from the direct operation of inland elevators in the United States (leasing most of them to ADM as of 1993), it maintained its leading position as a grain exporter with high-capacity port elevators, and it used acquisitions to expand its origination and processing operations in South America and East Asia.[646]

At the turn of the century (1999), Cargill acquired the merchandising and exporting business of Continental — the old grain trade giant — to become the largest exporter of U.S. grains and oilseeds, controlling over 35% of total exports.[647] A few years later (2008), ConAgra sold Peavey to Japanese-owned commodity trader Gavilon (of Marubeni), which merged it with DeBruce in 2010 and Millard Grain in 2011 to create the third-largest U.S. grain merchandiser by storage capacity (after Cargill and ADM), and then steadily expanded the combination's footprint through a slew of acquisitions of smaller grain handling firms. Gavilon operated this network until 2022, then sold it to Viterra, a product of "a series of mega-mergers between Canada and Australia's formerly government-run grain cooperatives in the early 2000s."[648]

6. Competition in Grain Merchandising and Processing Today

In the shadow of these developments, today, the merchandising of grains and oilseeds — together with most of the major industries that process grains and oilseeds — are dominated by four entrenched incumbents: ADM, Bunge, Cargill, and Dreyfus. Often called the "ABCDs" after their initials, these four conglomerates are the reigning titans of international trade in agricultural commodities. Precise market share figures are unavailable because the industry is notoriously opaque, but UNCTAD recently estimated that the ABCDs account for over half of global food trade.[649] Although the ABCDs' role in agricultural trade with Japan and China has been more limited in recent decades due to government policy in those countries favoring domestic champions (state-owned enterprises like COFCO in China and the *sogo shosha* groups in Japan), the ABCDs still enjoy a particularly dominant position in the grain and oilseed trade among North and South America, Europe, Africa, and to a lesser extent, Australia.

The ABCDs are not just merchants, however. After the past few decades of relentless M&A activity, they have become colossal "system integrators" (or "value chain managers") involved in all phases of production and trade in basic agricultural commodities — from origination to processing, marketing, financial instruments, risk management, and distribution to consumers.[650] Either directly or indirectly, each of the ABCDs now operates a vast global network of crop elevators and port facilities; fleets of railcars, barges, and ocean-vessels; as well as mills and plants around the world. In recent years, the ABCDs have also capitalized on the deregulation of financial markets to build highly lucrative businesses in farm credit and insurance, speculative agricultural derivatives trading, and third-party investment management.

a. The ABCDs Dominate Grain and Oilseed Merchandising and Exporting

In addition to handling the overwhelming majority of America's foreign trade in grains and oilseeds, the ABCD's now also own or control a predominant share of the key distribution channels for these crops — including sub-terminal, river, and port elevators — and substantial portions of the domestic grain milling, oilseed crushing, feed manufacturing, and biofuel-refining industries.

To begin with, the ABCDs have unequivocally become the gatekeepers to world markets for America's grain farmers. Nationwide, they control approximately 60% of the port elevators in the country (32 out of 54).[651] In two out of the country's three most important port regions (the ones that handle almost all exports of U.S. grains and oilseeds), the ABCDs are even more dominant. In the Center Gulf region

at the mouth of the Mississippi River — which handles approximately two-thirds of America's corn and soybean exports and one-fifth of its wheat exports annually[652] — the ABCDs control almost 80% of the total port elevator capacity.[653] In the Pacific Northwest (PNW) region — which handles more than half of U.S. wheat exports and around a quarter of U.S. corn and soybean exports each year[654] — the ABCDs control nearly 70% of the port elevator capacity.[655] The final significant region for grain exports is the Texas Gulf, which handles around 20%of the country's wheat exports but only minimal quantities of corn and soybean.[656] There, port elevator capacity is split nearly half-and-half between ABCD and non-ABCD merchandisers (56% to 44%).[657] Across all three port regions, however, Cargill and ADM are particularly dominant — with ADM controlling a third (33%) of the port elevator capacity in the Center Gulf region and Cargill controlling around a third of that capacity in each of the PNW (31%) and Texas Gulf (35%) regions.[658]

Upstream and inland from the port regions, the ABCDs own approximately 45% of the country's river elevators and 22% of its subterminal rail elevators.[659] Since the ABCDs elevators are typically larger than the industry average, the ABCDs percentage of total river- and subterminal-elevator storage capacity is likely higher. Overall, we estimate that the ABCDs and the next three largest merchandisers — CHS, Viterra, and CBG/Zen-Noh — control just over 41% of all the grain storage capacity held by merchandisers in the United States, including storage at country, rail, river, and port elevators.[660]

Although calculated market shares are not publicly available for the U.S. export trade, the available information suggests that the ABCDs' dominance in grain handling capacity translates into substantial market power. For example, ADM reportedly exported just under 1 billion bushels of grains and oilseeds from its Center Gulf and Texas Gulf port elevators in 2014. That equals roughly 36% of the total volume of corn, wheat, and soybeans exported from those port regions in 2014 (2.73 billion bushels).[661] Similarly, Cargill reportedly "handles about one-third of the grain exported from the PNW [region]" annually, shipping "more than 400 million bushels" of grains and oilseeds in the 2022-2023 crop year alone through its TEMCO port elevators in Washington and Oregon.[662] At the Texas Gulf, Cargill's TEMCO elevator alone reportedly exports "over 140 million bushels" each year,[663] which translates into an overwhelming majority of the total volume of grains and soybeans exported out of the Texas Gulf annually (between 200 and 250 million bushels).[664]

Outside the ABCDs, there are precious few merchandisers to which farmers (and independent country elevator operators) could potentially sell their grains and oilseeds. Nationwide, there appear to be only 64 merchandisers besides the ABCDs.[665] Of those, only 37 appear to own or control sub-terminal elevators, and only 11 appear to own or control any river elevators.[666] Indeed, when it comes to river elevators, the overwhelming majority (85%) belong to the ABCDs and the next three largest merchandisers (CHS, Viterra, and Zen-Noh/CGB) alone.[667] Finally, only seven firms — six merchandisers and one large processor — other than the ABCDs appear to own or control working port elevators in the three major exporting regions of the country: Ag Processing (AGP) and United Grain in the PNW region; The Andersons, Hansen-Mueller, and West Plains in the Texas Gulf region; and CHS, CGB/Zen-Noh, and The Andersons in the Center Gulf region.[668]

b. The ABCDs Dominate the Grain and Oilseed Processing Industries

Beyond merchandising, the ABCDs have also come to dominate most of the major domestic end-user industries that are supposed to provide grain and oilseed farmers with an alternative outlet for their crops — and that other merchandisers are supposed to compete against the ABCDs to supply. In particular, ADM, Cargill, and Bunge now control a substantial majority of the country's corn milling, oilseed crushing, and wheat milling capacity. Although the ethanol and animal feed industries are somewhat less concentrated, ADM and Cargill, respectively, have used serial acquisitions to develop and continue to expand market-leading positions in these two industries as well.

The entire wet corn milling industry has consolidated into just six firms: ADM, Cargill, Ingredion (formerly Corn Products International or CPI), the Grain Processing Corporation (GPC), Roquette, and Tate & Lyle.[669] As of 2017, the four largest of these firms made over 89% of the industry's total sales, according to the Census Bureau.[670] The latest available firm-specific data (2011) shows that ADM, Ingredion (then CPI), and Cargill are in the lead, holding alone more than 85% of the country's wet corn milling capacity.[671] Soybean crushing is just as consolidated, with Bunge (26%), ADM (21%), Cargill (21%), and Ag Processing (12%) collectively controlling more than 80% of industry output as of 2011.[672] Similarly, the four largest firms in wheat milling control nearly two-thirds (63%) of industry capacity.[673] The industry leader by far is Ardent Mills, a joint venture between Cargill, CHS, and ConAgra that pooled their previously separate wheat-milling operations in 2014.[674] Ardent Mills commands around one-third (31%) of industry capacity. The second-largest wheat miller is ADM, with around 16% of the country's milling capacity. Grain Craft (10%) and Bay State (6%) round out the top four firms in wheat milling.[675]

The four largest ethanol manufacturers — POET (17.5%), Valero Energy (10.6%), ADM (10.5%), and Green Plains (6.2%) — control nearly 45% of total U.S. capacity.[676] Although this makes the ethanol industry somewhat less concentrated than the other grain- and soybean-buying industries, it has also seen rapid consolidation over the past decade. POET, ADM, and Valero have all sought to roll-up industry capacity.[677] A similar dynamic has been at play in the animal feed industry. As of 2020, Cargill is the largest animal feed manufacturer in the country, with an annual output of 19.6 million tons. ADM is the fifth largest, producing around 3 million tons of feed annually. Overall, the five largest producers (Cargill, Land O' Lakes, Tyson, Alltech, and ADM) accounted for just under 30% of U.S. animal feed output in 2020, totaling just under 216 million tons.[678] However, a trend toward more consolidation in the industry is evident as "[t]he leading companies are focused on acquiring feed mills and small manufacturing facilities for the expansion of their businesses, in both domestic and international markets."[679]

Although exact data is not publicly available, the ABCDs also appear to control substantial portions of the wet corn milling, soybean crushing, and wheat milling industries in many countries other than the United States, directly or through subsidiaries, joint ventures, and strategic ownership interests. For example, ADM, Cargill, and Bunge reportedly "dominate" soybean crushing "in all of the major [soybean and soybean byproduct] exporting countries."[680]

c. The ABCDs Exercise Substantial Influence Over Their Putative Rivals

While these concentration figures are concerning on their own, they tend to understate the power of the ABCDs to dictate outcomes in America's grain and oilseed markets. In particular, these figures do not fully capture the leverage and influence that the ABCDs have over their putative rivals in grain origination and merchandising. They also do not account for the history of collusion among the ABCDs and between the ABCDs and the other large players in grain processing and merchandising.

To begin with, the ABCDs' vertical integration has enabled them to exercise leverage over, and form significant economic relationships with, some of their largest rivals in grain origination and marketing. For example, CHS — a large merchandiser owned mostly by 750 farmer cooperatives, which handles roughly 5-10% of total grain and oilseed production annually[681] — relies on a joint venture with Cargill (TEMCO) to access international markets through the PNW and Texas Gulf regions.[682] Three other major merchandisers — Viterra, Agrex, Columbia Grain, and their predecessors — are similarly dependent on ADM, having no port elevators of their own and relying on a joint venture operated by ADM (Pacificor) to access a single port elevator in the PNW region, with a 5.4-million-bushel capacity.[683]

Port elevators aside, the ABCDs' processing operations are frequently major customers of rival merchandisers, and the ABCD's merchandising operations are frequently major suppliers of rival processors. For example, in addition to joint-venturing with Cargill on TEMCO's port elevators, CHS is bound to Cargill through their flour milling joint venture, Ardent Mills, which buys around 50 million bushels of wheat from CHS annually.[684] ADM, meanwhile, has long had a close relationship with major corn miller A.E. Staley and its parent company, Tate & Lyle, which have received direct investments from ADM and benefited from numerous joint ventures with ADM in processing plants and logistics facilities.[685]

Beyond customer-supplier and joint-venture relationships, in some cases, the ABCDs have signed marketing arrangements with rival merchandisers that directly restrained competition. For example, the rise of The Andersons, Inc. — a merchandiser that now handles between 5 and 10%of the country's grain and oilseed production annually — was underwritten, in large part, by its close relationship with Continental Grain, which Cargill acquired in 1999. Since acquiring Continental Grain, Cargill has continued its predecessor's special relationship with The Andersons, signing successive five-year contracts under which The Andersons has: (1) leased two combined river-and-subterminal elevators in Toledo and Maumee, Ohio, from Cargill; (2) given Cargill the marketing rights to all grain sourced into these two elevators as well as two *other* Andersons-owned elevators nearby; and (3) remarkably, *bound itself not to "make direct sales into" any "rail markets" to which grain from these four elevators may be shipped without first "consult[ing]" Cargill.*[686]

These arrangements are not isolated incidents. They are part of a piece with a proliferation of collusive behavior in the grain merchandising and processing industries since the rise of the ABCDs. For example, the rise of ADM in the 1980s and 1990s was so bound up with price-fixing conspiracies that a 1996 article in TIME Magazine called ADM "Price Fixer to the World." After ADM and three of its executives (including CEO Dwayne Andreas) were convicted of criminal price-fixing by the Antitrust Division in the late 1990s, an in-depth academic study found that ADM's "leadership and corporate

culture" had a dangerous proclivity for "reckless collusive behavior," and that ADM was "well-positioned in markets [with] nearly all the features necessary to carry out [collusive] scheme[s]."[687] As the study explained, "collaborative arrangements" with rivals — much like those described above — were a core part of ADM's "drive to dominate" the grain and oilseed trade.[688]

d. The ABCDs Have the Power to Manipulate Grain and Oilseed Markets

In this context of depressed competition and growing inequality among grain merchandisers, a growing body of evidence and analysis suggests that the ABCDs "have come to occupy a privileged position" in terms of their power to set prices and shape activity on physical grain and grain futures markets, both here in the United States and around the world.[689] The opacity of the ABCDs activities makes it impossible for private and nongovernmental actors to describe this power — or how it is exercised — with specificity. However, reports commissioned by Oxfam and the UNCTAD have recently sought to trace the general outline of the ABCD's power to manipulate markets.[690]

The ABCDs' power to manipulate prices is rooted in their vast, multinational grain origination and processing capabilities, which — together with their sprawling storage, delivery, and intelligence networks — enable them to efficiently move decisive volumes of raw and processed crops in and out of target markets. As an Oxfam research report on the ABCDs explained in 2012: "The [ABCDs] own and operate global storage and delivery systems that are indispensable to the global grain trade. In many cases, it is almost impossible to know for sure the size of the commodity stocks these firms hold — much of that information is a tightly held secret."[691] What is known, however, is that "the existence and control of these physical stocks can have an important impact on grain prices" in relevant markets, and that "the storage function of [the ABCDs] is tightly integrated into" their financial investment and speculative trading activities on agricultural commodity and derivatives markets.[692]

In the 1990s and early 2000s, the deregulation of commodity exchanges and derivative markets opened the door for the ABCDs to use "financial instruments and engineering not simply to hedge their commercial positions, but to strategically ride the wave[s] of market volatility."[693] As each of the four giants has exploited its central position in agricultural value chains to speculate on its own account and offer investment products to third parties, these financial operations have come to "play a major role in the profit structure" of the ABCDs, at times eclipsing their commercial operations.[694] In particular, after examining patterns of profiteering in the global food trade over the past few years, UNCTAD found that the ABCDs have earned high profits from commodity market speculation by exploiting three critical advantages:

- First, their superior knowledge of agricultural commodities markets, including access to real-time supply-and-demand information and insider intelligence on how market conditions will evolve.

- Second, "their ability to store agricultural commodities to harness price surges when they occur," and the "significant grain reserves" they have built up for that purpose.

- Finally, the secrecy of their grain storage and speculation operations, which they assiduously maintain by carrying out those operations through hundreds of subsidiaries incorporated in strategic jurisdictions (including secrecy jurisdictions) around the world.[695]

In effect, the ABCDs appear to routinely engage in a version of insider trading, leveraging "abnormal … intragroup transfers" and nonpublic intelligence from their commercial operations to exploit — and possibly create or exacerbate — market volatilities.[696] The concern that these activities reflect the exercise of market power or abuse by the ABCDs is sharpened by the fact that the ABCDs along with a handful of other global food-trading firms) make profits on their financial operations that far exceed those made by other firms in the same industries.[697]

7. Harms to Farmers and Communities

The rise of the ABCDs — coupled with the shift to neoliberal agriculture policy in the 1980s and 1990s, which the ABCDs were instrumental in bringing about — created a market environment where large, industrial-scale grain and oilseed agribusinesses are entrenched by government largesse, while family-scale farms are driven to extinction. Since the Federal Agricultural Improvement and Reform Act of 1996, federal farm subsidy policy has been geared almost exclusively toward stimulating the overproduction of a handful of key commodities, particularly corn, soybeans, and other grains and oilseeds. Over the same period, competition for these commodities has progressively dwindled as dominant merchandisers and processors have taken advantage of antitrust atrophy to acquire major rivals, customers, and suppliers, secure preferential contracts with railroads and ocean shippers, and otherwise foreclose opportunities for fair rivalry in grain and oilseed industries (see figures 3-5).

Because of these two dynamics, the prices for grain and oilseed crops have fallen to unsustainable levels over the past two decades — indeed, to their lowest levels since the turn of the 20th century in real, inflation-adjusted dollars.[698] Along the way, government subsidy programs have been used to prop up agribusiness incumbents, but beginner, small, and midsize grain farms have been hung out to dry. The farmers who faced growing debt or diminishing income — or who were forced to exit agriculture altogether — as a result, were the first to feel the consequences of this destructive course of the "Get Big or Get Out" policy. But, they were not the last. As our food supply has grown less diversified, less nutritious, and less resilient to disaster and disruption, the entire country has paid the price for the growing concentration in the grain and oilseed sector over the past four decades. More to the point, as UNCTAD has warned, the "[g]rowing cross-sectoral control over the food system by major agri-corporations [including the ABCDs] raises the risk that extreme food-price swings will become the norm," and threatens to render futile "any policy effort to mitigate the short-term effects of food price spikes."[699]

The Livestock Sector

The Beef Industry

1. Background

a. Stages of Production

The production of cattle in the United States typically has three phases: the "cow-calf" phase, the "stocker" phase, and the "finishing" phase. The conventional supply chain for beef cows begins with cow-calf ranchers, who breed cattle and raise calves for beef production. Calves are weaned from their mothers after 6 to 9 months, when they reach a weight of 400-700 pounds. Then, after spending some time on pasture, they are transferred to specialized stocker operations, where they gain another 200-400 pounds over 3 to 8 months. The stockers sort the animals into quality grades and sell them to feedlots (also known as concentrated animal feeding operations, or CAFOs), where they eat energy-dense grain feed for another 4 to 8 months until they reach around 1250-1350 pounds. At that point, the animals are considered "fed cattle" and are sold by the feedlots to the packers. The packers slaughter the animals, chill the carcasses, butcher them into various cuts of meat, and then vacuum seal the cuts to form boxed beef. The boxed beef is then sold to retailers and restaurants both directly and through processors and distributors.[700]

b. Marketing Channels

The primary channel for marketing conventional-fed cattle is the beefpacking industry, which buys, slaughters, and processes cattle to make beef and beef products for wholesale distribution. Competition among beef packers for fed cattle is geographically restricted because of transportation difficulties. Transporting cattle is expensive, both due to trucking costs and because fed cattle lose weight (and value) during transport.[701] As a result, beef packers tend to procure cattle from feedlots near their processing plants, and this is especially true for fed cattle from small producers. The latest available data (2011) suggests that, on average, cattle from small feedlots (those with less than 500-head capacity) travels only 81 miles to slaughter, while cattle from midsize feedlots (500-999-head capacity) and cattle from large feedlots (more than 1,000-head capacity) travels 170 miles and 166 miles, respectively.[702]

c. Transaction Methods

Calves in the cow-calf and stocker phase of production are sold primarily to other farming operations through auctions or negotiated sales.[703] From the 1960s through the 2000s, most fed cattle were sold to beef packers through negotiated sales in the local cash markets, but alternative marketing arrangements have become more prevalent in recent decades. Today, only small beef packers rely mostly or exclusively on local cash markets to procure cattle; large beef packers draw their cattle supplies primarily through alternative marketing arrangements and resort to cash markets for only nominal amounts of cattle or to meet unanticipated demand.[704]

Nonetheless, many transactions between feedlots and packers are still based on negotiations that occur in what is commonly referred to as the local cash market. "Each week, feedlots provide a list of fed cattle that are available for purchase and beef packers call to submit bids."[705] Beef packers typically have detailed information about the competitive environment from week to week, which they secure from conversations with feedlot managers, daily USDA reports, and other sources. "Most transactions in the cash market clear within a few hours late in the week."[706] Usually, prices are based either on the animal's carcass weight as measured at the beefpacker's plant (sometimes with adjustments for the yield and grade of the beef) or on the animal's live weight as measured at the feedlot.

Most transactions, however, are conducted under so-called alternative marketing arrangements (or AMAs for short). Under an AMA, the feedlot agrees to sell its cattle to the beefpacker at some date in the future, at the price to be determined by some formula. Two types of AMAs are common. The first is often referred to as "formula contract." Under a formula contract, prices are determined by those realized in a designated cash market on or around the delivery date of the cattle. "Average cash market prices are publicly known because the USDA collects and disseminates data on prices."[707] In the typical arrangement, the feedlot notifies the beefpacker when it has cattle ready for purchase, and the beefpacker then sets the delivery date. The payment to the feedlot is calculated based on the average cash market price from the week prior to delivery, with adjustments for yield and grade. Depending on the contract, the formula payment may also include a small premium. Under the second type of contract — often called a "forward contract" — the payments to the feedlot are pegged to the futures price of cattle on the Chicago Mercantile Exchange (CME). "The futures price can fluctuate over time, although it is supposed to converge with cash market prices as the delivery month approaches." The feedlot typically has an option to set the contract price to the future price on any date between the contract start date and the contract delivery date. "As formula contracts are pegged to the cash market and forward contract prices are pegged to futures prices (which ultimately converge to the cash market), increasingly the prices that packers pay feedlots for cattle is determined by a relatively small number of cash market transactions."[708]

2. Anti-Monopoly Policy and the Old "Meat Trust"

At the turn of the 20th century, the meat sector was dominated by a "Meat Trust" composed of five dominant meatpackers: Armour, Swift, Morris, Cudahy, and Wilson. As the FTC explained in a 1918 report on the meatpacking industry, these "Big Five" firms had "attained such a dominant position that they control at will the market in which they buy their supplies, the market in which they sell their products, and hold the fortunes of their competitors in their hands."[709] Not only that, the FTC went on, but the Big Five had leveraged their market power in the meat industry to invade and gain control, "similar in purpose if not yet in extent, over the principal substitutes for meat such as eggs, cheese and vegetable products, and [were] rapidly extending their power to cover fish and nearly every kind of foodstuff," "allied industries" like grocery distribution, and "even unrelated ones."[710] This dominance neither derived from, nor created, efficiencies of scale; indeed, "[t]he best economic data from the period suggests that the [Big Five] were no more efficient than their rivals and frequently less so."[711]

The FTC's report came out of an investigation ordered by a resolution of Congress in 1917, which directed the FTC to conduct a "hoof to table" inquiry into the meat industry and uncover any

"manipulations, controls, trusts, combinations, or restraints out of harmony with the law or the public interest."[712] As the FTC investigated the Big Five, it found that they had acquired their great size primarily by leveraging "monopolistic control of the market places and means of transportation and distribution" of livestock and meat products — specifically, the stockyards where livestock was bought and sold, the freight depots attached to them, the specialized (stock and refrigerated) railcars used to transport live animals and perishable products, and the cold storage facilities necessary to distribute and market fresh meat and dairy products throughout the country.[713] "Lacking access on equal terms to these facilities," the FTC concluded, "competitors of the five great packers [were] at their mercy, and, competition being stifled, the consumer similarly [was] helpless."[714]

The metastasizing power of the Meat Trust stirred fears of a rising "food dictator" throughout the country.[715] "The unequal condition" which the Meat Trust's rise had engendered between "the man who *sells* in the [stock]yard and the man who *buys* [in it]," lawmakers observed in 1921, not only drove livestock growers to "financial ruin and disaster," but also threatened "the equal, inalienable rights of the producer and consumer."[716] The Big Five used sweetheart deals to manipulate livestock ranchers and brokers and their trade organizations, creating "a pro-packer … faction within several of these organization" that "seemed on the whole to speak in the interest of the packers rather than their own."[717] Simultaneously, a revolving door developed between the Big Five and the USDA, which became so captured by the Big Five that members of Congress believed it could not even conduct a "genuine investigation" into the industry it regulated.[718]

Following the FTC's investigation, the DOJ brought charges of monopolization and restraint of trade against the Big Five, which ended in a consent decree in 1920. Under the terms of the decree, the Big Five disposed of their interests in stockyards, railroad terminals, market newspapers, and cold storage warehouses and agreed to refrain from engaging in the retail meat business and all "unrelated lines" of business, such as grocery wholesaling and fish processing.[719] Signaling the beginning of the *laissez-faire* era of the 1920s, however, the consent decree allowed the Big Five to keep the monopoly they had built up in the procurement, processing, and distribution of livestock and livestock products, including meats, butter, cheese, and eggs.[720]

At the same time the FTC was investigating the Big Five, Congress was undertaking "exhaustive hearings" on the "packer question" before the House and Senate Agriculture Committees.[721] Based on its findings, in 1921, Congress enacted what lawmakers called "a most comprehensive measure" to "assure fair competition and fair trade practices in livestock marketing."[722] Going "further than any previous law in the regulation of private business,"[723] the P&S Act prohibited meatpackers from using "any unfair, unjustly discriminatory, or deceptive practice," from imposing "any undue or unreasonable preference or . . . prejudice" on any "particular person or locality," and from engaging in any course of business "for the purpose or with the effect of manipulating or controlling prices" — all in addition to banning meatpackers from monopolizing or restraining commerce.[724]

Unfortunately, when it drafted the P&S Act, Congress made a fateful choice to entrust its enforcement exclusively to the USDA — which proceeded to ignore the law's existence for the next three decades. In the first 36 years after the P&S Act was passed, the USDA issued only 32 cease-and-desist orders under the Act. When a congressional panel investigated the USDA's record in 1957, it labeled what it found "a significant and shocking record of neglect and inaction in enforcement."[725] At the same time,

since the P&S Act gave the USDA exclusive jurisdiction in the regulation of livestock markets, neither the FTC nor any other agency could act in its place to protect ranchers, growers, small meatpackers, and independent livestock brokers from illegal trade practices — creating a "supervisory vacuum."[726]

Notwithstanding the limitations of the 1921 consent decree (and the USDA's lackluster enforcement of the P&S Act), the restrictions they imposed on the Meat Trust packers' ability to enter the livestock-growing, stockyard-operating, meat-retailing, and grocery lines of business served to prevent the Big Five from foreclosing smaller meatpackers' access to upstream supplies or downstream markets. Furthermore, in 1948, the DOJ sought to finish the job it started in 1921 by commencing proceedings to break Armour and Swift into five companies each and Cudahy and Wilson into two each.[727] Although the suit was ultimately dismissed in 1954, it served to chasten the anticompetitive impulses of the old Meat Trust as new competitors entered the industry in the post-war era. This, combined with the broader enhancement of antitrust protections against unfair business methods in the 1940s, enabled a wave of new, independent meatpackers to enter the field following World War II.

Over the 1950s, thousands of single-species, single-story slaughter plants were built near production areas in rural communities — ending the Big Five's centralization of slaughter within large plants near terminal markets in major cities.[728] The proportion of total slaughter accounted for by the industry's largest firms declined rapidly.[729] By 1963, the four-firm concentration ratio in livestock markets reached as low as 26% for cattle, 33% for hogs, 14% for chicken, and 23% for turkeys.[730] The competition between meatpackers was good for both producers and consumers: by 1970, fully 70% of the consumer's beef dollar went to cattle producers — and only 30% went to markups by processors and retailers.[731]

3. The Rise of the "Big Four": JBS, Tyson, Cargill, and National Beef

In the 1950s and 1960s, technological innovations — such as "on-rail" cattle slaughter and "on-line" carcass processing — allowed spread-out, single-story plants to streamline cattle processing and benefit from modest economies of scale.[732] Simultaneously, the erection of the federal highway system under the Eisenhower administration and the accompanying rise of the interstate trucking industry made shipping fresh beef products from plants in the countryside to urban markets more economical. Several upstart meatpackers — particularly IBP, Spencer Beef, and Monfort (so-called "New Breed" packers) — took advantage of these technological changes to build larger, more efficient slaughter plants on cheap land in the countryside and use them to challenge the Meat Trust incumbents (which came to be known as the "Old Line" packers). The location of these plants in rural communities allowed the New Breed packers to realize cost advantages through both legitimate efficiencies and the exercise of market power in isolated rural labor and cattle markets.

Generally, IBP and its cohort of meatpackers built their plants in small, rural communities in "right-to-work" law states, particularly Texas, Kansas, Iowa, and Nebraska. Placing large plants that required hundreds (and sometimes thousands) of workers in rural communities gave the New Breed packers substantial monopoly power over the labor markets they operated in. The fact that those labor markets were in "right-to-work" states, in turn, made sure they could exploit that power. Since "right-to-work" laws impeded unionization at the upstart packers' plants, they felt little pressure to abide by the industry-wide "master" labor agreements that the meatpacking unions had negotiated with the

Old Line firms since World War II. As a result, by the mid-1960s, the move into the High Plains gave the New Breed packers an unfair wage advantage over their Old Line competitors, ranging from 10 to 20% on average, and reaching as high as 50%, according to some reports.[733]

Simultaneously, the move to the High Plains enabled the New Breed packers to seal exclusive contracts with the commercial feedlots then emerging in the countryside. On the one hand, these contractual arrangements enhanced plant utilization by giving the New Breed packers a guaranteed, year-round supply of cattle, and the proximity of the contracted feedlots reduced the cost of transporting cattle to the New Breed packers' plants.[734] On the other hand, these contracts allowed the New Breed firms to hold substantial percentages of the cattle on feed in their draw areas captive, handicapping entry into those areas by other meatpackers (including the Old Line firms) and lessening competition for local ranchers' cattle.[735]

The spread of unfair labor and trade practices in the meatpacking industry was a symptom of a broader problem during this era — namely, the USDA's abiding unwillingness to enforce the P&S Act's protections in livestock markets. IBP, in particular, took advantage of this regulatory vacuum to engage in a notorious campaign of business racketeering throughout the 1960s and 1970s.[736] A former IBP executive who came forward during hearings of the House Small Business Committee in 1980 described IBP's business strategies as follows:

> Hughes Bagley, who had been terminated by IBP and was employed by Spencer Foods at the time of his testimony, believed that "somebody somehow had to stand up and be counted, or IBP was going to swallow up all of its smaller competition, including my new employer" as part of a "massive takeover by IBP of the packing industry." Bagley testified that IBP became "overly zealous in its attempts to control and monopolize the packing industry" and that "the idea of market domination was discussed continuously by Mr. Holman [the co-chairman of IBP] and others at IBP. It was almost as if we were waging war against our competitors. It was felt that the best way to achieve market domination was to control the industry at the production level because then we could control the industry at the retail level."[737]

The House Small Business Committee investigation at which Bagley testified found that IBP had, among other unfair and deceptive practices, "regularly resorted to predatory pricing practices to increase its share of the boxed-beef market."[738] One of the more shocking — though not atypical — examples of IBP's conduct during this era was that IBP had penetrated key markets "in the early 1970s" by "paying off gangsters and using illegal pricing policies."[739] Indeed, stemming out of this scheme, in 1974 one of IBP's co-founders, Currier Holman, was convicted "on a criminal charge of conspiring with a Mafia figure to bribe IBP's way into New York[.]"[740]

In addition to below-cost and discriminatory pricing, vertical integration played a crucial role in IBP's unfair labor and trade practices. In 1967, IBP became the first beef packer to forward-integrate into butchery (what is now called "processing"), equipping its plants to break down carcasses into primal or subprimal cuts of meat (round, sirloin, rib, chuck, etc.) that could be vacuum-packed and boxed for shipment to grocers and retailers. Previously, beef packers had shipped only whole carcasses to their customers, who then employed skilled butchers to process the carcasses into ready-for-sale cuts. Since in-house butchery departments at grocery chains like Safeway and Kroger were mostly unionized

while IBP's plants were mostly not, IBP's sale of "boxed beef" — particularly at below-cost prices — enabled grocery stores to fire and de-skill their unionized in-house butchers.[741]

At the same time, IBP used its butchery operations to degrade and control its competitors. Specifically, IBP "bought large quantities of carcasses from older packers, waited for their distribution systems to erode, then stopped buying from them."[742] Unable to afford live cattle due to the loss of revenue, and lacking a market for a large share of their output, the older firms would then quickly fold.[743] As a result of these unscrupulous maneuvers, by the mid-1970s, IBP's share of boxed beef sales was approaching 50%.[744]

Throughout the 1950s and 1960s, the Old Line meatpackers responded to the upstarts' challenge by investing in plant modernization and by reorganizing to reduce their labor costs. "In 1954, Cudahy led the exodus from Chicago; within six years most of the large plants there were idle."[745] Between 1959 and 1965, Armour modernized or constructed dozens of plants with state-of-the-art technology, cutting tens of thousands of workers from its payroll and moving substantial capacity out of urban centers like Chicago to the countryside in the South and Midwest.[746] To a remarkable extent, The meatpacking unions cooperated with Armour in its automation efforts, establishing a joint fund steering committee with the company to support dislocated workers.[747] Swift, Wilson and Cudahy likewise emphasized investments in new technology, and Wilson and Cudahy inked bargains with their unions comparable to the one secured by Armour.[748]

The results were dramatic. In inflation-adjusted terms, annual capital investment grew across the industry by more than half between 1955 and 1970, from $107.0 million to $168.2 million.[749] Over the same period, the productivity of meatpacking workers not only increased but doubled.[750] As the 1960s drew to a close, the old Meat Trust packers no longer dominated the industry like they once did, but they were still growing, profitable enterprises. Their revenues and profits were expanding year-over-year — even setting records — and their integrated animal slaughter and meat processing operations were efficient.[751] Indeed, the average profit rate enjoyed by Armour, Swift, Wilson, and Cudahy between 1961 and 1971 (7.79%) more than doubled the average profit rate they had enjoyed between 1925 and 1935 (3.50%).[752]

As the 1960s turned to the 1970s, however, changes in ownership brought capital investment at the Old Line packers to an effective halt. Between 1967 and 1972, all the major Old Line packers were acquired by financier-backed conglomerates "focused on capturing cash flow obtained through disinvestment" rather than "investment and modernization."[753] LTV bought Wilson in 1967. Greyhound gobbled up Armour in 1970. General Host took over Cudahy in 1972. Instead of being acquired by a conglomerate, Swift became one — starting to buy sundry unrelated businesses in 1968 and reorganizing as the Esmark holding company in 1973, with its meat business as just one of many subsidiaries.[754] Within these financialized conglomerates, the meatpackers were considered "cash cows."[755] They generated tremendous revenues, which helped their parent conglomerates balance profits and losses across their portfolios, keep earnings per share up, and secure capital for more acquisitions.[756] However, they were not considered businesses where capital investment would generate a quick, attractive return in the form of higher profits, so they were starved of it.[757]

Lewie Anderson, the head of the UFCW division representing meatpacking workers at the time, explained what happened to the Old Line packers this way: The conglomerates, he said, "kept their

old plants operating for as long as they could, sucking the profits out of them and putting the money into other ventures."[758] John Copeland, who joined Swift in 1948 and became its chairman after it was spun off from Esmark in 1980, agreed: "Very little help came down from the top, … They did not want this side of the business to grow."[759]

With the end of the 1970s and the onset of the Reagan administration, things took a turn for the worse. In 1982, the Reagan administration adopted a policy of limiting enforcement of the antitrust laws against corporate mergers and acquisitions, shifting Old Line packers' incentives even further away from innovation and investment while enabling a handful of moneyed conglomerates to roll up the industry.[760] That same year, Reagan's FTC seemingly gave a green light to price-fixing and other unfair practices in meatpacking by abruptly ending a three-year investigation into an alleged conspiracy among the largest New Breed packers — IBP, MBPXL, and Spencer Foods — and 10 large grocery stores to fix cattle prices with a terse announcement: "{N]o further action is warranted by the commission at this time."[761]

Despite the upheaval caused by the financialization of the Old Line packers and IBP's unfair methods of competition, as of 1980, the four-firm concentration ratio in cattle slaughter was still only 36%.[762] However, the change in antitrust policy starting in 1982 triggered a wave of serial acquisitions that progressively concentrated the cattle slaughter market in the hands of just four dominant packers.[763] Cargill — which entered meatpacking in 1979 by acquiring MBPXL — rolled up the slaughter plants of Dugdale (1983) and Spencer Beef (1987) and merged them with MBPXL to create a consolidated subsidiary named Excel.[764] ConAgra entered meatpacking by acquiring Armour in 1983, then rolled up Northern States Beef (1985), Monfort (1987), E.A. Miller (1987), and Sterling Beef (1987). In 1987, ConAgra also acquired a controlling interest in Swift, which had just merged with Val-Agri the year before.[765] Meanwhile, IBP rolled up plants from various packers, including Illini Beef and Hygrade in 1982 and Iowa Pork in 1988.[766] At the tail end of this consolidation wave, National Beef was created through a combination of Dubuque Packing and Beef Nebraska in 1988.[767]

By the end of the decade, four dominant firms — IBP, Cargill, ConAgra, and National Beef — had emerged with control over more than 70% of cattle slaughter in America.[768] In thirteen regional cattle procurement markets identified by reports to the U.S. House Committee on Small Business, average four-firm concentration reached 83 percent in 1986 and "very likely increased . . . further" to around 90% after the series of beef-packer mergers that took place in 1987.[769] Notably, a 1990 study of consolidation in meatpacking found that essentially all of the increase in concentration that took place in beef packing between 1977 and 1982 — that is, before the Reagan administration's change in merger policy — was attributable to the Old Line packers' plant divestments and IBPs internal expansion. In contrast, the study found that the increase in beef packing concentration that took place between 1982 and 1988 "was almost totally driven by mergers and acquisitions."[770]

These mergers and acquisitions were not failing-company transactions in which the acquired packers could not survive independently. For example, in 1980 and 1981, just before Greyhound sold Armour to ConAgra in 1983, Armour had actually earned record profits.[771] Furthermore, in 1982, Greyhound busted the meat cutters' union at Armour by shutting down all of its plants, severing all of their employees, and reopening them without union representation — so even the modest wage disadvantage that Armour had previously experienced was gone.[772] As an indication of the fact that

Greyhound expected Armour's plants to be profitable, it sold them to ConAgra primarily in exchange for shares in ConAgra — not cash.[773]

Nor were these mergers and acquisitions motivated by the pursuit of economies of scale or scope, or the pursuit of operational or managerial efficiencies more broadly. While the conventional wisdom is that modest scale economies exist in cattle slaughter and processing at the plant-level, those economies did not require multi-plant ownership to realize, and no research has documented the existence of scope economies associated with firm-size or multi-plant ownership in beef packing.[774] More to the point, as numerous researchers have found since the 1990s, the Big Four did not even begin to coordinate "procurement, slaughter, and downstream marketing activities . . . across their multiple plants in any meaningful way" until the late 2000s.[775]

4. Competition in Beef Packing Today

Since then, the Big Four meatpackers have been entrenched, with no meaningful challenge to their dominance.[776] The only changes that have occurred are in the Big Four's nameplates. Tyson Foods — a dominant poultry integrator — acquired IBP in 2001.[777] Brazilian meatpacker JBS acquired the beef division of Smithfield in 2008 and that of ConAgra in 2007, after the latter had been spun off as "Swift & Co." in 2002.[778] JBS tried to roll up National Beef as well in the mid-2010s but was blocked by DOJ. In 2018, however, another Brazilian food company, Marfrig, was allowed to acquire National Beef, giving the two Brazilian firms control over approximately 40% of all cattle processing in the United States.[779]

5. Concentration, Consolidation, and Vertical Integration

Today, these four vertically-integrated protein conglomerates control 80-85% of national cattle processing volume: JBS USA (20-25%),[780] Tyson Foods (20-25%),[781] Cargill (15-20%),[782] and National Beef/Marfrig (~14-15%).[783] Outside the Big Four, only 16 other companies procure and slaughter a substantial amount of cattle. As of 2021, the 10 largest meatpackers controlled 91% of the national cattle slaughter, and nearly all fed cattle slaughtered in the United States (98%) was processed by just 20 firms.[784] In the local markets where cattle are actually bought and sold, concentration is even more severe and, in many cases, "approaches literal monopoly."[785] The USDA has recently found that "there are commonly only one or two buyers in local geographic markets, and few sellers have the option of selling fed cattle to more than three or four packers."[786]

Importantly, the three largest of the Big Four — Tyson, JBS, and Cargill — have become dominant not just in beef packing but across the major meatpacking industries.[787] Cargill is dominant in both cattle and poultry processing, while JBS and Tyson are dominant across all three major meats — beef, pork, and poultry.[788] All three are using serial acquisitions to expand into other protein industries, such as salmon processing[789] and meat alternatives.[790] Across all meat livestock species, the four largest firms now account for 51% of the value of U.S. livestock production, the 10 largest firms account for 71%, and the 20 largest firms account for 82%.[791]

Before meatpacking consolidation took off in the 1980s, only 28% of cattle were processed in large plants with 500,000+ head capacity.[792] As of 2022, the 35 largest plants (annual capacity of 300,000+)

processed approximately 84% of all cattle processed in the United States. The largest 21 of those plants, which have an annual capacity of 500,000-head or more each, processed over two-thirds (67%) of all cattle processed in the United States that year, while twelve mega-plants with an annual capacity of 1,000,000-head or more alone processed nearly half (49%).[793] By consolidating processing capacity in less than three dozen locations in this way, beef packers appear to have eliminated substantial inter-plant competition for farmers' cattle from geographic markets throughout the United States.[794]

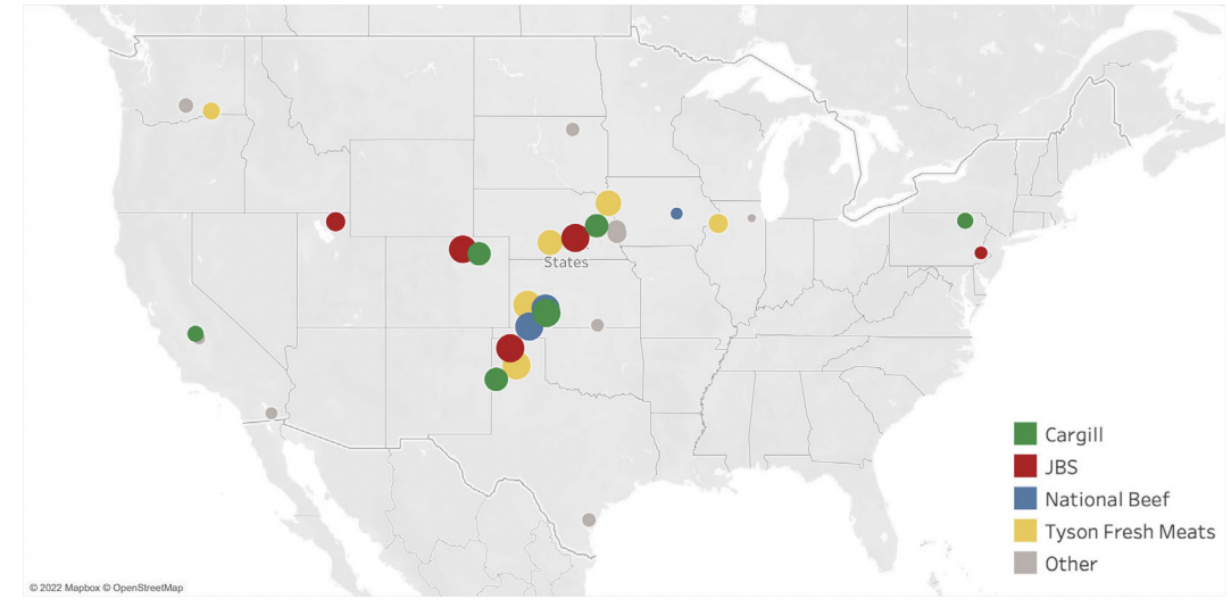

Figure 13: Fed cattle beef packing plants by daily capacity (size) and firm (color). Source: Pudenz, C. C., & Schulz, L. L. (2024). Multi-plant coordination in the U.S. Beef packing industry. American Journal of Agricultural Economics, 106(1), 382-415. https://doi.org/10.1111/ajae.12391

The move towards heightened concentration in beef packing has been accompanied by growing beef packer control over cattle production and marketing channels. For most of the mid-20th century, producers sold fed cattle primarily through public markets, in which prices were established transparently through open auctions attended by many buyers and many sellers.[795] Since beef packers began consolidating in the 1980s, however, the pool of buyers available to cattle producers has dwindled, and open cash markets for cattle have largely dried up.[796]

Bilateral, long-term production and marketing contracts between large packers and feedlots have become the primary transaction mechanism for fed cattle in nearly every part of the country.[797] Between 1995 and 2022, the percentage of cattle sold through forward and formula marketing contracts rose from 18.1% to 73%.[798] Over the same period, the percentage of cattle sold through negotiated cash trades plummeted from 81.9% to about 27%.[799] Moreover, the latest available data suggests that around a third of U.S. cattle are being raised pursuant to dedicated production contracts with packers.[800]

Through these contractual arrangements, the largest beef packers have given large fed cattle producers guaranteed market access in exchange for a dedicated cattle supply they can use to meet "high probability demand for beef."[801] The institutionalization of these captive supply relationships over the past two decades has, in effect, partially integrated the largest feedlots with the largest beef packers.[802] While marketing contracts are less restrictive than production contracts, both enable meatpackers to hold cattle supplies captive and exercise substantial control over the methods, facilities, and materials employed by cattle producers — all without requiring them to bear the burdens and risks of directly owning and raising cattle.

Tellingly, since 2017, the beef packing giant Cargill has fully divested its feedlots, abandoning a foray into cattle feeding it began a decade before and opting instead to reserve the output of its old feedlots through contracts.[803] Following Cargill's lead, after owning feedlots for decades, Tyson, National Beef, and JBS made similar moves to substitute contractual control over cattle in place of ownership.[804]

In Focus: How JBS Used Corruption to Acquire a Dominant Position in U.S. Beef and Cattle Markets

JBS is a Brazilian state-backed company. It acquired Swift Foods Co. outright in 2007, immediately making it the third-largest pork and beef processor in the United States. Two years later, it bought a controlling stake in Pilgrim's Pride. By 2015, it had also acquired Cargill's pork division. Today, JBS is the largest beef processor, the second-largest pork processor, and the second-largest chicken processor in the United States, controlling anywhere between one-sixth and one-fourth of the nation's supply of each major protein.[805]

Brazil's national development bank was the primary financier behind JBS's acquisition spree in the late 2000s, investing about $580 million into the company in 2007, just as the company was buying Swift, and $2 billion in 2009 when the company bought Pilgrim's Pride.[806] Nearly a decade later, law enforcement investigations revealed that JBS had secured this largesse from the Brazilian government through "systemic graft."[807] In a 2017 plea deal with Brazilian prosecutors, JBS admitted to bribing thousands of Brazilian politicians (including the country's then-president Michael Temer) to secure cheap government funding to finance its global ambitions. Three years later, it admitted the same in a U.S. court after the DOJ brought a suit under the Foreign Corrupt Practices Act.[808] Nonetheless, in a signal of how dominant JBS had become using its ill-gotten foreign capital, the USDA has been unable to debar the company from federal procurement — citing the lack of competitors to fill its place.[809]

Indeed, looking only at JBS's on-shore capacity understates the power it has acquired over American cattle and beef markets. JBS is the largest food company in the world, with $65 billion in net annual income.[810] In 2021, JBS's global operations — located mostly in Brazil, the United States, Australia, and Mexico — were estimated to have slaughtered more than 26.8 million head of cattle.[811] For comparison, only 33.8 million head of cattle were slaughtered in the United States in 2021.[812]

6. Collusion, Coordination, and Market Manipulation

As a result of the concentration and vertical integration described above, the regional cash markets for fed cattle have been relegated into an "insurance" or "residual" source of cattle supplies for the largest packers, to which they resort only to satisfy "low probability demand" for beef.[813] Almost all cattle transactions in U.S. livestock markets today take the form of alternative marketing arrangements (AMAs).[814] In theory, these arrangements should allow for cattle producers and beef packers to rationally contract in ways that evenly distribute the risks to each party of particularly high or low prices at the time of delivery.[815] In practice, however, AMAs today leave packers with a variety of tools to manipulate the prices they pay producers at the time of delivery.

a. "Thin" Cash Markets Enable Collusion, Depress Prices

In most regions of the country, cash markets have become so thin and uncompetitive that they no longer provide reliable price signals for reference in AMAs. The percentage of cash market procurement in recent years has reached as low as 12.5% of total cattle sales in the Kansas (KS) region, 8.3% in the Colorado (CO) region, and an alarming 2.6% in the Texas-Oklahoma-New Mexico (TX-OK-NM) region.[816] Only the Iowa-Minnesota (IA-MN) region has reliably maintained cash market procurement of 50% or more of marketed cattle in recent years.[817] Meanwhile, the Nebraska (NE) region's percentage has hovered around 30-40%.[818] The USDA has found that as cash markets thin down in this manner, asymmetries of information can develop that systematically benefit processors over producers:

> Market observers and regulators find less data to use, analyze, and publish, and producers are left to wonder whether they are being paid a fair price in a shrinking cash market or in contracts where price benchmarks may not be available. Additionally, because the contracting process involves real transactions costs, it poses several new risks to some thin-market producers. . . .
>
> [Further,] because thin market prices may not be disclosed publicly, processors who interact with several producers have an advantage during negotiation — for example, processors who successfully contracted with nearby producers have a clearer picture of a similar producer's likely costs and the lowest price they are willing to accept.[819]

With extremely low volumes of spot market sales reported, packers can exert substantial influence over spot market prices by conducting a small number of sales, steering them in the direction they deem to be in their interest.[820] Indeed, where large meatpackers have minimal or no competition from other buyers, packers have been observed to fix spot market prices via an "all or nothing" approach — putting out a request for a quantity of cattle at a particular price and forcing producers to either accept or reject the offer without engaging in a competitive negotiation.[821] Consistent with packers' incentive and ability to drive cash market prices down when taking delivery of cattle under an AMA, recent research has found that every 1% increase in the fraction of cattle purchased under an AMA is associated with a nearly .06% reduction in the cash market price for cattle.[822]

b. Price-Fixing Lawsuits

Against this backdrop, numerous lawsuits have alleged a variety of collusive schemes among beef packers in recent years. In 2019, class-action lawsuits were filed by grocery stores, ranchers, restaurants and other wholesalers in Minnesota's federal court against JBS, Tyson, Cargill, and National Beef, alleging that the "Big Four" beef packers had conspired to suppress the number of cattle being slaughtered at least since 2015 to drive up the price of beef and suppress the price of cattle.[823] The ranchers' case specifically alleged that the Big Four strategically cut back on cash market cattle bids, closed plants, and imported foreign cattle in order to force farmers to accept lower prices, with an economic analysis showing that these manipulations depressing the price of fed cattle by an average of 8% starting in 2015.[824] As a result, the distance between the price of wholesale beef to consumers and the price of cattle paid to producers — also known as the "spread" — increased over 60% between 2016 and 2018, according to the ranchers' complaint.[825]

In Focus: National Beef's Acquisition of Iowa Premium Undermined the Last Healthy Cash Market In the Country

In 2019, National Beef entered the IA-MN region by acquiring Iowa Premium, a midsized beef packer that was the largest buyer of cattle in the region and that would certainly have been National Beef's most important competitor had National entered the region by building a new plant.[826] Before this acquisition, the IA-MN region was "the last bastion of robust regional competition for fed cattle" in the country.[827] All of the other USDA-defined cattle procurement regions were dominated by the Big Four meatpackers — JBS, Tyson, Cargill, and National Beef — that processed around 85% of U.S. cattle.[828] In these regions, the Big Four generally sourced their cattle supply through restrictive contracts with large feedlots and shunned the weekly "cash market" on which smaller feedlots sold their livestock.[829] The Iowa-Minnesota region was different. There, small and midsize meatpackers like Iowa Premium were still a substantial factor, and they sourced their supply primarily on the cash market from independent feedlots.[830] As a result, by 2019, the IA-MN region was the only region of the country left where over half of all cattle was still sold on the cash market.[831]

The importance of this last competitive cash market to the nation's small cattle feeders could not be overstated. It directly sustained more than a quarter of the nation's fed cattle producers with under 1,000-head capacity in Iowa alone — around 5,500 in total — and maintained the least consolidated cattle feeding industry in the country. And, crucially, the existence of a functioning cash market where producers could get competitive prices for their cattle in the IA-MN region gave producers in other regions a benchmark against which to compare the prices they were getting.[832]

As the leading midsize packer in Iowa, Iowa Premium played a critical role in preserving this open, competitive market for fed cattle in the IA-MN region. It sourced nearly 300,000 heads of cattle for slaughter annually, generally on the cash market, and was known to offer price premiums for quality production methods that made it an innovator in consumer beef markets.[833] This made Iowa Premium an important

outlet for independent producers in the region and a pillar of the region's cash market. By rolling Iowa Premium up into the Big Four oligopoly, National Beef deprived local producers of a critical alternative to the contract-production system run by the dominant beef packers. Since the acquisition, cash trading in the IA-MN region has substantially declined. While cash market sales ranged from 60-75% of all sales in the IA-MN market between 2005-2011, that number began to decline in the mid-2010s. In 2021, the percentage of cattle sales in cash dropped below 50% for the first time.[834]

7. Unfair and Exclusionary Conduct

Facing inhibited market access and depressed profitability in the conventional supply chain, since the 1990s ranchers have increasingly turned to smaller processing facilities[835] — including ones they open themselves — and to niche, value-added markets for local, grass-fed, and organic beef in order to generate sustainable returns. Smaller processors, in turn, have increasingly relied on the ability of independent ranchers to access premiums in these niche markets in order to profitably slaughter and process cattle at relatively low volumes. These symbiotic relationships between small-to-midsize ranchers and processors have contributed immensely to the rejuvenation of America's local food systems since the mid-2000s.[836] Over the past decade, the Big Four have sought to dominate this haven for small producers, too — using a wave of unfair, deceptive, and anticompetitive strategies to capture this higher-margin segment without bothering to produce a premium product at all.

a. The Grass-Fed Beef Segment: A Haven for Small Producers

Cow-calf producers in the grass-fed and conventional markets operate similarly, since all cattle begin their lives on pasture. The clearest distinction between grass- and conventionally-fed beef production occurs at the stocker and finishing stages. Grass-fed cattle remain on pasture and are finished on a diet of grass or other forages. They grow more slowly and are typically slaughtered at 20-28 months of age, which has allowed for more whole-life operations to persist, where the cow-calf, stocker and finishing phases take place on the same property.

After slaughter, meat from grass-fed animals is usually marked with a USDA approved grass-fed label and sold into niche grass-fed beef markets for a premium. Branded meat companies and cooperative ventures (*e.g.*, Bartels, Grass Run Farms, Panorama Meats, Grassland Livestock Alliance, etc.) buy an estimated 81% of the domestic, finished grass-fed animals by volume, while the remaining 19% are mostly sold by producers through direct marketing. Both branded programs and individual producers tend to use smaller, independent processing facilities. These facilities typically charge a fee for their services on a contract basis and do not buy or own the animals.

Unlike the consolidated, vertically integrated supply chain for conventional beef, which channels revenue flows toward a handful of metro-headquartered corporations, the grass-fed beef supply chain remains local and decentralized.[837] "Nearly all grass-fed finishers work with local and regional processors" to process their cattle into carcasses and cuts, pay independent truckers and cold storage facilities to transport and hold their goods, use third-party specialty meat distributors, and sell a significant portion of their fresh beef products directly to local or regional grocers, foodservice providers, or individual consumers.[838]

The well-established preference of American consumers for beef derived from cattle born, raised, slaughtered, and processed in the United States has been a critical competitive factor for domestic grass-fed ranchers and their processors.[839] Environmental factors give grass-fed cattle producers in other countries a structural cost advantage over domestic ranchers.[840] For example, in the grass-fed segment, favorable weather conditions allow Australian cattle to feed on grassland pasture year-round without irrigation or fertilization.[841] This environmental advantage dramatically cuts the cost of production for Australian producers: On average, a large Australian grass-fed operation spends around a third of what a large American grass-fed operation spends on each pound of cattle weight gained — and just 10-15% of what a small American grass-fed rancher spends.[842] As a result, importers have long been able to buy cheap Australian grass-fed cattle, slaughter it in overseas plants, ship the carcasses or primal cuts for further processing in the United States — and still ultimately undercut the price of domestic grass-fed beef.[843]

Under these conditions, American grass-fed producers have historically relied on the preference of consumers for U.S.-origin products to stay competitive by delivering a premium product: Fresh beef from a grass-fed cow, born on an American family farm, raised using sustainable methods, and slaughtered in the United States. Until the repeal of mandatory country-of-origin labeling (MCOOL) in 2015, that reliance was well-placed: U.S. producers consistently enjoyed over 60% of the American grass-fed market despite selling their beef at a higher price point.[844]

b. The "Big Four" Takeover: Acquisitions, Origin-Washing, and Green-Washing

Over the past decade, the Big Four meatpackers have set their sights on the niche market for local, organic, and grass-fed beef. Instead of legitimately developing their own value-added meat supply chains and competing on the merits, however, the largest packers have sought to capture this higher-margin segment of the beef market through strategic acquisitions, false advertising, and other unfair and exclusionary practices. For most of the last 30 years, the largest buyers of organic and grass-fed cattle and marketers of non-conventional beef were independents like Panorama Meats, Niman Ranch, Iowa Premium, and Grass Run Farms.[845] Since 2017, however, a slew of acquisitions by JBS, National Beef, and Perdue Farms have transformed the niche segment.

Niman Ranch and Panorama Meats have been rolled up by Perdue, a dominant chicken processor, while Grass Run Farms and Iowa Premium have been acquired by JBS and National Beef, respectively. These acquisitions eliminated the independent firms that would have given the dominant packers their strongest competition had they entered the local-organic-grass-fed market *de novo*. They also restricted the outlets available for independent ranchers' cattle while giving the dominant incumbents well-recognized brands through which to green- and origin-wash their own cattle and beef.

Taking advantage of lax enforcement against fraudulent U.S.-origin claims since 2015, JBS and other dominant beef packers have flooded the domestic market for grass-fed beef with counterfeit "Product of U.S.A" beef products derived from lower-cost foreign cattle. Within 2 years of the repeal of MCOOL legislation, American ranchers' share of the domestic grass-fed beef market fell from over 60% to less than 25 percent.[846] Ranchers, journalists, and market analysts alike have attributed the shift to the "rampant mislabeling" of cheaper foreign beef.[847] As Joe Fassler explained in The Counter: "If we can't tell the difference between Australian and American [grass-fed] beef — if both are labeled 'Product of

U.S.A.' — even a locally minded shopper is more likely to go with the cheaper product."[848] Agricultural policy expert Austin Frerick recently documented how JBS, in particular, uses both origin- and green-washing to steal opportunities from honest processors and family ranchers:

> Because the Batista Brothers [who own JBS] made it a point to maintain the brands they bought, most Americans do not know that they are actually buying meat from this Brazilian company. In fact, the brothers don't sell any meat under the JBS name in America. This hidden ownership obfuscates their control over the American meat market . . .
>
> As of 2023, JBS listed forty-three different meat brands that it sold in America alone. This list included several high-end brands that give the illusion of sustainable family farms. One such brand is Grass Run Farms, which describes itself as working with a "small network of family farmers in America's Heartland to ensure high quality, grass fed beef through careful production and sustainable management." The brothers also own Just Bare chicken, whose website proclaims, "We could tell you everything that goes into our products, but truth is there's nothing to see here. No antibiotics. No added hormones or steroids. No added preservatives. Just simple protein." Both websites feature images of idyllic family farms.
>
> The one that stands out most to me is Cedar River Farms, which I saw highlighted a few years back at a famous restaurant near the White House as one of its "family farm" providers. The name caught my eye because my hometown is named after the Cedar River, which runs through it. At the time, I figured the operation must be based somewhere along the river. I only later discovered that it was actually based hundreds of miles away in Greeley, Colorado, Wesley Batista's adopted hometown and the location of JBS's American headquarters.[849]

This false image comes at the expense of actual ranchers. As dominant meatpackers have passed their lower-cost imports and industrially-produced products as premium U.S.-origin meats over the past few years, the effect of their deception has not been simply to deprive independent ranchers of some of their sales. The American grass-fed movement was built on an alternative vision for beef production. It grew out of the efforts of individual innovators rooted in local economies. The premium margins that a grass-fed model enabled a rancher to earn were intended to help — and did help — thousands of ranchers transition from industrial agriculture methods to regenerative and humane ones. Over the past few years, however, cheap imports masquerading as domestic products have undermined the price structure for genuinely American grass-fed beef, collapsing profit margins for small ranchers.

In the words of grass-fed farmer Will Harris, the unfair competition facilitated by lax enforcement against misbranding of all kinds — from origin-laundering to green-washing — has made getting a

"fair return" on a "regenerative, compassionate, and fair" ranching operation "elusive." Harris is a member of the board of the American Grassfed Association and the owner of White Oak Pastures, a 158-year-old regenerative farm producing grass-fed beef in Bluffton, Georgia.[850] "I don't begrudge importers or producers from other countries selling to knowing consumers that want to buy that imported product," Harris told The Counter in 2019.[851] "But I'm appalled at what the deception has done to the economies of our membership," he continued. "It has moved the needle from [grass-fed] beef producers being profitable, to being a very break-even — or, if you're not careful, a losing — proposition."[852]

8. Harms to Farmers and Communities

The transformation of cattle markets over the past four decades has dramatically undermined the viability of ranching operations with less than 1,000-head capacity, driving tremendous consolidation in the live cattle industry. Between 1980 and 2011, nearly 36,000 small fed-cattle operations — out of a total of 110,000 feedlots of all sizes — exited the market.[853] Since then, small operations have only disappeared faster; between 2011 and 2023 alone, the country lost over 50,000 of them.[854] The mass disappearance of these ranchers has led to a dramatic polarization in the fed cattle segment of the live cattle industry — with dominant meatpackers and corporate feedlots coalescing on one end and independent ranchers and processors on the other.

To begin with, the relative size and sales of small fed-cattle producers have become minuscule compared to other producers. Out of approximately 26,000 feedlot operations left in the United States in 2023, about 22,500 were small producers, but their share of the total volume of cattle marketed by U.S. feedlots was slightly over 12%.[855] In contrast, the remaining 3,000 or so large producers finished over 87% of such cattle.[856] As of 2020, the majority of the nation's cattle inventory was controlled by around 200 large producers with a +24,000-head capacity each — and just 74 mega-feedlots with a +50,000-head capacity each controlled over 33%.[857] At the same time, the relative incomes of small fed-cattle producers have also diverged from those of large producers. Compared to fed-cattle producers with more than 1,000-head capacity, small producers generally are denied the bonus, financing, and risk-sharing terms offered to industrial-scale fed-cattle producers and are required to sell their cattle to packers on at-will cash markets for lower aggregate compensation.[858]

This differential procurement channeling by large packers has structurally inhibited the ability of small, independent ranchers to access conventional markets. By controlling a full or near-full supply of cattle through forward contracts at any given time, the largest beef packers have consolidated not only significant buyer power but also the power to deprive small producers of access to markets entirely. Unsurprisingly, as dominant meatpackers have wielded this gatekeeping power over the past three decades, the profitability of small fed-cattle producers has plummeted — going from an average profit of about $50 per head in 1990 to an average loss of about $50 per head in 2021.[859]

Against this backdrop, small fed-cattle producers — particularly the many, if not most, who operate in localities where they can only feasibly sell their products to one or two packers — have become profoundly vulnerable to economic abuse. Compelled to use local packers as their sole distribution channel, they are isolated from alternative trading networks. Moreover, in highly concentrated local cash markets — including the entire Colorado trading region — opacity about actual market conditions

has become entrenched, as the USDA no longer publishes price information because of potential confidentiality concerns.[860] As packers have reportedly used their power to threaten and intimidate those who speak out about abusive industry practices, small producers have even become isolated from law enforcement and public officials.[861]

The Dairy Industry

1. Background

The dairy sector encompasses six distinct stages. The first is production: Raw milk is produced on dairy farms from dairy cows. The second is marketing. A dairy farmer can sell their raw milk through a direct transaction with a processor or an intermediate aggregator, or they can participate in a cooperative to market their raw milk together with other dairy farmers. Once a sale is made, the raw milk is tested, loaded onto trucks, and hauled to the processor — typically less than 40 miles due to perishability concerns and transport costs.[862] Finally, the processor turns the raw milk into fluid milk, which is either bottled and distributed, or processed further into other dairy products (such as butter, cheese, yogurt, and ice cream) and sold to retailers and distributors.

2. Concentration, Consolidation, and Integration

Most participants in the dairy sector are small, single-stage operators that are not vertically integrated across the various stages of dairy production. However, the share of milk produced, marketed, and processed by these operators today is relatively small. At the farm level, the largest 2.5% of dairies — those being the 834 dairy operations with more than 2,500 dairy cows each — produce nearly 45% of American raw milk annually, according to the 2023 Census of Agriculture.[863] A single cooperative, Dairy Farmers of America (DFA), aggregates and markets around 30% of the country's raw milk from over 14,000 dairies, and the eight largest milk cooperatives together account for over 54% of annual milk production.[864]

DFA's power is magnified by virtue of its vertical integration downstream from the farm into testing, hauling, processing, and distribution.[865] Indeed, DFA is the nation's largest milk processor, controlling nearly 15% of all milk product sales — and over 39% of fluid milk sales specifically.[866] Accordingly, it buys much of the raw milk its marketing branch sells and enjoys a near-monopsony on raw milk in many regions because of the lack of alternative plants to which local dairies could feasibly ship their milk.[867] Taken together, the top four milk processors — DFA (~15%), Land O' Lakes (~10-12%), Saputo Inc. (~7%), and Nestle (~7%) — control nearly half of all milk and milk product sales nationwide.[868] The national market for fluid milk, however, is even more concentrated, with the top three firms — DFA (39.1%), Land O'Lakes (35.2%), and California Dairies (8.8%) — alone capturing around 83% of all U.S. fluid milk sales as of 2022.[869]

This concentration in the milk processing industry is a product of a series of acquisition waves that swept the industry in the 1980s and 1990s, followed by mega-mergers among dominant incumbents in more recent years. Suiza Foods entered the U.S. dairy industry in 1993 and acquired 39 competing milk processors before the end of the decade to become the largest dairy company in the United States.[870] Dean Foods, a large milk company since the 1950s, went on its own acquisition spree over

this period, acquiring 14 rival milk processors in 1997 and 1998 alone.[871] In 2001, after more than 50 acquisitions total had built the two companies into consolidated juggernauts accounting for 35% of fluid milk processing in the United States — and in some regions of the country, like New England, fully 70%[872] — Dean Foods and Suiza themselves merged.[873] In the maneuvering to gain approval for the deal from antitrust authorities at the time, DFA and other investors created a joint venture called National Dairy Holding Group L.P., which traded DFA's pre-existing 38.2% interest in Suiza for 11 fluid milk plants from Suiza and Dean. By 2012, the four largest firms accounted for 29.9% of cheese sales, 46.3% of fluid milk sales, and 74.6% of butter sales in the United States — and concentration has only increased since, particularly with DFA's acquisition of Dean Foods in 2020.[874]

3. Unfair and Exclusionary Conduct

In addition to the monopolistic M&A strategies of dominant milk processors, another key driver of consolidation in the dairy sector over the past decade has been unfair and predatory conduct by the nation's largest grocery chains, including Walmart, Kroger, and Albertsons.

Retailers — especially supermarket and convenience/dairy store chains — first entered milk processing in the post-war decades between the 1950s and 1970s. During this era, raw milk prices were stabilized through USDA marketing orders and supply-management programs; state "fair-trade" laws allowed milk processors (like other producers and manufactures of retail goods) to set the retail price of their products. At the same time, strong enforcement of the Robinson-Patman Act against commercial discrimination prohibited chain stores from using their buying power to extract more favorable terms from milk processors. Together, these policies meant that chain stores could not lure customers into their stores with artificially low ("loss-leading") prices on milk staples. If they wanted to compete on milk and milk-product prices, chain stores had to either source those products from more efficient processors that could produce and sell milk products at lower prices to all of their buyers, or they had to try to build more efficient milk processing plants of their own. Many — including A&P, Kroger, Safeway, and Southland, a forebear of 7-Eleven — opted for the latter. By the 1970s, approximately 20-30% of fluid milk sales were made by supermarket-owned plants, which competed felicitously alongside dairy cooperatives and proprietary (investor-owned) dairy companies for the output of dairy farmers and the custom of dairy consumers.[875]

This situation changed in the 1980s. Most states repealed their fair-trade laws, and federal enforcers stopped enforcing the Robinson-Patman Act. This eliminated the original incentive for chain stores to build and operate milk processing plants. Additionally, whereas FTC enforcement actions had "brought a virtual halt to acquisitions by the eight largest dairy companies" from the mid-1950s through the 1970s,[876] the Reagan administration abandoned this policy in 1982. This gave chain stores an easy way out of the milk processing business. Instead of continuing to invest in their plants, Kroger, Safeway, A&P, Southland, and other supermarket, convenience-store, and dairy-store chains let their plants depreciate in value and then sold them to competitors. Mostly, the buyers were proprietary (investor-owned) processors like Borden and Dean Foods, which took advantage of the deregulatory environment to rapidly consolidate the fluid milk industry (as described above).[877]

Since the turn of the 21st century, however, the fortunes of Borden, Dean, and other non-cooperative processors have wilted as the grocery sector has consolidated and dominant retailers have re-entered

milk processing — this time without the guardrails of the fair-trade and antitrust laws that existed in the 1960s. By the mid-2000s, Kroger had rebuilt the capacity to process and bottle between 90% and 100% of the milk sold in its stores. Walmart and Albertsons followed Kroger's lead in the 2010s.[878] Albertson's opened its first plant in 2014. Walmart announced that it would open its first plant in 2016. By the end of the decade, these vertical integration moves — together with the grocers' proclivity to sell their white-label milk at a loss to lure in shoppers — had a dramatic effect on the structure of the dairy industry.

Dean Foods — the leading dairy processor at the time — had sold 15-20% of its production to Walmart for years at that time. In early 2015, there was a dispute between the companies: Walmart wanted Dean to lower its prices in tandem with commodity milk prices so Walmart could increase its profits on retail sales of Dean milk. Dean declined. Walmart responded by lowering the price of its private-label milk steeply below Dean's branded milk. Almost immediately, sales of Dean's branded milk slowed to a crawl at Walmart stores. By the end of 2016, Dean Foods had lost around 5% of its total sales, which translated into a loss of nearly 50% of its net profit.[879]

The hits did not stop there. Food Lion, a grocery conglomerate with 1,000 stores on the East Coast, terminated its contract with Dean in early 2018 — opting to buy its milk supply from Kroger.[880] By the time Walmart's plant opened a few months later, Dean was in bad shape. In August of that year, Dean reported a quarterly net loss, cut its financial outlook, and closed plants across six states. Walmart continued expanding its milk processing capacity. In February 2019, Dean reported another quarterly loss, and its financial statements showed that its total sales — and the percentage of them going to Walmart — had declined precipitously. By November, it had filed for bankruptcy.[881] DFA — which had been closely aligned with Dean Foods for decades prior to its bankruptcy — ended up buying Dean's assets out of liquidation, including 44 of Dean's 60 dairy processing plants.

4. Harms to Farmers and Communities

The growing concentration and vertical integration of the milk industry downstream from the farm have deeply undermined the viability of small and independent dairy farm operations. Adjusted for inflation, the price of raw milk dropped to some of the lowest levels in a half century over the past several years — a collapse fueled in part by conspiracies to fix prices among dominant milk processors DFA, Borden, and Dean Foods (before its merger with DFA).[882] In tandem with the growth of concentration in dairy processing, federal agriculture policy shifted from a focus on supply management to a focus on supply maximization — with subsidy programs similar to those in the grain and oilseed sector serving to entrench mega-dairies but delivering little support to family-scale operations.[883] As a result, since 1996 consumer milk prices have increased by roughly 125%, while the price of raw milk paid to farmers has increased by less than 50%, and oftentimes falls to below 1990s price levels.[884]

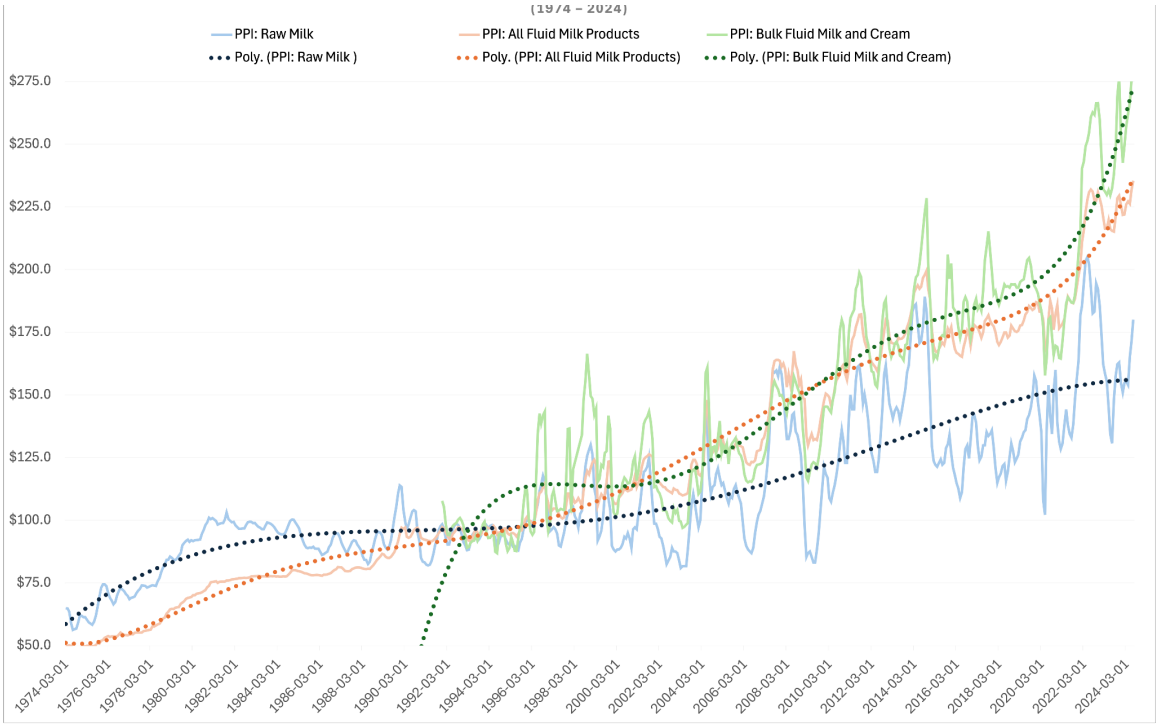

Figure 14: Spread between farm gate milk prices and milk prices charged to consumers. Source: Farm Action analysis of USDA National Agriculture Statistics Service data. Retrieved from https://quickstats.nass.usda.gov/. Data available upon request.

As a result, family farmers have been caught in a vicious cycle of consolidation and overproduction. To survive in an environment of constantly depressed prices, farmers have increased the number of cows and the scale of production to reduce costs — increasing the supply of milk even as the demand for milk has fallen due to consumers seeking out non-dairy alternatives. As a report by Food & Water Watch found in 2023, "[s]ince 2000, the average U.S. dairy has managed to turn a profit just twice," with a prime culprit being that real milk prices dropped more than 20% from 2000 to 2021.[885] In this unforgiving context, the country lost almost 70% of its family-scale commercial dairy farms between 1997 and 2017, and thousands more have gone bankrupt since — leading to rapid concentration of milk production among an ever-smaller number of mega-dairies.[886]

The Poultry Industry

1. Background

a. Stages of Production

Almost all chickens in the United States today are raised by farmers under a production contract with an integrator. Poultry integrators generally operate their own hatcheries and feed mills and provide the farmer with chicks, feed, medication, and veterinary services, while the farmer provides housing, labor, and management in accordance with the specifications of the integrator. Poultry integrators also generally operate their own processing facilities. When the birds reach processing age (around 4-5 weeks), the integrator collects and ships them to its processing plants, where they are slaughtered and processed into chicken products for wholesale distribution.

b. Marketing Channels

There is no open market for conventionally produced live poultry ready for processing. In the ordinary course of business, poultry integrators acquire chickens for slaughter exclusively through their production contracts with poultry growers. In this context, poultry farmers generally do not sell chickens to integrators; they sell poultry-growing services, which consist of the housing and labor required to raise birds for slaughter. Since transporting live poultry is expensive and the birds lose weight (and value) in transit, integrators typically seek to enter production contracts with poultry growers whose farms are close to their processing plants. As of 2014, the USDA has found that 90% of birds processed in poultry processing plants are raised within 60 miles of the plant, while 50% are raised within 30 miles.[887]

c. Transaction Methods

The production contract is the primary method for transacting poultry growing services and poultry for slaughter. Under these contractual arrangements, "poultry growers work on contract and do not own the chickens they raise or the food or medicine they use in their trade."[888] The integrators provide these items, "maintaining tight control over the inputs into the chicken-rearing process[.]"[889] When a flock of chickens matures, "the growers return the chickens to the [integrators] for processing."[890] Poultry growers are then compensated for their services with a per-pound fee. In most cases, production contracts do not specify a base per-pound fee but allow the integrator to adjust the grower's compensation up or down for each flock based on the grower's feed conversion and mortality performance compared to other growers in their locality.

2. Concentration, Consolidation, and Integration

More than 60% of the national live poultry market is controlled by four integrators — Tyson Foods (~25%), Pilgrim's Pride (~20%), Wayne-Sanderson Farms (~8%), and Perdue Farms (~7%). The remainder of the market is controlled primarily by 16 other poultry integrators, with the 10 largest integrators processing 77% and the 20 largest processing 94% of the poultry processed annually.[891] Concentration is even more severe in the local markets where poultry growers sell their services. As

of 2011, fully one-half of poultry growers have a choice of only one or two integrators to work with in their locality, and almost none have more than four — and concentration has only increased since.[892]

Vertically integrated poultry enterprises control virtually every aspect of broiler chicken production in America. Integrators own or control the breeding and hatching of broiler chickens, the feed, medication, facilities, and techniques used in raising those chickens to maturity, and their ultimate processing and distribution as chicken products for consumption in homes, restaurants, and other venues. Generally, however, integrators do not raise the birds themselves; they outsource that step to nominally independent farmers working under restrictive poultry growing contracts. Through these contractual arrangements, integrators can secure the facilities and labor capacity to raise as many chickens as they want — and maintain tight control over how those chickens are raised — while shifting the costs, capital requirements, and risks involved onto farmers.

Today, more than 95% of the nation's poultry production occurs under contract for integrators.[893] Since there is no open market for live poultry ready for processing, conventional (non-specialty) poultry growers have no viable alternatives to the contract growing system.[894] Under these production contracts, "poultry growers do not own the chickens they raise or the food or medicine they use in their trade."[895] The integrators provide these items, "maintaining tight control over the inputs into the chicken-rearing process[.]"[896] When a flock matures, "the growers return the chickens to the [integrators] for processing."[897] In this context, contract growers are effectively held captive by their integrator — and it shows in the degree of control that integrators exercise over them. In 2018, the Inspector General of the Small Business Administration found that contract growers had so little independence from integrators in the operation of their farms that they were effectively employees.[898]

3. Harms to Farmers and Communities

The harmful effects of coerced *de facto* integration between poultry growers and integrators are exacerbated by the payment system that integrators have generally opted to use in compensating growers, which is known as the "tournament" system. Under this system, an integrator is allowed to adjust the price it pays for a grower's chickens up or down based on how — in the integrator's judgment — the grower performed in raising their chickens relative to other growers in the locality. This system "enables [integrators] to maintain wide discretion over the prices they pay and keep growers largely in the dark about how those prices are set."[899]

In this context, the prices integrators pay to growers tend to vary significantly from year to year, and those fluctuations deeply impact growers' earnings.[900] One study has found that growers lose money two years out of every three,[901] while another found that integrators were setting prices so low that "nearly three quarters of growers whose sole source of income is chicken farming live below the poverty line."[902] Importantly, these impoverishing outcomes have not reflected the fair market value of the grower's product, but the ability of integrators to capture that value for themselves: between 1988 and 2016, the wholesale price of chicken increased by 17.4 cents a pound for consumers in real terms — but the average pay of a poultry grower rose by just 2.5 cents.[903]

Even as they have depressed the income of poultry growers through the tournament system, integrators have also used their leverage to force growers "to bear most of the capital costs of

production, including land, buildings, and equipment."[904] When entering a contract with an integrator, growers are typically required to incur enormous financial risks to build and upgrade facilities to integrators' standards in order to continue receiving flocks.[905] In 2016, the average loan to a beginning poultry grower was $1.4 million.[906] Since the growing facilities built with these loans are highly specialized, their value plummets between 62% and 94% when a grower loses their integrator contract — making the facilities themselves functionally "worthless," according to a report by the Small Business Administration Inspector General.[907] While growers take on millions of dollars in debt to finance long-term capital investments, most contracts commit integrators to provide growers with flocks of chicks for a very short period — if at all. In 2017, for example, 42% of growers were on flock-to-flock contracts that allowed the integrator to stop placing flocks with the grower at any time for any reason. In contrast, only 31% of grower contracts were for a term longer than five years.[908] Even then, almost all growing contracts can be terminated with 90 days notice.[909] Naturally, this leaves growers in a deeply vulnerable position.[910] They must either accept whatever treatment they are given by their integrator — and stay on their integrator's good side — or risk bankruptcy.

Under the production arrangements that the integrators have imposed, poultry growers are structurally isolated from alternative market opportunities and deeply vulnerable to abuse. Since they are required to use their integrator as their source of supplies and their distribution channel in most localities, the growers are isolated from alternative trading partners. Often bound by draconian non-disclosure agreements in their contracts with integrators, they are also typically isolated from each other.[911] Moreover, the near-complete control exercised by integrators over growers, the growing process, and the tournament system creates intractable opacity about actual market prices, the quality of poultry inputs, and the fairness of poultry grading — leaving growers powerless to catch, much less police, unlawful conduct by integrators.[912] As integrators have reportedly used their power over growers to punish those who speak out about industry abuses, poultry growers have even become isolated from law enforcers, public officials, and their own communities.[913]

Beyond farmers, since consolidation began increasing in the poultry industry and other meat-processing industries in the 1980s, the average hourly wage for meat processing workers has declined by nearly 40% — amounting to a meager $11 an hour in 2015.[914] At that level, the average meat processing worker's wage was nearly half the average manufacturing worker's wage in 2020, even as poultry processing workers endured dramatically worse working conditions than other workers in the private sector.[915] Between 2015 and 2018, meat processing workers faced twice the risk of amputations as the average worker in private industry — and more than 50% reported other injuries such as carpal tunnel syndrome, "trigger finger," tendinitis, rotator cuff injuries, lower back injuries, and chronic pain and numbness.[916] The exploitation of these workers even extends to rampant abuse by plant managers, who have been reported to routinely deny workers bathroom breaks, use racial slurs, deride workers for complaining about pain or illness, and even place bets on how many workers will get COVID-19 and die following the processors' refusal to implement health-protective measures during the pandemic.[917]

The Egg Industry

1. Background

The egg industry produces eggs for human consumption that are marketed as shell eggs or broken and sold in liquid or dry form to food manufacturers and foodservice distributors and establishments. Since it takes egg-laying hens to produce eggs, the supply chain for eggs is a subdivision of the broader poultry supply chain. Poultry production begins with primary breeders, the genetic stock for the industry. Primary breeder flocks consist of elite (sometimes called pedigree or foundation) birds, great-grandparent birds, and grandparent birds. Grandparent flocks produce the final generation of breeding birds (multiplier/parent flocks). Eggs from multiplier flocks hatch to become production birds — broilers and egg-laying hens — for human consumption. Broiler chicks are shipped to production farms within a day of hatching, where they are raised for meat. Young hens are raised on pullet farms until they reach egg-laying age, then transported to egg production farms.

Most eggs in the United States are commodity products laid by hens that are of the same genetic stock, provided indistinguishable feed, and raised in comparable housing. However, egg production facilities are generally designed to service one of two distinct markets: (1) the table egg market, which primarily focuses on selling whole, washed eggs to grocery store consumers; and (2) the breaking stock (or "breaker") market, which sells pasteurized liquid and dried eggs primarily to restaurants, cafeteria, and food processors. Historically, about 70% of layer hens produced eggs dedicated for the table-egg market, while the remaining 30% of layers produced eggs dedicated for the breaker market. An important sub-segment of the table eggs market is the "quality-differentiated" egg segment. Differentiated eggs — such as eggs certified as "cage-free," and those using organic, vegetarian, or omega-3 enriched feeds — have accounted for a growing share of the table egg market over the past decade.[918]

Geographically, egg production capacity is concentrated in the Midwest, the South, and California. As of 2016, over 55% of the nation's egg-laying hens were located in the Midwest, with Iowa (17.3%), Ohio (10.1%), Indiana (10.1%), and Pennsylvania (8.4%) accounting for approximately 45%. Outside the Midwest, Texas produces a little over 5% of the nation's egg supply, while Georgia and California each produce between 3% and 4%.[919] The high cost of transporting eggs and their perishability limits the distance eggs can be shipped for distribution or processing, so the markets for farm-produced eggs are local rather than national in scope. Typically, producers must transport eggs and egg-products to regional distribution centers operated by large grocers and foodservice distributors or directly to customers' manufacturing and retail facilities.[920]

The most recent available data (2005) suggests that over 95% of eggs are marketed through open-ended, non-exclusive contracts between producer firms and wholesale buyers, where the price of eggs is based on wholesale quotes published online daily in Urner Barry's (UB's) *Price-Current* publication. The remaining 5% of the egg supply is available for trading through cash transactions, and about 80% of those are traded through auctions organized by the Egg Clearinghouse (EC), a privately-operated national farm-level exchange for eggs. Researchers have found that the EC plays a limited role in price discovery and functions primarily as an inventory adjustment mechanism for large-sized egg producers, brokers, and users, where they can "post their excess inventory for sale and find offers [to] fill their shortfalls."[921]

A typical egg marketing contract specifies pricing through formulas based on UB quotes, which consist of wholesale-level prices that include farm-level egg prices plus the costs of processing, cartoning, and transportation based on public and private sources of information.[922] The UB quotes are released daily for four egg types and two egg products bought in six regions. In a standard egg contract, Sunday through Saturday deliveries are priced off of the preceding Thursday's UB quotes. In addition to the egg types and packaging desired by the buyer, some contracts specify the shelf life of the eggs.

2. Concentration, Consolidation, and Integration

The production of eggs in America is dominated by a handful of companies led by Cal-Maine Foods today.[923] With nearly 47 million egg-laying hens, Cal-Maine controls approximately 20% of national egg sales and dwarfs its nearest competitor.[924] As of 2020, the largest 5 egg companies — Cal-Maine Foods, Rose Acre Farms, Versova Holdings, Hillandale Farms, and Daybreak Foods (the "Big Five") — control 36-40% of all egg-laying hens in the United States, the largest 10 control around 53% of the total, and the largest 20 control just under 73%.[925] The remainder of the nation's flock (around 27%) is held almost entirely by only 48 other firms, the vast majority of whom own less than 2.5 million hens each.[926] At the regional marketing level, the concentration of egg production capacity can be much more severe; for example, a 2019 study found that the four largest egg producers in California controlled over two-thirds (68%) of the egg-laying hens in the state.[927] These figures are the result of rapid concentration in the industry over the past three decades, which has been driven primarily by mergers and acquisitions.

Between 1900 and 1999, the number of US farms producing eggs dropped from 5 million to under 1000. In 1978, Watt Publishing Company began a survey of major egg-producing companies in the United States (the "Watt Survey"). That year, they reported that 34 companies owned 1 million or more egg-laying hens, representing 27% of the nation's laying hens. By 2000, the Watt Survey listed 63 companies with 1 million or more hens, and they represented 78% of the nation's total flock. At the same time, companies with 10+ million hens each controlled 27% of the nation's flock, and 11 companies with 5+ million hens controlled 41% of the nation's flock. This left only about 59 million (or approximately 21.5%) of the nation's 275 million hens in the hands of companies with less than 1 million hens each.

Cal-Maine first obtained its dominant position in the egg industry in 1988, when it tripled the number of egg-layers under its control from 6.5 million to 18.5 million by acquiring Cargill's egg production division.[928] Since then, Cal-Maine has expanded its preponderant share of industry capacity and strengthened its vertical integration through no less than 25 acquisitions of substantial egg-production and processing companies, the most recent closing in September 2023.[929] The rise of the second-largest egg company, Rose Acre Farms, has likewise been propelled by mergers, particularly its acquisitions of Agri-Foods, Inc., in 1992 and National Egg Products, Inc., in 1998.[930] Formed out of a roll-up of four large egg production companies in 2017, Versova Holdings has since acquired at least two others, including Rembrandt Foods and Willamette Egg Farms in 2021 — the latter a 3-million-hen operation owned by Michael Foods, then the sixth-largest egg producer in the country.[931] Although Daybreak Foods' history is more difficult to chart — the firm is a closely held private company — industry reports indicate it has made at least four sizable acquisitions in the past 5 years alone.[932]

These acquisitions have allowed the dominant egg companies not only to consolidate the industry horizontally but also to pursue vertical control over the breeding and hatching of egg-laying hens upstream from the production farm and the breaking and processing of eggs downstream. For example, in addition to its 40 million hens and egg production facilities, Cal-Maine hatches the majority of its chicks in its own multiplier farms and grows them in its own pullet farms. When they reach egg-laying age, Cal-Maine transports them to its own production farms (~90%) or contracted farms (~10%), where they are given feed from Cal-Maine's own feed mills. After eggs are produced, Cal-Maine cleans, grades, and packages them at its own packing facilities for sale as shell eggs or breaks and transforms them into liquid, frozen, or dried form at its own processing facilities for sale as egg products. Finally, Cal-Maine prepares its table-eggs and egg products to be picked up by customers, or ships them to customers' warehouses and retail stores with its own fleet of delivery trucks, or with contracted trucks.[933]

Almost all of the other 20 largest egg companies have similar vertical capabilities in feed manufacturing and egg processing, leaving few independent egg packing and breaking operators in the market for non-integrated egg producers to use. The latest available data (2010) suggests that no egg producer other than Cal-Maine and Rose Acre Farms have breeder flocks, however.[934] Instead, they all source pullets to replenish and expand their laying flocks from one of two sources — either Cal-Maine and Rose Acre Farms, one the one hand, or the highly concentrated layer-hen breeding industry in which two firms (Hendrix Genetics and EW Group) possess a duopoly, on the other.[935] This asymmetry potentially gives Cal-Maine, with its +10-million-strong breeder flock, a powerful tool to use in steering wholesale egg prices and imposing discipline on the rest of the industry. For example, it would stand to reason that smaller egg companies would be unlikely to challenge Cal-Maine knowing that it could, on its own, dramatically increase production capacity and flood the market with eggs, depressing prices across the board).

3. Collusion, Coordination, and Market Manipulation

Historically the U.S. egg industry has been characterized by relatively stable prices. As Figure 15 shows, the prices received by egg producers fluctuated in a narrow range for most of the 20th century, with the industry regularly going through mild price-output cycles: Population growth would lead to increased demand, increased demand would lead to higher prices. Higher prices would stimulate egg producers to expand output, and expanded output would bring prices back down. Egg producers would then stop expanding output, and stagnant supply would allow population growth to tighten the supply-demand situation again. Prices would then rise, and the cycle would repeat.[936]

Since the industry's dramatic consolidation in the 1980s and 1990s, however, cyclic fluctuations have become less prevalent, and the industry has been increasingly characterized by production rigidity, both in the face of rising prices and in the face of declining prices.[937] In the mid-2000s, the industry's dominant incumbents also reportedly developed an infrastructure for "cartelistic conspiracies," which — according to a federal jury in a recent verdict — they used to engineer a shortage of eggs between 2004 and 2008 by slaughtering egg-laying hens early, restricting the replacement of hens lost to mortality, and steering eggs to the export market.[938] Because of this conspiracy, the inflation-adjusted index for wholesale egg prices doubled between 2005 and 2008 to historically unprecedented levels and never came back down, settling around a new, higher focal point between 150 and 200 percent of 2005

levels until the 2020s.[939] Remarkably, over the same period of unprecedentedly high egg prices, the industry managed not only to hold the rate of U.S. egg production per capita roughly constant — but also to bring it *under* the rate of egg consumption per capita for the first time in American history.[940]

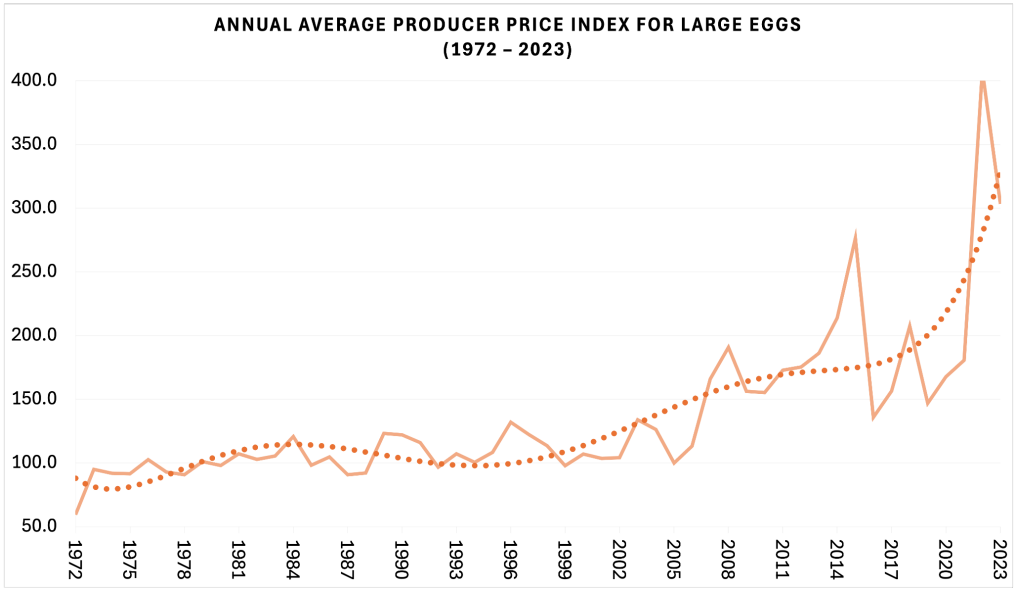

Figure 15: Farm Action analysis of USDA National Agriculture Statistics Service data. Retrieved from https://quickstats.nass.usda.gov/. Data available upon request.

4. Price Gouging in the Aftermath of the COVID-19 Pandemic

In the aftermath of the COVID-19 pandemic, a similar dynamic of throttled supplies and high prices took hold in the egg industry — tripling wholesale egg prices in one year, and seemingly allowing the industry to settle around a yet higher focal point for the 2020s. Between January 2022 and December 2022, wholesale egg prices went from 144 cents for a dozen Grade-A large eggs to 503 cents a dozen.[941] This was the highest price ever recorded for wholesale eggs.[942] Over the entire year, wholesale egg prices averaged 282.4 cents per dozen in 2022.[943] When asked about the multiplying price of their product, the largest egg producers and their industry association, the American Egg Board, insisted that it was entirely outside their control; an avian flu outbreak and the rising cost of things like feed and fuel, they said, had caused egg prices to rise all on their own.[944] And, to be sure, those were real headaches for the egg industry in 2022, as about 43 million egg-laying hens were lost due to bird flu by December 2022,[945] and input costs for producers certainly increased over 2021 levels. As Farm Action detailed in letters to federal antitrust enforcers at the time, however, the math behind those explanations for the steep increase in wholesale egg prices did not add up.[946] Contrary to industry spin, wholesale egg prices did not triple because of inexplicable "supply chain, 'act of God' type stuff," Farm Action demonstrated.[947] Rather, the true driver of record egg prices was simple profiteering and,

more fundamentally, the anti-competitive market structures that enabled the largest egg producers in the country to engage in such profiteering with impunity.

The avian flu outbreak simply did not have as substantial an effect on egg production as the industry represented. Although about 43 million egg-laying hens were lost to avian flu outbreaks in 2022, they were not all lost at once, and there were always over 300 million other hens alive and kicking to lay eggs for America during that year. The monthly size of the nation's flock of egg-laying hens in 2022 was, on average, only 4.8 percent smaller on a year-over-year basis.[948] On top of this, the effect of losing those hens on production was itself blunted by "record high" lay rates throughout the year — lay rates which were, on average, 1.7 percent higher than the lay rate observed between 2017 and 2021.[949] With substantially the same number of hens laying eggs faster than ever, the industry's total egg production in 2022 ultimately came in at only 2.98 percent lower than it was in 2021.[950]

Turning to the egg industry's input costs, it is true that they were higher in 2022 than in 2021, but they were not *that* much higher. Farm production costs at Cal-Maine Foods — the only egg producer that publishes financial data as a publicly traded company — increased by approximately 20% between 2021 and 2022.[951] Their total cost of sales went up by a little over 40%.[952] At the same time, Cal-Maine produced roughly the same number of eggs in 2022 as it did in 2021.[953] If we take Cal-Maine is the "bellwether" for the largest egg producers in the country, as industry analysts typically do,[954] the dominant egg companies patently did not experience anywhere near enough inflation in egg production costs to account for the three-fold increase in wholesale egg prices.

Against the backdrop of these facts, it is clear that neither rising input costs nor a drop in production due to avian flu was the primary contributor to skyrocketing egg prices in 2022. What *was* the primary contributor? Profits. Gross profits at Cal-Maine Foods, for example, increased in lockstep with rising egg prices through every quarter of 2022. They went from nearly $92 million in the quarter ending on February 26, 2022, to approximately $195 million in the quarter ending on May 28, 2022, to more than $217 million in the quarter ending on August 27, 2022, to just under $318 million in the quarter ending on November 26, 2022. The company's gross margins likewise increased steadily, from a little over 19% in the first quarter of 2022 (a 45% year-over-year increase) to nearly 40% in the last quarter of 2022 (a 345% year-over-year increase).[955]

The most telling data point, however, is this: For the 26-week period ending on November 26, 2022 — in other words, for the 6 months following the height of the avian flu outbreak in March and April — Cal-Maine reported a five-fold increase in its gross margin and a ten-fold increase in its gross profits compared to the same period in 2021. Considering the number of eggs Cal-Maine sold during this period was roughly the same in 2022 as it was in 2021, it follows that essentially all of this profit expansion came from only one source: higher prices.[956]

5. Was Pandemic Price-Gouging Facilitated by Collusion Among Egg Industry Leaders?

On its own, the foregoing analysis plainly shows that high egg prices in 2022 and 2023 were a product of price-gouging by dominant egg producers, who used the cover of inflation and avian flu to extract profit margins as high as 40% on a dozen loose eggs. Some agricultural economists and industry-

aligned analysts, however, questioned whether this price gouging should raise antitrust concerns. The dramatic escalation in egg prices between 2021 and 2023, they argued, was just "normal economics" at work.[957] Per Angel Rubio, a senior analyst at the industry's go-to market research firm, Urner Barry, the runaway increase in wholesale egg prices was simply a function of the "compounding effect" of "avian flu outbreaks month after month[.]"[958] These outbreaks repeatedly disrupted egg deliveries, he assumed, driving customers to assent to spiraling price demands from alternative suppliers. In a blog post on Urner Barry's website, Mr. Rubio further hypothesized that jittery customers may have "increased their 'normal' purchase levels to secure more supply," goosing up prices even higher.[959]

There are several reasons to doubt this theory of the case. To begin with, Mr. Rubio's analysis simply assumes that avian flu outbreaks caused significant disruptions in the supply of eggs even though, as discussed above, the aggregate production data suggests that was not the case. Let us assume, however, that there *were* supply disruptions, that these disruptions *did* lead to a glut of demand for reliable suppliers, and that this glut gave such suppliers pricing power. If that were the case, it would stand to reason that Cal-Maine — which did not report a *single* case of avian flu at any of its facilities in 2022 — had an opportunity to sell a lot more eggs in 2022 than it did in 2021, and to sell them at record-high profit margins. But Cal-Maine did not, in fact, sell a whole lot more eggs. It sold roughly the same number of eggs in 2022 as it did in 2021.[960] If Mr. Rubio's theory were right, why did Cal-Maine leave money on the table?

Even more curiously, Cal-Maine was not alone among dominant egg producers in pursuing price and production policies over the course of 2022 that seem contrary to self-interest. In a truly competitive market, one would have expected Cal-Maine's rivals to respond to a near-tripling of average market prices with efforts to undercut Cal-Maine's skyrocketing profit margin and capture market share for themselves. Alas, that did not happen. In researching its letter to antitrust enforcers, Farm Action found no evidence of aggressive price competition for business among the largest egg producers. Indeed, not only did egg producers refrain from competing on price, but they also refrained from expanding supply to take advantage of the high prices that they were refusing to compete down. As early as August of 2022, the USDA observed that favorable conditions existed, both in terms of moderating input costs and record-high egg prices, for producers to invest in expanding their egg-laying flocks.[961] Yet such investment never materialized.

Even as prices reached unprecedented levels between October and December of 2022, the number of eggs in hatcheries and the number of egg-laying pullets hatched both remained flat, and were even below 2021 levels in December.[962] As the year drew to a close, the USDA observed that "producers—despite the record-high wholesale price—are taking a cautious approach to expanding production in the near term."[963] The following month, it pared down its table-egg production forecast for the entirety of 2023—while raising its forecast of wholesale egg prices for every quarter of the coming year—on account of "the industry's [persisting] cautious approach to expanding production."[964]

Because of this puzzling "caution" among egg producers, the total number of egg-laying hens in the United States recovered from the losses caused by avian flu outbreak of 2023 at *less than one-third of the pace* it recovered from the (relatively more severe) avian flu outbreak of 2015, according to data from the USDA's National Agricultural Statistics Service (Figure 16). At its lowest point in the aftermath of the 2022 avian flu outbreak—in June of last year—the egg-laying flock counted a little

under 300.5 million hens, or around 30 million (or 9%) fewer hens than it started the year with (330.8 million). For comparison, at its lowest point following the 2015 outbreak—which was also in June of that year—the egg-laying flock totaled 280.2 million and had nearly 35 million (or 11%) fewer hens than it did at the start of 2015 (315 million).

Figure 16: Chart of the total number of egg-laying hens in the U.S. on the first of every month between January 2014 and February 2023. Data derived from USDA National Agricultural Statistics Service. Credit: @BrightonCap (Twitter).

As Figure 16 demonstrates, in 2015, it took the industry less than 8 months to rebuild the egg-laying flock from its June low point; by the end of February 2016, producers had added over 30 million hens, bringing the total size of the egg-laying flock back up to 310.2 million. Contrast this pace of flock recovery between 2015 and 2016 with the pace of recovery observed in 2022. In the first 8 months after the June low-point of 2022, the industry added *less than 9 million hens* — leaving the flock at an anemic 309.4 million by the start of February 2023. Indeed, as of this writing in early 2024, the industry is still more than 10 million hens short of where the size of its flock was at the beginning of 2022.[965]

On its own, this comparison shows that the largest egg producers almost certainly *could have* rebuilt their hen flocks in the wake of the 2022 avian flu outbreak much faster than they did. When this is considered alongside the fact that, in 2015, the monthly average wholesale price reached its highest point in August and never exceeded $2.71 per dozen, the sluggishness of the 2022-2023 recovery becomes objectively suspicious. According to Urner Barry, in 2015, wholesale egg prices rose 6-8% for every 1% decrease in the number of egg-laying hens caused by the avian flu; that is barely half the 15% price increase for every 1% decrease in hens observed in 2022.[966] The monthly price for a dozen wholesale eggs in 2022 cleared the 2015 high of $2.71 per dozen as early as April,[967] and stayed at

comparable or higher levels through the rest of the year.[968] And yet, egg producers "cautiously" added hens in 2022-2023 at a fraction of the pace they did in 2015-2016.

As Senator Elizabeth Warren and Representative Katie Porter noted early last year, through these and other actions producers appeared to be "impervious to the basic laws of supply and demand."[969] This was the case not only in terms of their willingness to invest in *new* capacity but also in their willingness to utilize *existing* capacity. The rate at which hens lay eggs is the basic measure of flock productivity in the egg industry. Several factors can affect lay rates, including hen genetics and age, but within physical limits, producers can speed or slow egg-laying by their hens through nutrition, lighting, and other flock management choices.[970] Yet, even as millions of hens were being lost to avian flu and eggs were fetching unprecedented prices in 2022, producers seemed to make choices that depressed, rather than maximized, their remaining hens' lay rates.

The average table-egg lay rate reached its highest level ever (around 83.5 eggs per 100 hens per day) in the early, most severe months of the avian flu epidemic — between March and May of 2022 — but then it nosedived. By June, the national average lay rate had dropped to about 82.5 eggs per 100 hens per day. This was consistent with seasonal trends in years past; it's typical for lay rates to moderate as Spring turns to Summer. What happened *after* June, however, was curious. Normally, the average lay rate would start climbing again in July and stay on an upward trend through the end of the year, with the strongest lay rates often reported in the last 2 or 3 months of the year. In 2022, however, the opposite occurred. Lay rates flat-lined from June through the Fall before dipping to their *weakest level* in the last 3 months of the year.[971] In other words, during the exact period when egg prices were hitting their stride — the last 6 months of 2022 — the industry somehow managed to orchestrate a wholesale deviation from historical trends in the direction of getting *fewer eggs* out of the hens it already had.

6. Conclusion

The American egg industry was once a truly vibrant one, with millions of farms marketing eggs from a diversity of chicken breeds through a variety of channels.[972] Over the past four decades, however, the companies that dominate the egg industry today used a parade of acquisitions and mergers, exclusionary contracts, and cartelistic arrangements to destroy it. The farmers who were forced to exit the field were the first to feel the consequences of these firms' predatory course, but they have not been the last; consumers are now paying a price, too. The pattern of behavior exhibited by dominant egg producers since the mid-2000s is consistent with longstanding research beginning in the 1970s showing how leading firms in consolidated industries "administer prices" to achieve higher-margin "focal points" during economic shocks and periods of inflation.[973] For over 12 months between 2022 and 2023, they brazenly demonstrated their ability to charge exorbitant prices for a staple of Americans' diet for no reason other than having the power to do it. Even now, after wholesale egg prices have come down, they are still five-to-six times what they were in 2005, and the nation's supply of eggs has remained anemic — barely tracking demand, if that. The "philosophy" of our antitrust laws — as Justice Douglas once reminded his colleagues on the Supreme Court — is that such private power over the nation's economy "should not exist."[974]

The Pork Industry

1. Background

a. Stages of Production

Until the early 1990s, farmers raised pigs from birth to marketing ("farrow to finish") with feed from the farm's crops and sold market-weight hogs to packers in cash market transactions. An abrupt transformation occurred in the late 1990s, however. Since then, most hogs have been raised by farmers under a production contract with an integrator — a firm that coordinates production. The integrator provides young piglets and formulated feed rations, while the farmer provides housing, labor, and management in accordance with the specifications of the integrator. Hog farm operations now specialize in single stages of production, such as farrowing, farrow-to-wean, or wean-to-finish, all coordinated by the integrator. In farrow-to-wean operations, sows give birth to litters of pigs, which are typically nourished by the sow for about 3 weeks before weaning. Once the piglets weigh between 12-14 pounds, they are transferred to nursery operations, which raise weaned animals to weights of about 40 pounds. These "feeder pigs" are then transferred to finishing operations, where they are confined and fed rations composed mainly of corn and high-protein soybean meal to achieve slaughter weights between 265 and 285 pounds. At that point, slaughter-ready pigs are transferred to a packer to be slaughtered and processed into pork and pork products, which are then sold to wholesale buyers.

b. Marketing Channels

The hog-packing industry — which procures, slaughters, and processes hogs to produce pork and pork products for wholesale distribution — is the primary market for slaughter-ready hogs. However, there is no longer a meaningful cash market for slaughter-ready hogs; absent a production contract with an integrator, a farmer generally has no way to sell a herd of hogs to hog packers. Moreover, under the prevailing production contracts, farmers do not own the hogs they raise; the integrators do. When the hogs mature, the integrators collect and sell them to hog packers, typically under formula or forward marketing contracts that commit each side to quantity and pricing targets.[975] In some cases, the hog packer is also an integrator and contracts directly with farmers to raise the hogs it will ultimately process.[976]

In this context, swine farmers generally do not sell hogs to integrators or packers; they sell hog-growing services, which consist of the housing and labor required to raise hogs for slaughter. All the same, because transportation costs and hog weight shrinkage restrict the distance that hogs can be transported for slaughter economically, integrators and processors only enter production contracts with swine farms near the hog-packing plants they will supply. The latest available data (2007) indicates that, on average, hogs are shipped 113 miles from farm to slaughterhouse, and almost all hogs are shipped less than 300 miles.[977] The conventional wisdom is that shipping hogs more than 200 miles is uneconomical.[978]

c. Transaction Methods

Historically, most slaughter-ready hogs were sold by farmers to hog packers through marketing agents at terminal stockyards, auctions at local sale barns, or negotiated sales in regional cash markets. Since the late 1990s, however, stockyards, auctions, and cash sales have become marginal, while alternative marketing arrangements have become the predominant methods for transacting hogs. For the most part, hog farmers today sell swine-growing services to integrators through production contracts similar to those used in the poultry industry, and integrators sell the hogs that farmers produce to hog packers through forward and formula contracts similar to those used to sell cattle.

Stockyards. Central public stockyards (also known as terminal markets) handle about 2% of the nation's slaughter-ready hogs. Slaughter-ready hogs sold through public markets are typically consigned to a commission firm (agent) at that stockyard. The commission firm negotiates with buyers and sells hogs on behalf of the producer. When selling hogs through a terminal market, producers typically pay a yardage fee to the stockyard plus a commission to the firm handling the hogs.

Auctions. Although auctions are not a major slaughter market outlet in most hog-producing regions, about 2% of the nation's hogs are still sold through auctions. The typical auction is a sale barn, but auctions are occasionally conducted electronically via telephone and video. Slaughter hogs marketed through auctions are sold to the highest bidder, whereas at terminals, they are sold by commission agents to buyers who, in the agents' judgment, will be the strongest bidders. When selling hogs through an auction market, the producer pays a commission to the auction operator.

Cash Market Sales. Around 5% of hogs are still transacted through negotiated cash sales with hog-packing plants and packer-owned buying stations, order buyers, country dealers, and independent country buying stations that are within delivery distance of hog-producing farms. Generally, hogs sold through such cash market transactions are sold on a live weight basis, with some adjustment for carcass grade and yield.

Forward and Formula Marketing Contracts. Under formula contracts, hog prices are pegged to those realized in specified cash or auction markets near the delivery date of the animals. In recent years, hog formula contracts have also been pegged to wholesale pork cut-out values reported by the USDA. Under forward contracts, hog prices are pegged to the futures price on the Chicago Mercantile Exchange (CME), with the seller exercising the option to set the transaction price at some point between the contracting date and the delivery date.

Production Contracts. As described above, integrators and hog packers outsource the raising of hogs to farmers through production contracts. Under these contracts, farmers provide the facilities and labor to raise hogs owned by the integrator or hog packer in exchange for a fee. Typically, such fees include a per-animal-space or per-delivered-hog charge, with premiums and discounts applied for targets such as feed conversion.

2. Concentration, Consolidation, and Integration

The hog processing industry began to dramatically consolidate starting in the 1980s, but particularly in the 1990s and early 2000s. In 1980, the top four dominant firms in the industry controlled

approximately 34% of the market. By 1995, 15 years later, their market share had jumped to 46%. By 2010, it had jumped all the way to 65%.[979]

Today, four dominant companies — JBS-Swift, WH Foods-Smithfield, Tyson Foods, and Hormel — slaughter over 70% of the hogs processed annually. Nine out of ten (90%) hogs are processed by the largest 10 hog packers, and almost all hogs (96%) are processed by the largest twenty.[980] This restructuring was driven in part by advancements in packing and processing technology, which incentivized economies of scale. Dominant pork processors began building significantly larger processing facilities, in order to realize these scale benefits. In 1977, plants processing at least one million hogs accounted for 38% of hog slaughter. By 1997, that share had jumped to 88%.[981] By 2021, these large plants accounted for 92% of industry production.[982] To our knowledge, however, there is no evidence that multi-plant ownership yields ascertainable efficiencies in hog processing.

In the local markets where swine farmers sell their services and integrators sell their hogs, concentration is even more severe. In the Southeast and in the Oklahoma/Texas panhandles, a single packer handles the vast majority of pork processing while in the Eastern Corn Belt (ECB) region of Indiana, Michigan, and Ohio, only four packers compete.[983] Data also indicates that as plants have consolidated, competition on a regional scale has fallen. In the Northwest (Washington, Oregon, and Idaho), the average number of processing plants within a 150-mile radius has fallen from 194 in 1991 to 7.9 in 2021. In the Southern region of Florida, Alabama, Georgia, and South Carolina, this number has fallen from 20.5 in 1991 to 11.2 in 2021.[984]

Consolidation of meatpacking plants has spurred a structural shift in pork production. As processing plants have grown, processors have increasingly relied on various types of contractual relationships with larger pork producers and pork integrators in order to ensure a large and steady flow of livestock.[985] As a result, the cash market has almost entirely disappeared, with almost all pork now sold through contract. Meanwhile, hog production has been consolidated into fewer, but larger farmers. Between 1997 and 2017, the number of hog farms with inventory declined 47%, the average farm size roughly doubled, and the share of farms with 5,000 or more heads rose from 40% to 73%.[986]

3. Collusion, Coordination, and Market Manipulation

One concern with this restructuring of the swine supply chain is the issue of captive supply. Today, dominant packers own a significant portion of the U.S. hog inventory. In 2007, the Grain Inspection, Packers and Stockyards Administration (GIPSA) estimated that 20-30% of hogs were owned by packers.[987] Today, Smithfield alone owns nearly 20% of U.S. inventory.[988] This level of control of the supply can effectively eliminate price discovery and enable the packer to manipulate market prices by using its own supply of animals to flood the market and drive down prices when it is favorable to them.[989]

The increase in packer's control of production, either through direct ownership or contracting, has dramatically eroded the spot market by diverting the vast majority of livestock to other channels. In 1994, the spot market accounted for 62% of sales, but by 2009 this had declined to 8%.[990] Spot markets thinned to this level raise "concerns about whether the prices offered represent fair market prices . . . because large buyers can exert undue influence on prices with their purchases, and they have an

interest in doing so because the spot price plays a significant role in determining the prices buyers pay to growers under contract."[991]

4. Harms to Farmers and Consumers

The transformation of the hog industry has had a disastrous effect on hog farmers. Between 1997 and 2022, the United States lost 45% of hog farms —- nearly 50,000.[992] This loss of farm and growth of the mega-operation affects more than just the farmer. As small farms are shuttered and consolidated, they are accompanied by wealth extraction and rural depopulation. Further, communities that house large, industrial corporate-managed operations are left burdened with increased water and air pollution, often coupled with declining property values.

The Fruit and Vegetable Sector

1. Background

The fruit and vegetable sector encompasses the supply chain between produce farms and retail consumers, including a variety of market intermediaries, processors, and retailers. Because different fruit and vegetable crops have different growing, perishability, and marketing attributes, the sector is complex.[993] The organization of production and the forces driving competition tend to vary by crop, or at least by groups of crops that are usually grown in similar locations and marketed by the same pool of firms, which form industry subsectors (*e.g.*, the stone fruit subsector, the berry subsector, the apple-pear-cherry subsector, etc.). Further, industry dynamics tend to differ for perennial and annual crops due to the variation in production, investment, and supply time horizons. Adding to the industry's complexity, a systematic study of produce marketing channels has not been done in nearly two decades. Nonetheless, we can roughly sketch an outline of the produce sector as follows.

2. Fruit and Vegetable Production

Fruits and vegetables are produced throughout the United States, with the largest acreage (excluding acres for potatoes and dry beans) in California, Florida, and Arizona. The Upper Midwest (Michigan, Minnesota, and Wisconsin) and the Northwest (Washington and Oregon) report the largest vegetable acreage for processing, while California, Florida, and Texas harvest the largest share of fresh vegetable and melon acreage.[994] A few states account for the overwhelming majority of land dedicated to fruit orchards. On its own, California accounts for over half of U.S. fruit acreage (including berries), while Washington and Florida account for around one-fifth and one-tenth, respectively. The remainder of the country's fruit acreage is split mostly between Michigan, Oregon, Texas, and New York.[995]

Commodities within the fruit and vegetable sector may be classified according to two major end uses: (1) fresh produce and (2) processing. The processing channel can be further subdivided into canning, freezing, juicing, and dried/dehydrating tracks. Except for a few fruits and vegetables with varieties suitable for both uses (*e.g.*, apples, grapes, broccoli, cauliflower, and asparagus), produce grown for processing is not interchangeable with produce grown for the fresh market. Occasionally, some fruits and vegetables harvested for fresh use do not meet quality standards and are sold for processing. In general, however, substitution between the markets is uncommon, even in years when crop output is severely cut due to bad weather or pests.[996]

While some types of fresh-market fruits and vegetables (*e.g.*, grapes, lettuce, and celery) can be field-packed, many other types of produce (*e.g.*, onions, oranges, apples, and tomatoes) must be washed, sized, sorted, graded, and packaged in a "packing" facility before they can be loaded for shipment to terminal markets, wholesalers, retailers, or farmers' markets. Transporting fresh produce from the packing facility has become increasingly difficult and costly. Rail availability has declined over time, and truck shortages have become routine in many production areas. At times, the cost of transportation has exceeded the free-on-board value of the produce being shipped.[997]

3. Fruit and Vegetable Marketing and Distribution

According to the most recent available data (2002-2004), more than half of total U.S. fruit and vegetable production goes into the processing channel, including around 50% of all vegetables, 60% of non-citrus fruits, and 70% of citrus fruits. With respect to crops sold as fresh produce, the endpoint for an estimated 60-70% of all fresh fruits and vegetables before consumption are grocery stores and other food-at-home retail outlets.[998] Foodservice establishments (restaurants, cafeteria managers, caterers and so forth) are the next most common destination for fresh produce.

Against this backdrop, a produce farmer today can grow their fruit or vegetable crop under contract with a so-called "grower-shipper" or "grower-shipper-packer" firm (a GSP), or they can operate independently. A growing contract in the produce sector often requires the farmer to follow GSP mandates as to what crop and seed variety to plant, what pesticides to use, and what crop management techniques to implement. In exchange, the GSP typically provides 50-60% of the growing costs of the crop and agrees to provide some or all of the services needed to harvest, pack, refrigerate, ship, sell, and collect payment for a crop. Ultimately, the GSP charges the farmer for these services, collects payment for those charges from the proceeds of the sale of the farmer's crop, and divides what is left between itself and the farmer in proportion to their respective shares of the growing costs.

Historically, if a farmer opted to operate independently, they could sell their crop through one of four marketing channels, either on their own or as part of a farmer's cooperative. First, they could market their fruits and vegetables directly to retail consumers, such as through a roadside stand, a pick-your-own operation, a community supported agriculture cooperative, or a local farmers market. Second, they could truck their crop to a "terminal market" in a metropolitan area near their farm, where buyers for grocery stores, wholesale distributors, and foodservice establishments might purchase it. Third, they could entrust their crop to a produce broker, who arranges a sale between a terminal buyer and the farmer for a fee or sell their crop to an intermediary produce wholesaler, who takes title and possession of the crop and re-sells it to terminal buyers. Fourth, they could try to cut out the middlemen and market their crop directly to processors, restaurants, and grocers.[999]

Today, however, these marketing channels are no longer as open and available to most produce farmers as they used to be. While they continue to exist to various degrees in different parts of the country, using them to obtain a decent return on a crop of fruits or vegetables has become a much riskier and more onerous proposition.

4. Concentration, Consolidation, and Integration

Over the past three decades, terminal buyers of fruit and vegetable crops — including grocers, foodservice managers, and wholesale distributors — have consolidated dramatically. As they consolidated, terminal buyers began sidestepping intermediary markets and contracting directly with GSPs as well as some large farms and co-ops. These actions thinned out the supply chain, eliminating many of the physical markets, brokers and other intermediaries through which farmers once sold their produce — and through which smaller buyers once procured their fruit and vegetable supplies.[1000]

a. The Rise of Power Buyers: Grocers, Distributors, and Processors

According to a recent report by Food & Water Watch, in 1993, the combined market share of the four largest grocery chains in the country was 23%, and there were hundreds of alternative small and regional chains as well as independent retailers. By 2010, twenty grocers were estimated to control approximately two-thirds of the value of groceries sold nationally, only 138 retail chains with 10 or more stores were operating in the United States, and 40 of those chains had more than 100 stores each.[1001] As of 2019, the four largest grocery retailers capture more than 69% of consumer grocery spending, with Walmart alone taking nearly 35%.[1002] Similar — and greater — concentration is now a systemic feature across the fruit and vegetable processing industries as well. For example, in recent years the market share of the top four companies reached 47% in juice, 53% in table sauce, 56% in bottled/canned green beans, 58% in canned tomato, 59% in canned potatoes/sweet potatoes, 68% in prepared salad, 69% in wine, 70% in prepared soup, 81% in almond milk, and 90.7% in dips.[1003] Concentration has also taken off among foodservice distributors, an industry once predominantly composed of small, family-owned local and regional firms. In the critical broadline distribution segment, it is estimated that today the top 10 firms control 60-70% of national sales, the top five control over 50%, and Sysco alone controls over 30%.[1004]

The use of direct, long-term contracts to procure fruit and vegetable supplies has grown alongside concentration in the terminal buying industries. Since the early 2000s, the overwhelming majority of produce destined for processing has been grown under contractual arrangements between GSPs and processors, including 85% of all processed vegetables. Contracting shifts a portion of the decision making related to production from the grower to market gatekeepers, such as juice processors, canning firms, and salad processors.[1005] A USDA analysis of data on the production of 11 different processing-variety vegetables between 2000 and 2004 found that the acreage grown under contract ranged from a low of 85% (for cucumbers) to a high of 100% (for green peas).[1006]

In the fresh produce segment, regional and national grocery retailers began sourcing their fruit and vegetable supplies through long-term contracts in the 1990s. By 2001, retailers were buying as little as 25% of their produce from intermediary markets, with small retailers relying on intermediaries more than larger stores.[1007] Today, the overwhelming majority (approximately 80-90%) of fresh produce is marketed through GSPs.[1008]

b. The Rise of Vertically Integrated Middlemen: "Grower-Shipper-Packers"

Historically, the high level of production risk and price volatility common to wholesale produce markets contributed to a heavy reliance on daily spot sales as opposed to forward contracting between farmers/shippers and buyers. This began to change in the 1990s when Walmart entered the grocery business with its supercenter format. Walmart initiated the practice of securing produce through seasonal and annual "preferred-provider" contracts with GSPs. As the grocery retail sector consolidated since then, other major grocery chains have followed Walmart's lead.

Originally, GSPs were started by individual successful growers going direct to wholesale. They built coolers, hired harvesters and salespeople, and offered their services to other growers for slightly more than cost. Over time, many GSPs stopped farming and became service providers and "farming

partners." Since then, growing concentration in the retail and foodservice channels has encouraged consolidation and vertical integration among GSPs as well. "This has generally taken place through merging the marketing operations of shippers into combined larger entities, although acquisition of the production, packing or fresh-cut operations of competitors has also occurred."[1009] By 2011, industry analysts estimated that there were only 3214 GSPs left in the United States, including 1259 in California and 465 in Florida. Today, according to the Center for Agroecology at the University of California–Santa Cruz, around 20 large, investor-owned GSPs have emerged as clear sector or subsector leaders — with some, such as Dole, Chiquita, and others, being publicly traded on the stock market.[1010]

The combined volume of California, Florida, Arizona and Pacific Northwest GSPs represents the vast majority of fresh produce grown in the United States, as well as much of the volume of imports. (Most of Arizona's volume of both fruits and vegetables is marketed by California shippers who have relationships with Arizona growers.) California's dominance lies in its ability to produce a great diversity of products over extended seasons, whereas other states are confined by climate to either more limited offerings and/or shorter seasons. In contrast to food manufacturers, fresh produce suppliers are generally not large enough to service the total demand of national chains and foodservice distributors. Instead, GSPs typically compete to service specific distribution centers and/or divisions within national chains, distributors, and other large terminal buyers.

The greater a GSPs ability to make large volumes of supplies available across seasons, the more attractive they become to national grocers and distributors as they seek to streamline procurement and reduce transaction costs. Initially, the pressure to provide year-round availability led many GSPs to become importers — sourcing fruits and vegetables from abroad (primarily South America) to meet retail and foodservice demand during North American off-seasons.[1011] Over the past decade, the largest GSPs have transitioned to sourcing produce from shifting production regions throughout the year, following climatically-determined seasonal patterns across several states and often other countries. Since 2015, many GSPs have gone even further, establishing or merging with agricultural operations abroad — driving a sharp rise in fruit and vegetable imports.[1012]

In this context, the number of produce marketing firms continues to shrink amid mergers.[1013] According to Steve Lutz, vice president of United States and Canada West for the Produce Marketing Association, the consolidation has been a long-term trend that is continuing.[1014] Michael Butler, co-founder and CEO of Cascadia Capital, an advisory investment bank that assists acquisitions, told Farm Journal's media outlet that "the challenge for fruit suppliers is to increase their market share to 20% to 25%, to have more leverage to counter big retail buyers such as Walmart and Kroger. Currently, many suppliers are in the range of 6% to 12% of the market."[1015] Butler continued: "There is [sic] a handful of big, big buyers and they call the shots, and that's why the industry's got to consolidate down to four or five or six major players."

c. In-Focus Crops: Berries, Stone Fruits, and Apples

In the market for strawberries, blackberries, blueberries, and raspberries, Driscoll's is the global leader. In 2011, Driscoll's was estimated to supply around 90% of raspberry sales in conventional supermarkets.[1016] In 2017, the company controlled approximately a third of the U.S. berry market,

with 60% of the organic strawberry market.[1017] As the market leader in the over $6 billion U.S. fresh berry market, Driscoll's has over 700 contract growers in the United States, Mexico, Chile, and Peru to deliver a year-round supply of strawberries, raspberries, blackberries, and blueberries. The majority of Driscoll's produce is grown in the United States, with California as their largest berry growing region. Farmworkers have levied complaints and allegations against Driscoll's.[1018] Driscoll's provides licensed contract growers proprietary seeds and deploys sensors, monitoring technology, and oversight to the growing process. The imposition of control over "independent" growers has become the industry norm in a market dominated by a handful of firms. The berry market is now controlled primarily by four firms: Driscoll's, Well-Pict Berries, Naturipe Farms LLC, and Dole Food Company.

In 2017, the private equity firm Paine Schwartz Partners took over Wawona Packing, a stone fruits GSP. Two years later, Pain Schwartz merged Wawona with Gerawan Farming to form Prima Wawona. As a result of the merger, Prima became the largest California stone fruit GSP by a significant margin, with special dominance in the peach market. However, after less than 4 years, in October 2023, Prima filed Chapter 11 bankruptcy, saddled with over $600 million in debt.[1019] While the initial plan was to restructure and sell the company to a buyer, the company valued at about $1 billion in 2019 could not find a buyer that met the $275 million minimum bid. Prima's assets are now expected to be liquidated.

In the apple industry, the State of Washington leads the nation in production, followed by Michigan, New York, Pennsylvania, and California. Regional apple production in Washington has been consolidating. In 2019, Broetje Orchards, one of the state's largest family-owned apple companies, was sold along with FirstFruits Marketing of Washington LLC, and Snake River Housing Inc., to form the GSP company FirstFruits Farms.[1020] FirstFruits became a leading firm in the tree fruit and apple subsector. More recently, in 2023, Washington-based FirstFruits Farms acquired Michigan-based Applewood Orchards and Applewood Fresh Growers.[1021] The acquisition also included Elite Packing.

At the same time as the Broetje Orchards sale, another large-scale purchase occurred in the apple produce market. International Farming Corp. of North Carolina acquired Legacy Fruit Packers, Valley Fruit, and Larson Fruit — all of which are based in the Yakima Valley of Washington.[1022] Legacy Fruit Packers itself was the product of a merger between Larson Fruit Company and Valley Fruit III in 2015. Under International Farming Corp., the combined companies formed Columbia River Orchards and included 4,000 acres of orchards and two packing facilities.[1023] Importantly, the purchase also included interests in Sage Fruit, a marketing firm for apples, pears, peaches, nectarines, apricots and cherries, and Pacific Coast Cherry Packers.

In 2022, after investment from Goldman Sachs Asset Management, Columbia Fruit Packers of Wenatchee and Frosty Packing merged to form New Columbia Fruit Packers. Goldman Sachs took a majority stake in the newly formed company. As a result of the merger, Columbia Fruit Packers operated apple- and cherry-packing facilities and owned over 3,000 acres of apple and cherry orchards or 1.4% of cherry and apple orchard acreage in the state.

Other sub-industries — like iceberg lettuce and fresh cut, bagged salad — have also experienced consolidation.[1024] According to a 2021 investigation conducted by the Guardian and Food and Water Watch, four firms — Cultrale-Safra, Itochu, Taylor Fresh Foods, and Bonduelle — control at least 54% of the market for fresh-cut salad, with Cultrale-Safra alone holding 21% of sales after completing a

takeover of Chiquita Brands International in 2014.[1025] Similarly, 60% of carrots are produced by just two companies, Bolthouse and Grimmway, both of whom are now owned by private equity firms.[1026] Butterfly Equity, which is backed by private equity giant KKR, acquired Bolthouse, while Teays River Investments acquired Grimmway. "There's only two sources," Adam Waglay, cofounder and co-CEO of Bolthouse owner Butterfly Equity, told *Forbes* recently. "We joke around — it's kind of like the OPEC of carrots."[1027]

5. Unfair and Exclusionary Conduct

As GSPs have consolidated and open spot markets for fruit and vegetable crops have disappeared, GSPs have turned their focus from competing for daily sales to building moats around their contract relationships with dominant grocers. Today, "innovative [GSPs] seek to become preferred suppliers of key retail accounts [for particular types of produce] and then focus on understanding the needs of that retailer and developing an account-specific marketing program covering multiple seasons."[1028] These programs often entail providing specific packaging, product sizes and grades, merchandising support, promotional programs, and in some instances, logistical support services. Starting in the 2010s, it also became common for these programs to include category development, a costly service that involves analyzing the product mix, space allocations, and pricing for a category (such as fresh tomatoes, stone fruits, apples-pears-cherries, etc.) using retailer point-of-sale scanner data.[1029] In other words, major GSPs have sought not just to seal multi-season "preferred supplier" arrangements with major grocers but also to partially integrate their marketing operations into those of the grocer — increasing switching costs for the buyer and raising a barrier to entry for new GSPs by adding yet another vertical service-integration requirement for potential competitors.

Since the early 2010s as well, the breeding of proprietary fruit and vegetable varieties has also emerged as a method of competition by large, vertically integrated GSPs.[1030] More GSPs are developing proprietary varieties with specific traits not just at the production level — yield and disease resistance — but also at the consumption level, like flavor and shape. In a few instances, GSPs have been observed to offer their proprietary varieties on a selective or exclusive basis to key accounts as a market segmentation strategy or to support the retailer's market differentiation and positioning strategy — potentially harming competitive opportunities for smaller grocers. Simultaneously, some seed companies are launching partnerships with GSPs to grow and market special fruit and vegetable varieties, such as the partnership between Syngenta and Dulcinea for specialty melons and tomatoes. In general, vegetable seed firms are focused on developing more varieties with consumer traits as a strategy for capturing more of the downstream value of vegetable seeds, and selling the seeds either directly to the grower or operating in production partnerships with GSPs. These relationships may be undermining the ability of smaller GSPs to compete.

One effect of all of these seemingly ever-tighter relationships between GSPs and seed companies, on the one hand, and between GSPs and grocers and distributors, on the other, is that they inhibit the opportunity for new, small, and midsized GSPs to compete on the merits. As early as 2011, there was already evidence that even "mid-tier firms, such as [GSPs] with $50-125 million in sales," were finding it more difficult to become and remain the preferred suppliers of major grocery retailers.[1031] More broadly, the use of exclusive deals and forward/backward integration by major GSPs has made it

practically impossible for independent farmers to grow and sell fruits and vegetables outside of a relationship with a GSP — entrenching GSPs as gatekeepers to produce markets.

The delay between initial investment and returns from sales in the produce sector — particularly in the context of tree orchards and other plants that require multiple years of growth before yielding a crop — is relatively long. The uncertainty of weather and markets over that period of delay makes banks hesitant to provide individual produce farmers with start-up and operating agricultural loans, or at the least, pushes banks to charge high interest rates for whatever loans they do make available. This problem has become more acute in recent years, as small, relationship-based community banks have disappeared rapidly from rural communities, and the number of agriculture-specialist banks with expertise in farm-venture underwriting has dwindled.[1032] This has made it difficult — and in some areas, "functionally impossible"[1033] — for produce farmers to borrow the money required to capitalize farm start-up and annual operating costs, especially if they do not have contracts with buyers guaranteeing them a market for their harvests.

The problem of exclusionary contracts between GSPs and terminal buyers is exacerbated by unfair relationships between GSPs and key input providers, such as water, fertilizer, and seed suppliers. For example, there is substantial evidence that dominant GSPs and their largest contract growers receive preferential prices and preferential access to supplies from agricultural input providers.[1034] There is also evidence that new, beginner, and small produce farmers are being foreclosed from accessing suitable land and adequate water supplies as incumbent GSPs are buying or otherwise appropriating an ever-larger share of both.[1035]

Most fruit and vegetable crops must be planted in regions with specific climate features (such as particular temperature and moisture levels) and on farmland with specific soil and nutrient characteristics to succeed. Since transport costs are such a large expense, produce farms must also be located in relative proximity to the distribution centers of the grocers and wholesalers they wish to serve in order to be competitive. Once a fruit or vegetable crop is planted, it requires water, which — unless the area receives sufficient precipitation — must be purchased from local water utilities or extracted from nearby rivers, lakes, and aquifers. In many produce-growing regions, however, GSPs and their contract farms have reportedly cornered a substantial share of the quality farmland and water supplies available — foreclosing independent farmers and rival GSPs from entering production in those regions and competing for the business of proximate buyers.

The degree to which GSPs have been able to foreclose competition for the majority share of the produce market represented by national grocery chains and foodservice distributors is exemplified by the limited success that "food hubs" have had in breaking into this segment over the past decade. Beginning in the early 2010s, regional food advocates pushed food hubs — essentially, small-to-midsize aggregators that can buy, combine, and market produce from small growers on a regional scale — as a cooperative-style answer to the volume demands of large produce buyers. Although many hubs have become successful enterprises and helped to rebuild the "missing middle" supply-chain infrastructure necessary to connect independent producers to local and regional processors, distributors, and retailers — practically none have succeeded in marketing produce to national grocery chains.[1036]

6. Harms to Farmers and Communities

Against this background, produce growers no longer compete with one another to sell fruits and vegetables but for contracts with GSPs. This competition "depresses the produce market" and makes growers into "price-takers for [GSP] services."[1037] As the number of GSPs has declined, dominant GSPs in fruit and vegetable subsectors have been able to increase the markup on their harvesting, cooling, and marketing services. As these upcharges have grown, they have come to enable GSPs to make money on harvested, packed, and delivered crops regardless of whether the price collected from crop buyers is sufficient to cover the production costs borne by the farmer. Indeed, GSPs are now incentivized — both by the prospect of service charges and by their contract obligations to terminal buyers — to continue harvesting and shipping farmers' crops as long as the return in charges covers *their* marginal costs, not the farmer's, resulting in a built-in bias toward oversupply and depressed prices for fruit and vegetable commodities.[1038]

In effect, the rise of GSPs in the 1990s and their consolidation of economic power in various fruit and vegetable sub sectors since then has consigned produce farmers — particularly those with small farms under 100 acres in size — to either accept a "formalized form of sharecropping" or lose access to substantial markets for their crops.[1039] Simultaneously, as financing options have dwindled for produce growers — again, particularly small farmers — over the past two decades, GSPs have increasingly presented themselves as an alternative source of credit. Unlike banks, however, GSPs are not disinterested lenders. When a farmer uses a loan from their GSP to expand operations, the GSP reaps not just an interest payment in return but also higher service charges at harvest time and greater crop volumes, which they can sell to cover marginal costs (labor, utilities, etc.) and generate operating profits.[1040] If a farmer later experiences difficulty paying back their GSP loan, the GSP may well find that advantageous, too — because it gives the GSP additional leverage in negotiations with the farmer over service charges, the split of crop proceeds, and so forth. Given these conflicts of interest, it is unsurprising that, according to UCSC's Agroecology Center, "there are many examples of GSPs extending far more credit than a farm could reasonably repay," and "there are areas of the country where farmers [seem to] end up increasing their debt to the [GSP] year after year."[1041]

The effect of these dynamics on small fruit and vegetable farmers, the farmworkers who work the fields and orchards, and the quality of the food available to the American public, has been nothing short of devastating. Since 2002, the total number of bearing acres in the United States has declined substantially across most major fruit crops, including apples (~10%), apricots (~60%), avocados (~30%), nectarines (~50%), peaches (~40%), pears (~43%), plums and prunes (~60%), and citrus fruits (~41%).[1042] Fundamentally, this loss of acreage seems to have been caused by a "dramatic contraction in the number of small operations."[1043] For example, the number of apple-growing farms between 5 and 250 acres in size shrank from 8,151 in 2002 to 4,710 in 2017.[1044]

Today, 112 farms (with 500 acres or more each) hold roughly a third of the country's apple acres, 37 farms (with 100 acres or more each) hold around 70% of its nectarine acres, 34 farms (with 50 or more acres each) hold over half of its apricot acres, 58 farms (with 250 or more acres each) hold nearly 30% of its sweet cherry acres, and 173 farms (with 100 acres or more each) hold over 60% of its peach acres.[1045] As small farmers have been squeezed out and a handful of large farm operators — most likely

under the supervision and direction of a GSP — have consolidated control over fruit and vegetable production, the wages and working conditions of farmworkers have deteriorated as well.[1046]

Ultimately, the loss of domestic production has also translated into less fresh fruits and vegetables being available for Americans at the grocery store. The annual per capita retail availability of many fruits is lower now than it has been in decades. For example, there were 28.4 lbs. of apples, cherries, peaches, pears, and plums on grocery store shelves per U.S. resident in the 1990s.[1047] That number declined to 25.7 lbs. in the 2000s and was only 24.4 lbs. between 2010 and 2017.[1048] Even the fruits and vegetables that do remain on the shelves, however, are not the same as those which Americans had access to just two decades before — as imports have replaced local produce, and varieties engineered for yield and uniformity have replaced unique regional ones.[1049] In the words of agricultural policy expert Austin Frerick:

> Since the 1990s, the United States has been a net importer of fresh and processed fruits and vegetables, and the gap gets bigger every year. More than half of all tomatoes sold in America are now brought in from Mexico, and nearly 60 percent of the apple juice sold in the United States comes from China, even though most of the United States has a climate conducive to apple production.
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> . . .
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> The offshoring of the American food system has made our food more like the rest of the American economy: uniform, lackluster in quality, and highly consolidated. This restructuring is visible in every aisle of the grocery store. Eaters get a lower-quality, blander product; there's a night and day difference between a backyard strawberry and a bloated, tasteless Baja berry.

Chapter 3. Agricultural Credit and Insurance

The Agricultural Finance Sector

1. Background

Access to agricultural credit that is appropriately structured and priced is critical to starting and operating a farm. In theory, farmers can obtain credit from one of three sources today: a Farm Credit System (FCS) institution, a commercial bank, or (in special cases) the Farm Service Administration of the USDA. Outside of commodity-crop and contract-growing operations, however, beginner, small, and midsized farmers typically struggle to find lenders willing to finance and underwrite their operations. These lending asymmetries disproportionately impact farmers of color, who are more likely to own and operate these types of operations and face additional barriers resulting from decades of systemic racist lending policies. In part, these struggles owe to default preferences for industrial, monoculture operations in the administration of the Farm Service Administration's (FSA) direct lending and loan guarantee programs. More broadly, however, they are a product of consolidation among commercial banks and among Farm Credit System (FCS) institutions.

FCS is a network of cooperative financial institutions chartered by Congress in 1916 to provide a dependable and affordable source of credit to U.S. farmers.[1050] Today, FCS is composed of 56 lending associations and four district banks that focus on lending to specific regional territories.[1051] FCS associations do not accept deposits or offer traditional banking services. Instead, associations acquire loanable funds by borrowing from their district bank, which is owned cooperatively by the associations it serves. The four district banks, in turn, acquire funds from the Federal Farm Credit Banks Funding Corporation (FFCBFC), which generates capital for the Farm Credit System by selling bonds to investors. In total, the system today has more than $300 billion in assets and serves more than 500,000 borrowers.[1052]

Today, FCS institutions hold over 40% of all outstanding farm debt in the United States. Commercial banks supply another 40% of agriculture loans. The rest come from a mix of governmental sources (such as the Farm Service Administration), credit unions, and other financial institutions.

2. Concentration, Consolidation, and Integration

a. The Farm Credit System

The current structure of the FCS is shockingly concentrated by historical standards. The number of FCS banks and associations has been declining for decades through mergers and reorganizations. In the mid-1940s, there were over 2,000 lending associations. That number declined to 900 by 1983, fewer than 400 by 1987, 200 by 1998, and only 80 as of 2015. The system operated with 12 regional bank districts well into the 1980s, but only eight survived in 1998, and only four regional banks have remained since 2012.[1053] As of March 2022, the six largest multistate FCS lending associations held

slightly over half of the total assets of all 65 associations. The median-size association had $1.44 billion in assets, while the bottom half of the associations (by assets) held less than 10% of total association assets.[1054]

Twenty years ago, the typical FCS association covered several counties and specialized in either land or farm production loans. Today, the typical FCS association covers a much larger region, delivers multiple farm and rural credit programs and services, and has an extensive loan portfolio. While the FCA does not publish data on FCS branch office numbers and locations, as the lending associations themselves have reported occasionally, they have been consolidating and closing branch offices. Not only do office closures distance FCS lenders from the farmers and ranchers they are lending to, but those lenders are likely to be less in touch with local agricultural conditions, which could increase the riskiness of FCS lending.[1055] Indeed, there are indications that the size and complexity of FCS institutions are already creating oversight difficulties for the Farm Credit Administration.[1056]

b. Commercial Banking

Nearly seven out of 10 community banks have disappeared since the 1980s—and the pace of their decline is accelerating. In 1984, there were about 14,400 community banks in America and they controlled nearly 40% of the industry's assets. By 2011, the number of community banks had declined to a little over 6,350 and their share of the market to about 15%.[1057] Since then, their decline has accelerated—just between 2011 and 2019, the country lost nearly a third of its community banks. Today, there are around 4,500 community banks and their market share stands at approximately 12%.[1058]

This mass disappearance of community banks has consolidated the industry's assets in the hands of metro-headquartered megabanks. In 1995, megabanks—banks with more than $100 billion in assets—controlled 17% of all industry assets. By 2005, their market share had grown to 50 percent. As of 2019, megabanks account for 64% of industry assets—and the largest four banks alone control 41%.[1059] None of these megabanks—and very few, if any, of the 105 large banks with $10-100 billion in assets that account for the remainder of the market held by noncommunity banks—are headquartered in rural communities.[1060]

The primary driver of this consolidation has been a 30-year sequence of merger waves. Mergers between banks were responsible for 70-75% of the annual decline in the number of community banks between 1984 and 2019.[1061] This high level of merger activity is ongoing and potentially intensifying in the aftermath of the pandemic. According to The Wall Street Journal, bank mergers deals were "on track to hit their highest levels since the financial crisis" in 2021, with deals totaling more than $54 billion being announced through September of that year alone.[1062]

The consolidation of the banking industry has left many small towns and rural communities dependent on absentee-owned banks for access to credit — or with limited access to financial services entirely. In 1995, only 14% of rural counties did not have a locally-owned bank. Today, that percentage is more than a third.[1063] Between 2012 and 2017 alone, nearly 100 rural banking markets lost all of their bank headquarters and over 40% of rural counties lost a significant number of bank branches.[1064] Even in rural counties where locally-owned financial institutions still exist, their presence has thinned

dramatically. In 1976, around 70% of financial institutions in micropolitan counties—and close to 80% in more rural counties—were locally owned. By 2007, that percentage was less than 20% in both types of counties.[1065] As a result, "there is a real concern for the development of 'credit deserts' in small towns and rural communities," as many are becoming dependent on absentee-owned banks and exploitative alternatives, such as payday lenders and check-cashing businesses, for financial services.[1066]

3. Harms to Farmers and Communities

Farmers, like most rural business owners, are dependent on small, locally-owned financial institutions for access to capital — and are struggling to find the capital to start, grow, and survive shocks as those institutions disappear. Farm operations generally do not attract equity financing[1067] and have greater difficulty providing the "hard" financial data required to satisfy the standardized lending criteria of large banks and online lenders.[1068] As a result, they are uniquely reliant on small, locally-owned banks and their "relationship lending" practices for financing.[1069] Outside of the Farm Credit System, community banks make 70% of agriculture loans, and the lion's share of those loans are made by agriculture-specialized banks that are small and headquartered in rural communities.[1070] Using their deep knowledge of local communities and face-to-face relationships with borrowers, such banks can extend loans to rural farms and businesses that might seem like "difficult credits" to absentee-owned institutions — while judging correctly that the loan will be paid back.[1071] They play an especially important role in "tending to the credit needs of many small and midsized farmers," according to a 2020 report by the FDIC, and are "highly committed to meeting those farmers' credit needs even during periods of agricultural stress beyond their borrowers' control."[1072]

As locally-owned banks have disappeared from rural communities, however, this critical source of capital for rural farms and businesses has dried up. Peaking in 2004, the real (inflation-adjusted) value of small loans to businesses in rural communities (including farms) has declined to less than half of what it was then — and is below 1996 levels today.[1073] This is consistent with what numerous empirical studies have shown about acquisitions of community banks by nonlocal institutions, namely, that they lead to significant and persistent reductions in credit supply to local small businesses.[1074] More directly, a study has found that the percentage of farms with less than $1 million in annual production using agricultural credit declined by 10 points between 1994 and 2016, while the percentage of farms with more than $2 million in annual production using such credit increased by 20 points over the same period.[1075] Scholars have observed that, while "large-scale farmers" have enjoyed "greater flexibility in regards to medium- and long-term credit financing" in recent years, it has become "very rare" for small and beginning farmers to access debt for "long-term investments," and especially so when it comes to capital investments other than land acquisition.[1076] Consistent with that observation, a primary survey of small Tennessee farmers with less than $350,000 in annual gross cash farm income recently (2020) found that approximately six out of ten were credit constrained and facing difficulties obtaining adequate financing for their operations.[1077]

This dynamic is starkly illustrated by the composition of FCS loans, which has shifted overwhelmingly in favor of dominant agribusiness, processing, and trading interests over the past three decades at the expense of small and midsize family farms. Although FCS is not a lender of last resort, Congress has repeatedly emphasized that FCS should be a decentralized, farmer-controlled system that is "responsive to the credit needs of all types of agricultural producers having a basis for credit."[1078] FCS

institutions, however, are increasingly financing only one type of agricultural producer: large-scale grain agribusinesses and industrial livestock operations associated with dominant processors. The share of total new FCS loans going to small farms by dollar volume declined from 30.3% in 2003 to a nadir of 13.9% in 2014 before increasing slightly to 15.9% by 2019.[1079] Although that share increased to 18.8% in 2021, that was because the Farm Credit Administration (FCS's regulator) determined it had somehow undercounted loans to small farms in the past.[1080] On the ground, anecdotal evidence suggests FCS institutions are no longer effective lenders for young, beginning, and small farmers in large parts of the country — particularly for those with fruit, vegetable, and mixed-crop farms.[1081] Meanwhile, a network analysis of the pork industry conducted by Loka Ashwood, *et al.*, in 2022 found that FCS institutions had become the predominant source of financing for dominant hog integrators and processors, including Prestage Farms, Christensen Farms, and even China-backed Smithfield Foods.[1082]

This shift in FCS lending is particularly tragic in light of the fact that — at least before government subsidies tip the scales — smaller farms with diversified crop and livestock operations have significant profitability and resilience advantages over large, monoculture farms. Since grain operations typically cannot generate a viable return without substantial scale, small and midsize farms are relatively more likely to grow specialty crops (fruits, vegetables, etc.) and to diversify their production to include multiple crops and types of livestock. Specialty crops and livestock fetch higher prices per unit and can be sold direct-to-consumer or in local markets, which allows smaller farms to earn better profit margins and generate more sustainable revenue from their operations. Moreover, since federal subsidy programs work best for large, monoculture grain agribusinesses, smaller-scale farms tend to build resilience to adverse weather and market events directly into their operations through diversification. By raising different crops or integrating livestock, small and midsize farms spread their income over multiple harvests, conserve the health of their soil, and reduce their reliance on any single set of input suppliers or distribution channels.

Nonetheless, in today's farm credit markets, small or midsize farms with diversified operations would likely face an uphill battle to secure a loan from an FCS institution. [1083] Increasingly, they are also unlikely to find an agriculture-specialist bank with the expertise — and relationship-based approach — required to properly underwrite their farm venture's creditworthiness. All these issues are further compounded for farmers of color, who face these standard issues which are then amplified by the effects of generations of racist lending policies.

The Crop Insurance Sector

1. Background

Farmers purchase crop insurance to protect against environmental hazards, crop failures, and market volatility. Obtaining crop insurance is also often required by farm lenders, making access to crop insurance policies a critical condition for young and small farmers to access financing. Most crop insurance in America is sold in conjunction with a federal subsidy program operated by the Federal Crop Insurance Corporation (FCIC). FCIC authorizes private-sector insurance companies — called Authorized Insurance Providers (AIPs) — on a yearly basis to underwrite and sell crop insurance policies pursuant to reinsurance agreements. Under these agreements, FCIC provides AIPs with: (1) protection against a portion of their losses on policies sold; (2) an operating subsidy equal to 12% or 20.1% of the premium value of issued policies (percentage varying by policy type); and (3) the terms on which FCIC will pay a farmers' premium subsidy to AIPs. In return, AIPs agree to comply with regulations promulgated by the USDA's Risk Management Agency (RMA) and to compete with each other for the opportunity to underwrite policies for crop insurance agencies, which sell policies directly to farmers.[1084]

2. Concentration, Consolidation, and Integration

Although public information about the number, identity, and market share of crop insurance carriers and agencies is limited, the available evidence suggests that both segments have consolidated dramatically in recent years. "Crop insurance was once a sector full of smaller players," an Insurance Journal article summarizing a proprietary report on the industry by Conning noted in 2017, but a wave of mergers and acquisitions has left the sector with "fewer and larger carriers," and made "corporate owners a dominating force" among agencies. "The high degree of M&A activity in the sector," the article continued, has also shifted the ownership of crop insurance policies "toward large corporate customers, which accounted for 93% of premiums in 2016."[1085]

Driven in part by depressed grain prices (which reduce crop values and, in turn, policy premiums, while increasing the risk of payouts), several large carriers sold their crop insurance divisions and exited the market in the last decade. For example, John Deere sold its crop insurance arm to Farmers Mutual Hail in 2014. A year later, Wells Fargo sold its Rural Community Insurance Services division, one of the largest U.S. crop insurers, to Zurich Insurance Group. That same year, OneBeacon Insurance Group transferred its crop insurance business to AmTrust, while AgriLogic Insurance, a Kansas-based crop insurer and agriculture consultant, was bought by Aspen Insurance Holdings.[1086] These and other transactions consolidating the carrier segment have decreased the number of AIPs in the federal crop insurance program, according to the Congressional Research Service, leaving only 16 national, regional, and single-state AIPs to underwrite 379.9 million acres of farmland for FCIC-subsidized policies as of 2021[1087] — and only 12 today.[1088] Overall, as of 2021, the top four largest multi-peril crop insurers control nearly 66% of the U.S. market for crop insurance policies measured by direct premium written (DPW).[1089]

As carriers have consolidated upstream and farms have consolidated downstream, crop insurance agencies have followed suit. "Running crop insurance agencies has become more difficult in recent years, with a lot of mega agencies changing," Tyler Silveus, CEO of Silveus Insurance Group, said in an interview with DTN-Progressive Farmer. “As farms continue to consolidate, agencies will too." Silveus Group bought out Cargill’s crop insurance agency in 2015 to become the nation’s largest independent crop insurance agency, with 80-90 brokers selling policies in every state. As Silveus has scaled, it has developed proprietary software to manage and support “a large, mobile agent force” in selling insurance policies and grain hedging instruments aligned closely with the needs of large agribusiness operations. Outside of “mega-agencies” such as Silveus, however, the broader agency segment appears to have grown moribund and insular. While about 12,000 agents are listed on RMA’s website, industry observers estimate only two-thirds are likely to be active, and relatively few beginning agents are entering the business every year.[1090] Indeed, even Silveus is selling out now, with an acquisition by a subsidiary of Accession Risk Management Group — a global insurance brokerage conglomerate that has rolled up over 170 brokerage groups in recent years — being announced earlier this year (2024).[1091]

3. Harms to Farmers and Communities

As a result of these developments among carriers and agencies, the crop insurance industry is leaving small and midsize farms behind and focusing almost exclusively on subsidy-eligible grain operations. As of 2019, 94% of the federally-subsidized policies issued by AIPs were for grain crops, and around half of the farms insured by AIPs were larger than 500 acres. In contrast, less than 15% of insured farms had fewer than 100 acres, and only 4% of policies were for specialty crops or multiple crops.[1092] Farmers of color, who are more likely to operate these types of operations, are disproportionately impacted by this sector’s structural shifts.

This agribusiness-heavy skew in crop insurance enrollment is driven by the business incentives of the sector’s dominant carriers. As industry consultancy Conning found in 2017, the primary features that have made crop insurance underwriting attractive to large carriers are “large premium volumes,” “low consumption of capital,” and “low correlation to other perils.”[1093] A carrier with a business model focused on these goals would naturally prefer insuring large, monoculture operations, which can be underwritten with streamlined procedures and are relatively insulated from market and environmental risks by federal commodity subsidy programs. In comparison, underwriting a crop insurance policy for a small or midsize farm — particularly a specialty crop or diversified one — would likely result in a lower aggregate premium, require more underwriting resources, and receive substantially less (if any) protection from federal programs. In this context, AIPs have a clear incentive to prefer serving established agribusinesses over smaller and non-conventional farms.

These carrier incentives matter because, although AIPs cannot modify the policies or prices established by RMA, they have wide discretion to structure the compensation of agents to encourage them to sell preferred types of policies.[1094] Agents, for their part, have shown little interest in serving beginner, small, or diversified farms and even in learning about the types of policies geared toward their needs, such as the Whole Farm Revenue Protection (WFRP) policy authorized by FCIC in 2015.[1095]

Until 2015, the low number of non-grain-crop farms enrolled in the federal crop insurance program could have been attributed in large part to the types of policies that FCIC allowed AIPs to issue. Historically, FCIC-approved policies covered a single crop at a time. This tended to make obtaining insurance for a diversified farm logistically difficult, as farmers (and their insurance agents) had to apply for and then manage a separate policy for each crop they planted and each type of livestock they integrated. For nearly a decade now, however, FCIC and RMA have worked to eliminate this logistical barrier. In 2015, FCIC authorized AIPs to issue WFRP policies, which insure a farm's total revenue regardless of what it produces.[1096] Since then, RMA has taken successive steps to streamline the underwriting process for WFRP policies and reduce paperwork burdens for small and midsize farms, including by introducing a Micro-Farm Insurance Program that minimized requirements for farms with less than $100,000 in annual revenue.[1097]

After WFRP was introduced in 2015, enrollment expanded rapidly at first — almost tripling in two years. After 2017, however, WFRP enrollment first stagnated and then declined. Even as RMA progressively lightened the applicable requirements, the number of WFRP policies fell from almost 3,000 in 2017 (covering $2.8 billion in crops) to fewer than 2,000.[1098] While farmers who seek WFRP policies continue to lament that it is more burdensome to enroll in a WFRP policy than a single-crop one, the real reason enrollment has retreated even as RMA has streamlined the underwriting process appears to be sabotage by carriers and apathy from agents. According to the National Sustainable Agriculture Council, farmers have not only "lament[ed] the program's uniquely high paperwork burden" but "also report[ed] becoming disillusioned with WFRP after their indemnity payments [were] reduced at the time of claim."[1099] Farmers also "routinely express an inability to find crop insurance agents who are willing to sell — or even have knowledge about — WFRP, despite the legal requirement for [AIPs] to sell the product."[1100] One farmer noted at a listening session hosted by the National Sustainable Agriculture Coalition, "It is not just that they don't understand [WFRP], but in my experience, they are outwardly hostile to a different insurance program."[1101]

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[5] BARRY LYNN, LIBERTY FROM ALL MASTERS: THE NEW AMERICAN AUTOCRACY VS. THE WILL OF THE PEOPLE 123-124 (2020)
[6] BARRY LYNN, LIBERTY FROM ALL MASTERS 123-124 (2020)
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[8] *See* Act of May 15, 1862, ch. 72, §1, 12 Stat. 387.
[9] *See* BARRY LYNN, LIBERTY FROM ALL MASTERS (2020)
[10] *See* BARRY LYNN, LIBERTY FROM ALL MASTERS (2020)
[11] GRANT MCCONNELL, THE DECLINE OF AGRARIAN DEMOCRACY 10 (1953).
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[15] *See* United States v. Trans-Missouri Freight Ass'n, 166 U.S. 290, 319 (1897). *See also* Standard Oil Co. v. United States, 221 U.S. 1, 83-84 (1911) (Harlan, J., concurring in judgment) ("All who recall the condition of the country in 1890 will remember that there was everywhere, among the people generally, a deep feeling of unrest. The Nation had been rid of human slavery… but the conviction was universal that the country was in real danger from another kind of slavery sought to be fastened on the American people, namely, the slavery that would result from aggregations of capital in the hands of a few individuals and corporations controlling, for their own profit and advantage exclusively, the entire business of the country, including the production and sale of the necessaries of life. Such a danger was thought to be then imminent, and all felt that it must be met firmly and by such statutory regulations as would adequately protect the people against oppression and wrong.").
[16] *See* Sanjukta Paul, *Recovering the Moral Economy Foundations of the Sherman Act*, 131 YALE L. J. 175, at 181-82 (2021).
[17] HOMER EDWARD SOCOLOFSKY, THE PRESIDENCY OF BENJAMIN HARRISON 53 (1987).
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[22] *See* The Sherman Antitrust Act, Pub. L. 51–647, 26 Stat. 209 (codified in 15 U.S.C. §§ 1-7).
[23] *See* Sanjukta Paul, *Recovering the Moral Economy Foundations of the Sherman Act*, 131 YALE L. J. 175, 183-190 (2021).
[24] *See* Sanjukta Paul, *Recovering the Moral Economy Foundations of the Sherman Act*, 131 YALE L. J. 175, 183-190 (2021).
[25] *See* Sanjukta Paul, *Recovering the Moral Economy Foundations of the Sherman Act*, 131 YALE L. J. 175, 183-190 (2021).
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[31] *See* Bruce Bartlett, *Money and Politics*, FORBES (Jun. 12, 2009); MATT STOLLER, GOLIATH: THE 100-YEAR WAR BETWEEN MONOPOLY POWER AND DEMOCRACY (2020).
[32] *See* Gideon Cohn-Postar, *"Vote for your Bread and Butter": Economic Intimidation of Voters in the Gilded Age*, 20(4) J. Gilded Age & Progressive Era 480 (2021).
[33] WILLIAM J. BRYAN, THE FIRST BATTLE: A STORY OF THE CAMPAIGN OF 1896 292 (1896).
[34] *See* Ellis Arnall, *The Menace of Monopoly*, 33 No. 3 SW. REV. 217 (1948).
[35] *See* Ellis Arnall, *The Menace of Monopoly*, 33 No. 3 SW. REV. 217 (1948).
[36] BARRY LYNN, LIBERTY FROM ALL MASTERS. *See also* NAOMI R. LAMOREAUX, THE GREAT MERGER MOVEMENT IN AMERICAN BUSINESS, 1895-1904 1 (1985).
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[40] *American Tobacco Company*, ENCYCLOPAEDIA BRITANNICA (Jul. 21, 2024); United States v. American Tobacco Co., 221 U.S. 106 (1911).
[41] *See* Helen Kramer, *Harvesters and High Finance: The Formation of the International Harvester Company*, 38 No. 3 BUS. HIS. REV 283 (1964). *See also Myers, David Lynn. "The changing market structure of the farm equipment manufacturers and dealerships." (1967).*

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[45] *See Northern Securities Co. v. United States*, 193 U.S. 197 (1904).
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[47] *See Standard Oil Co. v. United States*, 221 U.S. 1 (1911). *See also United States v. American Tobacco Co.*, 221 U.S. 106 (1911) (companion case). In general, *Standard Oil* (1911) held that a combination could constitute an illegal monopoly under the Sherman Act if a court decided that the combination is "unreasonably restrictive of competitive conditions." *Standard Oil Co. v. United States*, 221 U.S. 1, 61 (1911). Beyond that, a combination — regardless of what it is "in the concrete" — could only be a "monopoly" or have a "monopolistic tendency" prohibited under the Sherman Act if: (1) it was created "with an intent to wrong the public or limit the right of individuals," rather than "the legitimate purpose of reasonably forwarding personal interest and developing trade"; and (2) it is likely to result in one of three "evils" that supposedly "led to the public outcry against monopolies" — higher prices, lower production, or deterioration in the quality of the monopolized product. *Standard Oil Co. v. United States*, 221 U.S. 1, 56, 60 (1911). Essentially, in *Standard Oil*'s telling, the existence of a monopoly prohibited by the Sherman Act turned, not on the power or control a person or group possessed over the market, but on whether that power was reasonably justified (in the judgment of a court), whether it was legitimately obtained (in the judgment of a court), and what consequences it has had, or might have, for consumers (also in the judgment of a court). *See* Basel Musharbash and Daniel Hanley, *Toward a Merger Enforcement Policy That Enforces the Law: The Original Meaning and Purpose of Section 7 of the Clayton Act*, ___ Duquesne L. Rev ___ (forthcoming 2025) (manuscript on file with author).
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[49] Marc Winerman, *The Origins of the FTC: Concentration, Cooperation, Control, and Competition*, 71 ANTITRUST L. J. 1, at 13 (2003) ((citing THE COMMONER, May 26, 1911, at 1). Bryan reportedly asked, "When did a court interpret a statute against murder . . . on the theory that the legislature meant undue murder . . .?"
[50] *See* Basel Musharbash and Daniel Hanley, *Toward a Merger Enforcement Policy That Enforces the Law: The Original Meaning and Purpose of Section 7 of the Clayton Act*, ___ Duquesne L. Rev ___ (forthcoming 2025) (manuscript on file with author). Congress specifically targeted corporate mergers, exclusive dealing, and commercial discrimination based on what it had learned from a series of groundbreaking investigations over the previous quarter-century into the "actual processes and methods of monopoly." *See* Everette MacIntyre, *Small Business and the Antitrust Laws*, 39 U. DET. L. J. 169, 174-75 (1961); DAVID D. MARTIN, MERGERS AND THE CLAYTON ACT 43-45 (1959); Earl W. Kintner, *Introduction: The Clayton Act*, in LEGISLATIVE HISTORY OF THE FEDERAL ANTITRUST LAWS AND RELATED STATUTES 989-1023 (1978).
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[53] *See* BARRY LYNN, LIBERTY FROM ALL MASTERS 145-147 (2020).
[54] *See* BARRY LYNN, LIBERTY FROM ALL MASTERS 154 (2020).
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[59] Thomas K. Fisher, *Antitrust During National Emergencies*, 40 MICH. L. REV. 969, 996 (1942).
[60] *See* MATT STOLLER, GOLIATH (2020).
[61] *See generally* Thesis, Neil O. Buschman, *The United States Food Administration During World War I: The Rise of Activist Government Through Food Control During Mobilization for Total War*, AUBURN U. (2013).
[62] Thesis, Neil O. Buschman, *The United States Food Administration During World War I: The Rise of Activist Government Through Food Control During Mobilization for Total War*, AUBURN U. 34, 77 (2013).
[63] AUSTIN FRERICK, BARONS (2024); *See also* Linda Cameron, *Agricultural Depression*, MINNESOTA HISTORICAL SOCIETY (2018), https://www.mnopedia.org/agricultural-depression-1920-1934 ; AMERICAN HISTORICAL ASSOCIATION, *GI Roundtable Series* (2024), https://www.historians.org/teaching-learning/aha-historical-collections/gi-roundtable-series/.
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Administration in deciding upon the assured profit as between the producer and the packer should have been guided by this definition of the President, and if they had done so they would have come nearer arriving at justice. In the three-ear prewar period the producers of meat animals were not allowed a profit by the packers on meat animals marketed. The packers in the same period took enormous profits. From the terms of the packers' license and the results to producers since they were licensed, it would seem the intent of the Food Administration is to perpetuate this condition.").

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[70] Wayne Rasmussen, *Historical Overview of U.S. Agricultural Policies and Programs*, U.S. DEP'T. OF AG., https://www.ers.usda.gov/webdocs/publications/40556/50960_aer530b.pdf?v=0; *See also* The United States Senate Committee on Agriculture, Nutrition, and Forestry 1825 – 1998, *Chapter 3: From the "Golden Age" to the Great Depression: 1900-1929*, U.S. S., (1998), https://www.govinfo.gov/content/pkg/GPO-CDOC-105sdoc24/html/ch3.html ("When we talk of the "Coolidge prosperity" of that decade, we need to remember that not all Americans shared in that prosperity. For farmers, the 1920's were years of overproduction, debt and depression. Senator Norris and other farm state Senators asked how long the prosperity of big business could last "when the fundamental industry of all was languishing." The Coolidge administration, which epitomized laissez faire, offered no program to aid farmers . . .").

[71] Wayne Rasmussen, *Historical Overview of U.S. Agricultural Policies and Programs*, U.S. DEP'T. OF AG., https://www.ers.usda.gov/webdocs/publications/40556/50960_aer530b.pdf?v=0.

[72] *See* Wayne Rasmussen, *Historical Overview of U.S. Agricultural Policies and Programs*, U.S. DEP'T. OF AG., https://www.ers.usda.gov/webdocs/publications/40556/50960_aer530b.pdf?v=0 ("[A]gricultural prices collapsed in July 1920, largely because of a sudden decline in export demand. Farmers averaged $2.16 per bushel for wheat in 1919, but only $1.03 in 1921. For more than a decade, prices went up and down, with the trend always down. The situation was aggravated by the rigidity of nonagricultural prices and wages, creating a new gulf between farm income and costs. The continuing farm depression was one of the causes of the Great Depression."). *See also* MATT STOLLER, GOLIATH: THE 100-YEAR WAR BETWEEN MONOPOLY POWER AND DEMOCRACY 157-58 (2020) (citing Douglas E. Bowers, Wayne D. Rasmussen, and Gladys L. Baker, Economic Research Service, U.S. Department of Agriculture, History of Agricultural Price-Support and Adjustment Programs, 1933-84, Agriculture Information Bulletin No. 485 (Dec. 1984); and Census Bureau, Historical Statistics of the United States 1789-1945, at 31 (1949)).

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[74] William Kolasky, *Robert H. Jackson: How a "Country Lawyer" Converted Franklin Roosevelt into a Trustbuster*, 27 ANTITRUST 85, 85 (2013). *See also* MATT STOLLER, GOLIATH: THE 100-YEAR WAR BETWEEN MONOPOLY POWER AND DEMOCRACY 40-50 (2020).

[75] *See* Standard Fashion Co. v. Magrane-Houston Co., 258 U.S. 346 (1922); FTC v. Western Meat Co., 272 U.S. 554 (1926); Int'l Shoe Co. v. FTC, 280 U.S. 291 (1930).

[76] In the aftermath of the First World War, the discretion which *Standard Oil* (1911) gave to the courts in the application of the Sherman Act offered a convenient vehicle for a reactionary bench to read its "big business philosophy" into the antitrust laws. *See Standard Oil Co. of California v. United States*, 337 U.S. 293, 315 (1949) (Douglas, J., dissenting). In a trio of cases over the 1920s — *United States v. United Shoe Mach. Corp.*, 247 U.S. 32 (1918), *United States v. U.S. Steel Corp.*, 251 U.S. 417, 422 (1920), and *United States v. Int'l Harvester Co.*, 274 U.S. 693 (1927) — the Court developed concepts of "monopolizing" and "restraint of trade" that hinged more or less exclusively on whether a judge found the defendant's intentions and conduct were "bad." *See* Eugene V. Rostow, Monopoly Under the Sherman Act: Power or Purpose?, 43 ILL. L. REV. 745, 758-61 (1949).

[77] William Kolasky, *Robert H. Jackson: How a "Country Lawyer" Converted Franklin Roosevelt into a Trustbuster*, 27 ANTITRUST 85, 89 (2013) (quoting Robert H. Jackson, U.S. Assistant Attorney General for the Antitrust Division, *Should the Antitrust Laws*, 71 U.S.L. Rev. 575 (1937) (address before the Trade and Commerce Bar Association and Trade Association Executives, Sept. 17, 1937)).

[78] See Derek Bok, *Section 7 of the Clayton Act and the Merging of Law and Economics*, 74 HARV. L. REV. 226, 229-30 (1960).

[79] MATT STOLLER, GOLIATH: THE 100-YEAR WAR BETWEEN MONOPOLY POWER AND DEMOCRACY 44 (2020).

[80] AMERICAN HISTORICAL ASSOCIATION, *GI Roundtable Series* (2024), https://www.historians.org/teaching-learning/aha-historical-collections/gi-roundtable-series/; *See also* Jerome Stam and Bruce Dixon, *Farmer Bankruptcies and Farm Exits in the United States, 1899-2002*, U.S. DEP'T. OF AG. (2004); Matthew Jaremski and David Wheelock, *Banking on the Boom, Tripped by the Bust: Banks and the World War I Agricultural Price Shock*, NAT'L. BUR. ECON. ANALYSIS (2018); *Overproduction Leads to Low Prices*, IOWA P.B.S. (1979), available at https://www.iowapbs.org/iowapathways/artifact/1605/overproduction-leads-low-prices.

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[82] *See* Thurman Arnold, *The Economic Purpose of Antitrust Laws*, 26 MISS. L. J. 207, 208 (1955).

[83] *See* AUSTIN FRERICK, BARONS (2024) (citing JOHN C. CULVER AND JOHN HUDE, AMERICAN DREAMER: A LIFE OF HENRY WALLACE 72 (2000)).

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[118] MATT STOLLER, GOLIATH 149-50 (2020).
[119] MATT STOLLER, GOLIATH 149-50 (2020). It bears noting that Arnold did not achieve these results by sheer force of will; Congress gave him the resources to do the job. The Antitrust Division's budget increased nearly six-fold between 1938 and 1942. After declining somewhat during the war years, the Antitrust Division's budget increased again in the late 1940s. By 1949, the Antitrust Division's budget was approximately 900% greater than it was in 1938. *See Appropriation Figures For The Antitrust Division*, U.S. DEP'T. OF J. ANTITRUST DIV., (Jul. 2024), https://www.justice.gov/atr/appropriation-figures-antitrust-division.
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[127] *See, e.g.*, To Amend the Clayton Act: Hearing Before the H.R. Comm. on the Judiciary, 74th Cong. 4 (1935); 80 CONG. REC. 7761 (1936) (statement of Representative Patman); 80 CONG. REC. 9422 (1936) (statement of Representative Patman) ("This bill grants each and every one the opportunity to do an honest, legitimate business, and protects him from cheaters and racketeers. It is not going to hurt any manufacturer or producer who is doing an honest business and treating all of his customers in the same fair, square way that he should treat all of them."); 79 CONG. REC. 12658 (1935) (statement of Representative Boileau) (calling small businesses "the backbone" of the United States and that the purpose of the legislation was to "protect American individualism against continuing encroachment by the powerful few-to protect our people from the continuous encroachment of those who would do all the business and create further mergers, monopolies, and combinations and control not only the manufacturing but the distribution of the necessaries of life."). For extensive details on the history of the Robinson-Patman Act, *See* Daniel A. Hanley, *Controlling Buyer and Seller Power: Reviving Enforcement of the Robinson-Patman Act*, 52 HOFSTRA L. REV. 331 (2024); Brian Callaci, Daniel A. Hanley, & Sandeep Vaheesan, *The Robinson-Patman Act as a Fair Competition Measure* (Working Paper 2024).
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[129] *See* Everette MacIntyre, Small Business and the Antitrust Laws, 39 U. DET. L. J. 169, 169 (1961).
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[135] *See, e.g.*, FTC v. Anheuser-Busch, Inc., 363 U. S. 536 (1960); Utah Pie Co. v. Continental Baking Co., 386 U. S. 685 (1967).
[136] *See, e.g.*, Corn Prod. Ref. Co. v. Fed. Trade Comm'n, 324 U.S. 726 (1945); Fed. Trade Comm'n v. Morton Salt Co., 334 U.S. 37 (1948). Specifically, in accordance with the Robinson–Patman Act, manufacturers were required to give all customers who competed with each other in a downstream business one square price unless they could prove that giving a special discount to one of them was justified by savings in manufacturing costs that arose from the size of their order.
[137] United States v. American Tobacco Co., 221 U.S. 106 (1911), Associated Press v. United States, 326 U.S. 1 (1945), Schine Chain Theatres, Inc. v. United States, 334 U.S. 110 (1948), United States v. Griffith, 334 U.S. 100 (1948), United States v. Paramount Pictures, Inc., 334 U.S. 131 (1948), United States v. Yellow Cab Co. 338 U.S. 338, Int'l Salt Co. v. United States, 332 U.S. 392 (1947).
[138] *See* United States v. Columbia Steel Co., 334 U.S. 495 (1948).
[139] For a full review of the Celler-Kefauver Act of 1950, *see* Basel Musharbash & Daniel Hanley, *Toward A Merger Enforcement Policy That Enforces the Law: The Original Meaning and Purpose of Section 7 of the Clayton Act*, __ DUQUESNE L. REV. __ (forthcoming 2025) (manuscript on file with author).
[140] *See* Basel Musharbash & Daniel Hanley, *Toward A Merger Enforcement Policy That Enforces the Law: The Original Meaning and Purpose of Section 7 of the Clayton Act*, __ DUQUESNE L. REV. __ (forthcoming 2025) (manuscript on file with author).

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[145] *See* Richard Oulahan, *"Bowers in Democratic Keynote Scores Corruption; Smith Certain on First Ballot as Convention Opens, Picks Robinson as Running Mate, Dictates Platform,"* N.Y. TIMES (June 27, 1928).
[146] *See* E.L. Baum & S.L. Clement, *The Changing Structure of the Fertilizer Industry in the United States*. 40(5) J. of Farm Econ. 1186 (1958) https://www.jstor.org/stable/1234991*;* Mirko Lamer, *The Structure of Competition in the Fertilizer Industries in North America*, 75 *Weltwirtschaftliches Archiv* 275 (1955), http://www.jstor.org/stable/40435319.
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[185] *See generally* AUSTIN FRERICK, BARONS (2024); James Risser and George Anthan, *Why they love Earl Butz*, N.Y. TIMES (Jun. 13, 1976) (As Carol Tucker-Foreman, executive director of the Consumer Federation of America at the time, explained to the New York Times in 1976, Butz was "a spokesman for the big corporate farmers, for the food processors and for the grocery people. He's on the side of farmers or consumers. He's on the side of people who buy from farmers and sell to consumers.").

[186] *See* AUSTIN FRERICK, BARONS (2024).

[187] *See* AUSTIN FRERICK, BARONS (2024).

[188] *See* AUSTIN FRERICK, BARONS (2024).

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[201] *See* Keith Addison, *The N.Y. Times and the ADM Scandal*, 256 THE AGRIBUSINESS EXAMINER, (Jun. 9, 2003); JAMES B. LIEBER, RATS IN THE GRAIN: THE DIRTY TRICKS AND TRIALS OF ARCHER DANIELS MIDLAND (2000).
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[203] Brian Ahlberg, *Cargill: The Invisible Giant*, available at https://www.multinationalmonitor.org/hyper/issues/1988/07/mm0788_09.html.; *See also* Joseph W. DeLave, *Save the Small Farm - The 1985 Farm Bill Is Not the Answer*, 13 J. LEGIS. 247 (1986); *Family Farm Act of 1987*, FAMILYFARMJUSTICE, available at https://familyfarmjustice.me/2016/12/09/family-farm-act-of-1987/.
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[205] *See* AUSTIN FRERICK, BARONS 37–40 (2024).
[206] *See* AUSTIN FRERICK, BARONS 37–40 (2024).
[207] *See* AUSTIN FRERICK, BARONS 37–40 (2024)
[208] AUSTIN FRERICK, BARONS 37–40 (2024).
[209] AUSTIN FRERICK, BARONS 40 (2024).
[210] AUSTIN FRERICK, BARONS 42 (2024).
[211] There is also a dairy subsidy program, which operates similarly to the commodity programs.
[212] Farmers may enroll in either PLC or ARC based on preference, but not both.
[213] *Crop Commodity Programs*, U.S. DEP'T. OF AG. (Feb. 28, 2024) https://www.ers.usda.gov/topics/farm-bill/2018-farm-bill/crop-commodity-programs/.
[214] Farm Subsidy Database, *Price Loss Coverage Program (PLC)*, ENV'T. WORKING GRP., https://farm.ewg.org/progdetail.php?fips=00000&progcode=total_plc&page=conc&yr=2021&regionname=theUnitedStates.
[215] *America's Diverse Family Farms*, U.S. DEP'T OF AG. 23-26 (Dec. 2021) https://www.ers.usda.gov/webdocs/publications/102808/eib-231.pdf?v=944.
[216] *See infra* Crop Insurance Sector; *See also Federal Crop Insurance, A Primer*, CONG. RSCH. SERV. (Feb. 18, 2021), available at https://crsreports.congress.gov/product/pdf/R/R46686.
[217] *See Federal Crop Insurance, A Primer*, CONG. RSCH. SERV. (Feb. 18, 2021), available at https://crsreports.congress.gov/product/pdf/R/R46686.
[218] *See* Eric J. Belasco and Vincent H. Smith, *Who Receives Crop Insurance Subsidy Benefits?*, AM. ENTER. INST. (Sept. 7, 2022) https://www.aei.org/research-products/report/who-receives-crop-insurance-subsidy-benefits/.
[219] *See* Eric J. Belasco and Vincent H. Smith, *Who Receives Crop Insurance Subsidy Benefits?*, AM. ENTER. INST. (Sept. 7, 2022) https://www.aei.org/research-products/report/who-receives-crop-insurance-subsidy-benefits/.
[220] *See* Eric J. Belasco and Vincent H. Smith, *Who Receives Crop Insurance Subsidy Benefits?*, AM. ENTER. INST. (Sept. 7, 2022) https://www.aei.org/research-products/report/who-receives-crop-insurance-subsidy-benefits/. Notably, since payouts from crop insurance claims exceed the out-of-pocket premiums paid by insured farms nearly every year, Title XI premium subsidies routinely translate into net revenue for the largest farms. Between 2000 and 2016, for example, insured farms received, on average, $2.22 in claim payments for every $1 they spent on crop insurance premiums, according to an analysis by the Congressional Research Service (*See Federal Crop Insurance, A Primer*, CONG. RSCH. SERV. (Feb. 18, 2021) available at https://crsreports.congress.gov/product/pdf/R/R46686).
[221] *See Federal Crop Insurance, A Primer*, CONG. RSCH. SERV. at 13 (Feb. 18, 2021), available at https://crsreports.congress.gov/product/pdf/R/R46686. ("In 2019, the majority of policies sold were for row crops, including grains, oilseeds, pulses, and other commodity crops covered by commodity support programs (see Figure 5). Specialty crops (e.g., fruits, vegetables, and nuts), forage crops, and policies insuring livestock and animal products accounted for less than 10% of all policies sold.").
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[225] Jacob Bunge and Jesse Newman, *Global Oversupply of Grains Puts a Squeeze on Giant Processors*, WALL STREET JOURNAL (Nov. 2, 2017), https://www.wsj.com/articles/global-oversupply-of-grains-puts-a-squeeze-on-giant-processors-1509620400.

[226] *See* Daniel A. Hanley, *Controlling Buyer and Seller Power: Reviving Enforcement of the Robinson-Patman Act*, 52(2) Hofstra L. Rev. 314, 344-45 (2024).
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[228] *See* Staggers Rail Act of 1980, Pub. L. 96-448, 94 Stat. 1895 (1980). *See also* Ben Johnson, *The Staggers Rail Act of 1980: Deregulation Gone Awry*, 85(4) W.V. L. Rev. 725 (1983); Doug Campbell, "Staggers Act benefitted railroads, not communities", Prairie Star (May 14, 2016), agupdate.com/theprairiestar/opinion/staggers-act-benefitted-railroads-not-communities/article_fef2a604-09ef-5844-b886-f8ac3058f3e3.html.
[229] *See* Ben Johnson, *The Staggers Rail Act of 1980: Deregulation Gone Awry*, 85(4) W.V. L. Rev. 725 (1983); William W. Wilson, *U.S. Grain Handling and Transportation System: Factors Contributing to the Dynamics Changes in the 1980s and 1990s*, Working Paper No. 98004, N. Dak. S. Univ. Dep't. Agric'l. Econ. 5-6 (Nov. 1998).
[230] *See* MATT STOLLER, GOLIATH: THE 100-YEAR WAR BETWEEN MONOPOLY POWER AND DEMOCRACY (2020). For an overview of the harmful effects of railroad, airline, and bus deregulation — all of which were enacted under the Carter administration — on small towns, *see* Paul Stephen Dempsey, *The Dark Side of Deregulation: Its Impact on Small Communities*, 39 Admin. L. Rev. 445 (1987). *See also* Ganesh Sitaraman & Christopher Serkin, *The Reason Why American Regions Are Unequal*, Time, April 20, 2023, https://time.com/6272404/regional-inequality-us-public-policy/.
[231] See *Mandate For Leadership: Policy Management in a Conservative Administration*, THE HERITAGE FOUND., at 711-12 (1981), https://www.jcampbell.com/docs-campbell/articles/1981_Mandate_for_Leadership.pdf ("These kinds of discounts seem contrary to basic American precepts of justice. Allowing selective price gouging, non-cost justified discounts for big customers, and secret rebates seems to favor the large organized interests with competitive alternatives at the expense of the unorganized, uneducated, or captive passenger. It should be recalled, that transportation regulation in the United States originated primarily as a reaction to discriminatory pricing by the railroads, nor to their charging exorbitantly high prices.").
[232] *See* MATT STOLLER, GOLIATH: THE 100-YEAR WAR BETWEEN MONOPOLY POWER AND DEMOCRACY (2020). *See also* Matt Stoller, *The Secret Plot to Unleash Corporate Power*, THE BIG NEWSLETTER (Apr. 8, 2022) https://www.thebignewsletter.com/p/the-secret-plot-to-unleash-corporate;
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[237] *See* Matt Stoller, *The Secret Plot to Unleash Corporate Power*, THE BIG NEWSLETTER (Apr. 8, 2022) https://www.thebignewsletter.com/p/the-secret-plot-to-unleash-corporate; Erik Peinert, *Mergers and Smoking Guns*, PROMARKET (May 13, 2022) https://www.promarket.org/2022/05/13/mergers-and-smoking-guns/.
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[239] *See* Matt Stoller, *The Secret Plot to Unleash Corporate Power*, THE BIG NEWSLETTER (Apr. 8, 2022) https://www.thebignewsletter.com/p/the-secret-plot-to-unleash-corporate; Erik Peinert, *Mergers and Smoking Guns*, PROMARKET (May 13, 2022) https://www.promarket.org/2022/05/13/mergers-and-smoking-guns/; David Margolick, *Legacy Beyond Mere Policies*, N.Y. TIMES (Dec. 9, 1983) ("'He [Baxter] believed that bigness is better — that the only thing that ought to be against the law were smoking-gun price fixing and mergers between the first and second largest companies in an industry,' contended Jay Angoff, a lawyer with Congress Watch, a consumer-oriented organization.").
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[247] *See* Lewis F. Powell Jr., *Confidential Memorandum: Attack on the American Free Enterprise System* (Aug. 23, 1971), https://scholarlycommons.law.wlu.edu/powellmemo/1/. *See also* Andrew Elrod, "The Burglaries Were Never the Story", n+1 (July 13, 2022), www.nplusonemag.com/online-only/book-review/the-burglaries-were-never-the-story/

[248] For a comprehensive analysis of how pegging the enforcement of the antitrust law to welfare (*i.e.,* price, output, quality, etc.) effects makes them unenforceable, *see Request for Information on Merger Enforcement*, FARM ACTION 11-14 (Apr. 21, 2022) available at https://farmaction.us/wp-content/uploads/2022/04/Farm-Action-Merger-Guidelines-Comment-4.21.22.pdf.

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[257] *See Bell Atlantic Corp. v. Twombly*, 550 U.S. 544 (2007).

[258] *See Cont'l. T.V., Inc. v. GTE Sylvania Inc.*, 433 U.S. 36 (1977).

[259] *See Verizon Communications, Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398 (2003).

[260] See Lina M. Khan & Sandeep Vaheesan, *Market Power and Inequality: The Antitrust Counterrevolution and Its Discontents*, 11 HARV. L. & POL'Y REV. 235, 269 (2017) (quoting Eleanor M. Fox & Lawrence A. Sullivan, *Antitrust—Retrospective and Prospective: Where Are We Coming From? Where Are We Going?*, 62 N.Y.U. L. REV. 936, 963 (1987)).

[261] *See* Wheeler v. Pilgrim's Pride Corp., 536 F.3d 455, 460–61 (5th Cir. 2008) (rev'd on reh'g en banc, 591 F.3d 355 (5th Cir. 2009)).

[262] Wheeler v. Pilgrim's Pride Corp., 536 F.3d 455, 460–61 (5th Cir. 2008) (rev'd on reh'g en banc, 591 F.3d 355 (5th Cir. 2009)) ("We acknowledge that our decision today conflicts with nearly every decision of our sister Circuits on this issue.5 Their decisions, however, generally reached beyond the PSA's clear and unambiguous text, choosing instead to be guided by its legislative history, "antitrust ancestry," and "policy considerations." We believe that their decisions should have been guided by the text. Accordingly, this is where we depart from our sister Circuits. By resting our decision on the [Packers and Stockyards Act's] plain text, we follow the better path: 'prefer[ring] the plain meaning since that approach respects the words of Congress.'" "In this manner we," unlike our sister Circuits, 'avoid the pitfalls that plague too quick a turn to the more controversial realm of legislative history.') (internal citations omitted).

[263] *See* Been v. O.K. Indus., Inc., 495 F.3d 1217, 1233 (10th Cir. 2007).

[264] James Brock, "Merger Mania and Its Discontents: The Price of Corporate Consolidation", 26(7) Multinational Monitor, Jul/Aug. 2005, https://www.multinationalmonitor.org/mm2005/072005/brock.html.

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[270] *See* Lina M. Lobao, Locality and Inequality: Farm and Industry Structure and Socioeconomic Conditions 27 (1990).

[271] *See United States v. Grinnell Corp.*, 384 U.S. 563, 571 (1966).

[272] *See* Fed. Trade Comm'n, The Merger Movement: A Summary Report (1948), in LEGISLATIVE HISTORY OF THE FEDERAL ANTITRUST LAWS AND RELATED STATUTES 3436, 3456-57 (Earl W. Kintner, ed. 1978).

[273] Mary K. Hendrickson, Philip H. Howard, Emily M. Miller & Douglas H. Constance, Farm Action, *The Food System: Concentration and its Impacts* 3 (May 6, 2021), https://farmaction.us/wp-content/uploads/2021/05/Hendrickson-et-al.-2020.-Concentration-and-Its-Impacts_FINAL_Addended.pdf. *See generally* James M. MacDonald, U.S. Dep't of Agric., Econ. Rsch. Serv., *Mergers in Seeds and Agricultural Chemicals: What Happened?*, USDA: Amber Waves Magazine (February 15, 2019), https://www.ers.usda.gov/amber-waves/2019/february/mergers-in-seeds-and-agricultural-chemicals-what-happened/ (discussing the three mergers announced in 2015 and 2016, resulting in worldwide antitrust scrutiny and required divestitures); Claire Kelloway, *Bayer-Monsanto Deal Closes as Farmers Warn of Higher Prices and Less Resiliency*, Food and Power (June 7, 2018), https://www.foodandpower.net/latest/2018/06/07/bayer-monsanto-deal-closes-as-farmers-warn-of-higher-prices-and-less-resiliency; Leah Douglas, *Bayer Plans Sell-Off that would Worsen Competition in Seeds, Chemicals*, Food and Power (March 2, 2018), https://www.foodandpower.net/latest/2018/03/02/bayers-plans-sell-off-that-would-aggravate-agribusiness-concentration.

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[275] ETC Group, *Food Barons 2022: Crisis Profiteering, Digitalization and Shifting Power* 15 (Sept. 20, 2022), https://www.etcgroup.org/files/files/food_barons-summary-web.pdf. The fifth through eighth rankings in the global seeds market are occupied by, in descending order, Limagrain (4%), KWS (3%), DLF Seeds (3%), and Sakata (1%). The Big Four are even more dominant in the context of proprietary (branded) seeds, where they control an estimated 67% of the market. *See* James M. MacDonald, Xiao Dong & Keith O. Fuglie, U.S. Dep't of Agric., Econ. Rsch. Serv., *Concentration and Competition in U.S. Agribusiness*, 256 Econ. Info. Bull. 1, 12 (2023), https://www.ers.usda.gov/webdocs/publications/106795/eib-256.pdf?v=9006.9.

[276] ETC Group, *Food Barons 2022: Crisis Profiteering, Digitalization and Shifting Power* 15 (Sept. 20, 2022), https://www.etcgroup.org/files/files/food_barons-summary-web.pdf. The fifth-through-eighth rankings in the global agrochemicals market are occupied by, in descending order, UPL (7.9%), FMC (7.4%), Sumitomo Chemical (6.4%), and Nufarm (5.6%). ChemChina's share of the agrochemicals likely expanded significantly after this data was collected, due to a merger with another major chinese agrochemical and fertilizer company, SinoChem. *Id.* at 16. A 2017 report estimated that global concentration in pesticides had a CR3 of 58%, a CR5 of 74%, and a CR7 of 86%. Georgia Tsolomyti, Anastasios Magoutas & Giannis T. Tsoulfas, *Global Corporate Concentration in Pesticides: Agrochemicals Industry*, Business Intelligence and Modelling Springer Proceedings in Business and Economics 289, 294 (2021).

[277] Claire Kelloway, *Bayer-Monsanto Deal Closes as Farmers Warn of Higher Prices and Less Resiliency*, Food and Power (June 7, 2018), https://www.foodandpower.net/latest/2018/06/07/bayer-monsanto-deal-closes-as-farmers-warn-of-higher-prices-and-less-resiliency; *see also Consolidation and Competition in the U.S. Seed and Agrochemical Industry: Hearing Before the S. Judiciary Comm.* 4 (Sept. 20, 2016) (statement of Diana L. Moss, President, Am. Antitrust Inst.), https://www.judiciary.senate.gov/imo/media/doc/09-20-16%20Moss%20Testimony.pdf; *USDA Details Market Shares of Biggest Seed Industry Players*, SeedWorld (Oct. 4, 2023). Specifically, between 2018-2020, the top-four firms in the domestic corn seed market were Corteva (38.3%), Bayer (33.3%), AgReliant (6.8%), and Syngenta (5.0%). In the domestic soybean seed market, they were Corteva (37.7%), Bayer (28.2%), Syngenta (9.2%), and AgReliant (3.0%). Finally, the top four in the domestic cotton seed market were Bayer (38.4%), Americot (27.2%), Corteva (17.5%), and BASF (10.5%). James M. MacDonald, Xiao Dong & Keith O. Fuglie, U.S. Dep't of Agric., Econ. Rsch. Serv., *Concentration and Competition in U.S. Agribusiness*, 256 Econ. Info. Bull. 1, 11 (2023), https://www.ers.usda.gov/webdocs/publications/106795/eib-256.pdf?v=9006.9.

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Comm. 4-5 (Sept. 20, 2016) (statement of Diana L. Moss, President, Am. Antitrust Inst.), https://www.judiciary.senate.gov/imo/media/doc/09-20-16%20Moss%20Testimony.pdf.

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[281] James M. MacDonald, Xiao Dong & Keith O. Fuglie, U.S. Dep't of Agric., Econ. Rsch. Serv., *Concentration and Competition in U.S. Agribusiness*, 256 Econ. Info. Bull. 1, 12 (2023), https://www.ers.usda.gov/webdocs/publications/106795/eib-256.pdf?v=9006.9.

[282] Keith O. Fuglie et al, U.S. Dep't of Agric., Econ. Rsch. Serv., *Research Investments and Market Structure in the Food Processing, Agricultural Input, and Biofuel Industries Worldwide*, 130 Econ. Rsch. Rep. 1, 35 (2011), https://www.ers.usda.gov/webdocs/publications/44951/11777_err130_1_.pdf?v=1654.

[283] Samantha DeCarlo, U.S. Int'l Trade Comm'n, *And Then There Were Four?: M&A in the Agricultural Chemicals Industry*, Exec. Briefings on Trade (April 2018), https://www.usitc.gov/publications/332/executive_briefings/ag_ma_ebot_final.pdf ("In the 1960s, there were approximately seventy pesticide manufacturers in the United States. By 2000, the market had consolidated to eight dominant multinational manufacturers who controlled the majority of the domestic US market. By 2015, the global pesticides market was commonly referred to as the 'Big 6,' comprising Bayer, BASF, Dow, DuPont, Monsanto, and Syngenta.").

[284] *Diamond v. Chakrabarty*, 447 U.S. 303, 317-18 (1980). *See generally, Who Owns Nature? Corporate Power and the Final Frontier in the Commodification of Life*, Communiqué Issue 100 (ETC Group, Canada), Nov. 2008, at 11, https://www.etcgroup.org/files/publication/707/01/etc_won_report_final_color.pdf, (explaining how the proprietary seed market now accounts for 82% of the global commercial seed market due to the expansion of intellectual property rights over the last few decades).

[285] U.N. Conference on Trade & Dev., *Tracking the Trend Towards Market Concentration: The Case of the Agricultural Input Industry*, U.N. Doc. UNCTAD/DITC/COM/2005/16, at 25-26 (2006), https://digitallibrary.un.org/record/574354?ln=en&v=pdf [hereinafter *UNCTAD Report*].

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[287] *See generally Consolidation and Competition in the U.S. Seed and Agrochemical Industry: Hearing Before the S. Judiciary Comm*. 4 (Sept. 20, 2016) (statement of Diana L. Moss, President, American Antitrust Institute), https://www.judiciary.senate.gov/imo/media/doc/09-20-16%20Moss%20Testimony.pdf; Caius Z. Willingham and Andy Green, *A Fair Deal for Farmers: Raising Earnings and Rebalancing Power in Rural America,* Ctr. For Am. Progress, (May 2019), https://www.americanprogress.org/wp-content/uploads/sites/2/2021/08/Fair-Deal-for-Farmers1.pdf; Listening Forum on Merger Guidelines Before the Fed. Trade Comm'n & Dep't of Just., at 8-9, (Mar. 28, 2022) (statement of Todd Leake, N.D. Family Farmer), https://www.ftc.gov/system/files/ftc_gov/pdf/FTC-DOJ%20Merger%20Guidelines%20Listening%20Forum_FTC_March%2028%202022.pdf; Sarah Carden, Farm Action, Statement Prepared for the U.S. Dep't of Agric. Listening Session on Competition and the Intellectual Property System: Seeds and Other Agricultural Inputs, (Aug. 24, 2022), https://farmaction.us/wp-content/uploads/2022/08/SC-testimony-listening-session-seed-competition.pdf.

[288] U.N. Conference on Trade & Dev., *Tracking the Trend Towards Market Concentration: The Case of the Agricultural Input Industry*, U.N. Doc. UNCTAD/DITC/COM/2005/16, at 26 (2006), https://digitallibrary.un.org/record/574354?ln=en&v=pdf (citing David Schimmelpfennig & John King, *Mergers, Acquisitions and Flows of Agbiotech Intellectual Property*, in International Trade and Policies for Genetically Modified Products, 97-109, (R.E. Evenson and V. Santeniello eds., CABI Publishing, 2005).). As Diana Moss has recounted, the wave of mergers occurring from the mid-1990s through the early 2000's "included large mergers that (1) vertically integrated biotechnology innovation with plant breeding R&D and seed distribution and (2) horizontally expanded the seed holdings of individuals." *See* Diana L. Moss, *Competition and Transgenic Seed Systems*, 56(1) Antitrust Bull. 81, 89-90 (Spring 2011). Some of the transactions in this merger wave included:

> [T]he formation of Syngenta AG from Zeneca Agrochemicals and Aventis CropScience in 2002, and BASF's takeover of American Cyanamid in 2000. It was during this period that a number of large, formerly independent seed companies were acquired, including Pioneer Hi-Bred International Inc., DeKalb Genetics Corp., Northrup-King Seed Co., Cargill Inc. (international seed operations), and Golden Harvest Seed Co. In addition, Monsanto Co. acquired leading seed companies such as Agracetus, Calgene Inc., Holden's Foundation Seeds, and Asgrow Agronomics, accounting for about one-third of mergers and acquisitions in the industry between 1995 and 1998.

Id.

[289] Philip H. Howard, *Visualizing Consolidation in the Global Seed Industry: 1996–2008*, 1(4) Sustainability, at 1271 (2009), https://doi.org/10.3390/su1041266 ("Acquiring firms have paid significant premiums for seed companies in recent years, sometimes exceeding three times annual sales. Although rates of profit in the seed industry are already very high compared to other industries, these premiums suggest an expectation of recouping such investments with even higher rates of profit in the future.").

[290] Neil E. Harl, *The Age of Contract Agriculture: Consequences of Concentration in Input Supply,* 18(1) J. of Agribusiness 115 (Mar. 2000).

[291] *Consolidation and Competition in the U.S. Seed and Agrochemical Industry: Hearing Before the S. Judiciary Comm*. 4 (Sept. 20, 2016) (statement of Diana L. Moss, President, Am. Antitrust Inst.), https://www.judiciary.senate.gov/imo/media/doc/09-20-16%20Moss%20Testimony.pdf; Caius Z. Willingham and Andy Green, *A Fair Deal for Farmers: Raising Earnings and Rebalancing Power in Rural America,* Ctr. For Am. Progress, (May 2019), https://www.americanprogress.org/wp-content/uploads/sites/2/2021/08/Fair-Deal-for-Farmers1.pdf; Listening Forum on Merger Guidelines Before the Fed. Trade Comm'n & Dep't of Just., at 8-9, (Mar. 28, 2022) (statement of Todd Leake, N.D. Family Farmer), https://www.ftc.gov/system/files/ftc_gov/pdf/FTC-DOJ%20Merger%20Guidelines%20Listening%20Forum_FTC_March%2028%202022.pdf; Sarah Carden, Farm Action, Statement Prepared for the U.S. Dep't of Agric. Listening Session on Competition and the Intellectual Property System: Seeds and Other Agricultural Inputs, (Aug. 24, 2022), https://farmaction.us/wp-content/uploads/2022/08/SC-testimony-listening-session-seed-competition.pdf.

[292] Phil Howard & Amos Strömberg, *Seed Industry Structure 1996-2022*, philhoward.net (Jan. 2023), https://philhowardnet.files.wordpress.com/2023/01/seed2022.png.

[293] U.N. Conference on Trade & Dev., *Tracking the Trend Towards Market Concentration: The Case of the Agricultural Input Industry*, U.N. Doc. UNCTAD/DITC/COM/2005/16, at 25 (2006), https://digitallibrary.un.org/record/574354?ln=en&v=pdf.

[294] Dean V. Cavey, *Reflections on Consolidation in the Seed Industry*, Verdant Partners, (June 13, 2016), https://www.verdantpartners.com/post/reflections-on-consolidation-in-the-seed-industry.

[295] Dean V. Cavey, *Reflections on Consolidation in the Seed Industry*, Verdant Partners, (June 13, 2016), https://www.verdantpartners.com/post/reflections-on-consolidation-in-the-seed-industry.

[296] Complaint, *FTC v. Syngenta*, (M.D.N.C. 2022) (No. 22-cv-828), https://www.ftc.gov/system/files/ftc_gov/pdf/SygentaComplaint.pdf; Kline Group, *Leading Distributors in the U.S. Crop Protection Industry: A Strategic Market Analysis,* (Rep. No. P311J, 2020), https://klinegroup.com/wp-content/uploads/P311J-Leading_Distributors_Crop_Protection2019.pdf.

[297] James M. MacDonald, Xiao Dong & Keith O. Fuglie, U.S. Dep't of Agric., Econ. Rsch. Serv., *Concentration and Competition in U.S. Agribusiness*, 256 Econ. Info. Bull. 1, 9-10 (2023), https://www.ers.usda.gov/webdocs/publications/106795/eib-256.pdf?v=9006.9.

[298] James M. MacDonald, Xiao Dong & Keith O. Fuglie, U.S. Dep't of Agric., Econ. Rsch. Serv., *Concentration and Competition in U.S. Agribusiness*, 256 Econ. Info. Bull. 1, 12 (2023), https://www.ers.usda.gov/webdocs/publications/106795/eib-256.pdf?v=9006.9.

[299] Caius Z. Willingham and Andy Green, *A Fair Deal for Farmers: Raising Earnings and Rebalancing Power in Rural America,* Ctr. For Am. Progress, (May 2019), https://www.americanprogress.org/wp-content/uploads/sites/2/2021/08/Fair-Deal-for-Farmers1.pdf.

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[310] Claire Kelloway, *Big Ag Eyes Cut of Farmers' Profits in New Pricing Program*, Food and Power, (Mar. 12, 2020), https://www.foodandpower.net/latest/2020/03/12/big-ag-eyes-cut-of-farmers-profits-in-new-pricing-program; Gil Gullickson, *Get Set for Outcome-Based Pricing*, Successful Farming (Sept. 26, 2019), https://www.agriculture.com/technology/crop-management/get-set-for-outcome-based-pricing.

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[401] *See* Bill Tomson, *ITC Clears the Way for Duties on Phosphate Imports*, Agri Pulse (Mar. 11, 2021), https://www.agri-pulse.com/articles/15508-itc-clears-the-way-for-duties-on-phosphate-imports?v=preview; Georgetown Capital Advisors, Price Action Analysis: The Mosaic Company, Trade Alliance to Promote Prosperity (Jan. 21, 2021), https://www.promote-trade.org/issue-guides/2021/1/21/price-action-analysis; Chris Clayton, *Appeal on Moroccan Phosphate Duties*, Progressive Farmer (Sept. 22, 2023), https://www.dtnpf.com/agriculture/web/ag/crops/article/2023/09/22/court-orders-international-trade. The filing of Mosaic's petition in the last quarter of 2020 led to an immediate withdrawal of Russian and Moroccan phosphate fertilizer imports from the U.S. market, shrinking their share of imports by over 18 percentage points before the end of the year. *See* U.S. Int'l. Trade Comm'n., *Phosphate Fertilizers from Morocco and Russia*, Determination in Investigation No. 701-TA-650-651 (Final), USITC Pub. 5172 (Mar. 2021), https://www.usitc.gov/publications/701_731/pub5172.pdf. Although the duties on Moroccan phosphate fertilizers were reduced to around 2% recently, OCP has signaled it does not intend to return to the U.S. market until all duties are removed. *See* U.S. Int'l. Trade Comm'n., *Phosphate Fertilizers from Morocco and Russia*, Determination in Investigation No. 701-TA-650-651 (Final) (Remand), on remand from U.S. Court of Int'l. Trade, USITC Pub. 5490 (Jan. 2024), https://www.usitc.gov/publications/701_731/pub5490.pdf. In June 20221, the Commerce Department also imposed countervailing duties on imports of urea ammonium nitrate (UAN) solution from Russia and from Trinidad and Tobago, but those were lifted about a year later, in July of 2022. *See* David Lawder, *U.S. Panel Rejects Duties on Fertilizers from Russia, Trinidad and Tobago*, Reuters (Jul. 18, 2022), https://www.reuters.com/markets/commodities/us-panel-revokes-duties-fertilizers-russia-trinidad-tobago-2022-07-18/.

[402] Lee Harris, Fertilizer Firms Spread Wealth to Shareholders as Farmers Weather Extreme Prices, The American Prospect (Mar. 23, 2022), https://prospect.org/economy/fertilizer-firms-spread-wealth-to-shareholders-farmers-weather-extreme-prices/.

[403] Lee Harris, Fertilizer Firms Spread Wealth to Shareholders as Farmers Weather Extreme Prices, The American Prospect (Mar. 23, 2022), https://prospect.org/economy/fertilizer-firms-spread-wealth-to-shareholders-farmers-weather-extreme-prices/.

[404] Maytaal Angel, *Explainer: Have Western Sanctions on Russia Impacted its Fertiliser Exports?*, Reuters (May 11, 2023), https://www.reuters.com/world/europe/have-western-sanctions-russia-impacted-its-fertiliser-exports-2023-05-11/#:~:text=HAS%20THE%20WEST%20SANCTIONED%20RUSSIAN%20FERTILISER%20EXPORTS%3F%20Western,Russian%20payments%20or%20to%20obtain%20vessels%20and%20insurance..

[405] Lee Harris, Fertilizer Firms Spread Wealth to Shareholders as Farmers Weather Extreme Prices, The American Prospect (Mar. 23, 2022), https://prospect.org/economy/fertilizer-firms-spread-wealth-to-shareholders-farmers-weather-extreme-prices/; Maytaal Angel, *Explainer: Have Western Sanctions on Russia Impacted its Fertiliser Exports?*, Reuters (May 11, 2023), https://www.reuters.com/world/europe/have-western-sanctions-russia-impacted-its-fertiliser-exports-2023-05-11/#:~:text=HAS%20THE%20WEST%20SANCTIONED%20RUSSIAN%20FERTILISER%20EXPORTS%3F%20Western,Russian%20payments%20or%20to%20obtain%20vessels%20and%20insurance.. Belaruskali was already subject to U.S. sanctions when the Ukraine war broke out, which were imposed in 2021. *See* Justin Sink, *Biden Adds Belarus Sanctions on Election's Anniversary*, Bloomberg (Aug. 9, 2021), https://www.bloomberg.com/news/articles/2021-08-09/biden-adds-belarus-sanctions-on-disputed-election-s-anniversary?embedded-checkout=true. After Russia invaded Ukraine, the State Department imposed sanctions on the Belarus Potash Company (BPC), the firm through which Belaruskali marketed its potash exports. *See* Haik Gugarats and Jasmine Davis, US Slaps Sanctions on Belarus Potash Supplier, Argus (Feb. 12, 2021), https://www.argusmedia.com/en/news-and-insights/latest-market-news/2279460-us-slaps-sanctions-on-belarus-potash-supplier; Maytaal Angel, *Explainer: Have Western Sanctions on Russia Impacted its Fertiliser Exports?*, Reuters (May 11, 2023), https://www.reuters.com/world/europe/have-western-sanctions-russia-impacted-its-fertiliser-exports-2023-05-11/#:~:text=HAS%20THE%20WEST%20SANCTIONED%20RUSSIAN%20FERTILISER%20EXPORTS%3F%20Western,Russian%20payments%20or%20to%20obtain%20vessels%20and%20insurance.. Overall, around 14% of U.S. imports of potassic fertilizers, and 20% of U.S. imports of nitrogeneous fertilizers, came from Russia and Belarus in 2022, compared to around 16% and 17%, respectively, in 2021. *See* Observatory of Economic Complexity (OEC), Where Does United States Import Nitrogenous Fertilizers From? (2022), OEC, https://oec.world/en/visualize/tree_map/hs92/import/usa/all/63102/2022 (last visited July 16, 2024). These numbers suggest that — except, perhaps, in the case of ammonia — the outbreak of war in Ukraine had only a limited impact on the availability of Eastern European fertilizer materials in the United States (although that availability remained subject to the Commerce Department's countervailing duties, which raised their prices compared to domestic producers like Mosaic and Nutrien). Indeed, it bears noting that, before the war in Ukraine, Belaruskali sold less than 10% of its potash output in the United States, *see* Justin Sink, *Biden Adds Belarus Sanctions on Election's Anniversary*, Bloomberg (Aug. 9, 2021), https://www.bloomberg.com/news/articles/2021-08-09/biden-adds-belarus-sanctions-on-disputed-election-s-anniversary?embedded-checkout=true), and PotashCorp's CEO stated that Uralkali was not "in a position" to "determine what the price [of potassium fertilizer] is in the US." *See* Bruce E. Kelly, *Potash resilient after consortium break-up*, Railway Age (Aug. 23, 2013), https://www.railwayage.com/freight/class-i/potash-resilient-after-consortium-break-up/.

[406] CF Industries Holdings, Inc., First Quarter Earnings Report 2022 (May 4, 2022), https://cfindustries.q4ir.com/Investors/news/news-details/2022/CF-Industries-Holdings-Inc.-Reports-First-Quarter-2022-Net-Earnings-of-883-Million-Adjusted-EBITDA-of-1.65-Billion/default.asp; Douglas M. Stone, President, AgriBusiness, Simplot,, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (July 15, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1480.

[407] *See* Mosaic Co., Annual Report (Form 10-K) (Feb. 23, 2023), https://annualreport.stocklight.com/nyse/mos/23658772.pdf. Although Mosaic only owns a 25% equity interest in Saudi Arabia's MWSPC, Mosaic has been the exclusive U.S. importer of MWSPC phosphate fertilizer since 2020. *See* U.S. Int'l. Trade Comm'n., *Phosphate Fertilizers from Morocco and Russia*, Determination in Investigation No. 701-TA-650-651 (Final) (Remand), on remand from U.S. Court of Int'l. Trade, USITC Pub. 5490 (Jan. 2024), https://www.usitc.gov/publications/701_731/pub5490.pdf.

[408] Nutrien, *2023 Fact Book*, at 5 (Nov. 2023), https://nutrien-prod-asset.s3.us-east-2.amazonaws.com/s3fs-public/uploads/2024-01/Nutrien_2023Fact%20Book_Update_12624.pdf.

[409] Nutrien, *2023 Fact Book*, at 5 (Nov. 2023), https://nutrien-prod-asset.s3.us-east-2.amazonaws.com/s3fs-public/uploads/2024-01/Nutrien_2023Fact%20Book_Update_12624.pdf. Notably, CF's plant in Trinidad and Tobago is a 50/50 joint venture with Koch Industries, and appears to produce ammonia solely for use in the two companies' own fertilizer plants. 2022-cf-industries-annual-report.pdf (cfindustries.com). Although Nutrien's Fact Book shows Koch as owning only this joint venture with CF in Trinidad, Koch Industries also controls two other ammonia plants in Trinidad, Caribbean Nitrogen and Nitrogen (2000) Unlimited, through a partnership with the Proman Group and EOG Resources. Caribbean Nitrogen Company Limited & Nitrogen (2000) Unlimited

[410] The National Gas Co. of Trinidad and Tobago, *Media Release* (Nov. 18, 2023), https://media.ngc.co.tt/wp-content/uploads/2023/11/2023-11-17_media-release_gscs-signed-with-pcs-nitrogen-to-boost-tt-position.pdf; *see also* CF Industries, 2022 Annual Report, https://www.cfindustries.com/globalassets/cf-industries/media/documents/reports/annual-reports/2022-cf-industries-annual-report.pdf. Importantly, the price of natural gas under Nutrien's contracts with the National Gas Company of Trinidad are indexed to ammonia prices — so Trinidad's government has diminished incentive to operate its nitrogen fertilizer enterprises in a competitive manner that reduces ammonia prices. *See* Nutrien, 2023 Annual Report, at 133 (2023), https://nutrien-prod-asset.s3.us-east-2.amazonaws.com/s3fs-public/uploads/2024-03/Nutrien%202023%20Annual%20Report.pdf; *see also* Nutrien, 2022 Annual Information Form (Feb. 16, 2023), https://nutrien-prod-asset.s3.us-east-2.amazonaws.com/s3fs-public/uploads/2023-02/2022%20Nutrien%20Annual%20Information%20Form.pdf.

[411] *See* Potash Corp. of Saskatchewan, *Agrium and PotashCorp Announce Receipt of Regulatory Approval in India*, Cision (Oct. 18, 2017), https://www.newswire.ca/news-releases/agrium-and-potashcorp-announce-receipt-of-regulatory-approval-in-india-651504563.html; China also required PotashCorp to convert its interest in Chinese fertilizer giant, Sinofert, into a passive investment, which Nutrien has retained. Zacks, *Potash Corp & Agrium Merger Gets Regulatory Nod in China*, Nasdaq (Nov. 13, 2017), https://www.nasdaq.com/articles/potash-corp-agrium-merger-gets-regulatory-nod-in-china-2017-11-13.

[412] For the Israel Chemical Company, *see* Steven Scheer & Rod Nickel, *Potash Eyes ICL Takeover as a Road to China, India*, Reuters (Oct. 31, 2012), https://www.reuters.com/article/israelchemicals-takeover-idUSL5E8LV3F020121031/; *ICL Provides Updates on Chinese Potash Agreement and 2023 EBITDA Guidance*, Business Wire (June 22, 2023), https://www.businesswire.com/news/home/20230622778308/en/ICL-Provides-Updates-on-Chinese-Potash-Agreement-and-2023-EBITDA-Guidance; ICL, Press Release, *ICL Signs Long-Term Supply Agreement with India Potash Limited to Supply Organic Polysulphate* (June 133, 2022), https://investors.icl-group.com/reports-news-and-events/press-releases/press-releases-details/2022/ICL-Signs-Long-Term-Supply-Agreement-with-India-Potash-Limited-to-Supply-Organic-Polysulphate/default.aspx; Humphrey Knight, *Surprise India Potash Contract Price Change Gives Chinese Importers a Dilemma*, CRU (Apr. 30, 2021), https://www.crugroup.com/knowledge-and-insights/insights/2021/surprise-india-potash-contract-price-change-gives-chinese-importers-a-dilemma/. For Arab Potash of Jordan, *see* JT, *APC Signs 5-year MoU with Indian Company*, The Jordan Times (May 15, 2022), https://www.jordantimes.com/news/local/apc-signs-5-year-mou-indian-company; Reuters News, *Jordan's Arab Potash Signs New Potash Supply Contract With India's IPL*, Zawya (Sept. 17, 2018), https://www.zawya.com/en/markets/brief-jordans-arab-potash-signs-new-potash-supply-contract-with-indias-ipl-xeelwm61; Reuters, *Jordan's Arab Potash Company reports 12 pct rise in quarterly profit* (May 1, 2017), https://www.reuters.com/article/idUSL8N1I30MF/; JT, *Arab Potash Company's partnership with Chinese SDIC to bring progress, jobs* (Mar. 14, 2019), https://www.jordantimes.com/news/local/arab-potash-companys-partnership-chinese-sdic-bring-progress-jobs-%E2%80%94-pm. Until 2020, Nutrien also owned a 26% interest in Egypt's major nitrogen fertilizer producer, Misr Fertilizers Production Company S.A.E. (MOPCO). *See* Reuters, *Nutrien to sell MOPCO stake to Egypt, settle arbitration claims* (Dec. 18, 2020), https://www.reuters.com/article/idUSKBN28S2RP/.

[413] Justina Vasquez, *Fertilizer Surges Most in Decade Amid Import Probe*, Bloomberg (Oct. 1, 2020), https://www.bloomberg.com/news/articles/2020-10-01/fertilizer-prices-in-u-s-surge-to-decade-high-amid-import-probe?embedded-checkout=true; Georgetown Capital Advisors, Price Action Analysis: The Mosaic Company, Trade Alliance to Promote Prosperity (Jan. 21, 2021), https://www.promote-trade.org/issue-guides/2021/1/21/price-action-analysis.

[414] Mosaic Co., Annual Report (Form 10-K) (Feb. 22, 2024), https://stocklight.com/stocks/us/nyse-mos/mosaic/annual-reports/nyse-mos-2024-10K-24664209.pdf; *see also Phosphate Fertilizers from Morocco and Russia,* U.S. Int'l. Trade Comm'n. Hearing, Investigation No. 701-TA-650-651 (Final), at 293 (Feb. 9, 2021), https://edis.usitc.gov/external/attachment/733491-1606429.pdf.

[415] Justina Vasquez, *Fertilizer Surges Most in Decade Amid Import Probe*, Bloomberg (Oct. 1, 2020), https://www.bloomberg.com/news/articles/2020-10-01/fertilizer-prices-in-u-s-surge-to-decade-high-amid-import-probe?embedded-checkout=true; Georgetown Capital Advisors, Price Action Analysis: The Mosaic Company, Trade Alliance to Promote Prosperity (Jan. 21, 2021), https://www.promote-trade.org/issue-guides/2021/1/21/price-action-analysis.

[416] Estimates derived from Farm Action analysis of sales and production data in CF Industries 2022 annual report filed with the SEC and the latest available data on total U.S. output and consumption of nitrogen fertilizers from the U.S. Geological Survey. CF Industries, 2022 Annual Report, https://www.cfindustries.com/globalassets/cf-industries/media/documents/reports/annual-reports/2022-cf-industries-annual-report.pdf; U.S. Geological Survey, Minerals Yearbook, *Advance Data Release of 2021 Annual Tables* (Jan. 26, 2023) https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fd9-wret.s3.us-west-2.amazonaws.com%2Fassets%2Fpalladium%2Fproduction%2Fs3fs-public%2Fmedia%2Ffiles%2Fmyb1-2021-nitro-ert.xlsx. 2022-cf-industries-annual-report.pdf (cfindustries.com) Formally, the combined nameplate capacity of CF's plants accounts for approximately 40% of North America's total ammonia, urea, and UAN nameplate capacity; however, it bears noting that CF's

2022 Annual 10-K Report shows CF producing more tons of ammonia, ammonium nitrate, and urea than the aggregate nameplate capacity of its plants for each compound. CF Industries, 2022 Annual Report, https://www.cfindustries.com/globalassets/cf-industries/media/documents/reports/annual-reports/2022-cf-industries-annual-report.pdf. A recent report by the Staff of the International Trade Commission stated that "CF Industries alone accounts for approximately half of the domestic industry's production capacity" for UAN solution, *Urea Ammonium Nitrate Solutions From Russia and Trinidad and Tobago*, U.S. Int'l. Trade Comm'n, Staff Report, Investigation Nos. 701-TA-668-669 and 731-TA-1565-1566 (Final) (July 6, 2022), https://edis.usitc.gov/external/attachment/774904-1866705.pdf.

[417] *Id*.

[418] Nutrien, 2022 Annual Information Form (Feb. 16, 2023), https://nutrien-prod-asset.s3.us-east-2.amazonaws.com/s3fs-public/uploads/2023-02/2022%20Nutrien%20Annual%20Information%20Form.pdf; Mosaic Co., Annual Report (Form 10-K) (Feb. 22, 2024), https://stocklight.com/stocks/us/nyse-mos/mosaic/annual-reports/nyse-mos-2024-10K-24664209.pdf. Market share estimate based on analysis by Farm Action of Nutrien and Mosaic sales data in the companies' annual reports filed with the SEC for 2021 and 2022, as well as data on the consumption of potassium fertilizers in the United States and Canada from the U.S. Geological Survey and Statistics Canada. U.S. Geological Survey, Minerals Yearbook, *Advance Data Release of 2021 Annual Tables* (Jan. 26, 2023) https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fd9-wret.s3.us-west-2.amazonaws.com%2Fassets%2Fpalladium%2Fproduction%2Fs3fs-public%2Fmedia%2Ffiles%2Fmyb1-2021-nitro-ert.xlsx; Statistics Canada, *Fertilizer shipments to Canadian agriculture markets, by nutrient content and fertilizer year* (May 22, 2024), https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3210003901; Nutrien, 2022 Annual Report (2022), https://nutrien-prod-asset.s3.us-east-2.amazonaws.com/s3fs-public/uploads/2023-03/2022%20Nutrien%20Annual%20Enhanced%20Report.pdf; Mosaic, 2022 Annual Report (2022), https://s1.q4cdn.com/823038994/files/doc_financials/2022/ar/mos-2022-annual-report-finalweb.pdf.

[419] *See* Ronald J. Stanis, R&D Manager, GTI Energy, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 16, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1367; Wabash Valley Resources LLC, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 17, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1357; Atlas Agro, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 12, 2022),https://www.regulations.gov/comment/AMS-AMS-22-0027-0944.

[420] *See Phosphate Fertilizers from Morocco and Russia*, U.S. Int'l. Trade Comm'n. Hearing, Investigation No. 701-TA-650-651 (Final) (Feb. 9, 2021), https://edis.usitc.gov/external/attachment/733491-1606429.pdf; *Urea Ammonium Nitrate Solutions from Russia and Trinidad and Tobago*, U.S. Int'l. Trade Comm'n. Hearing, Investigation Nos. 701-TA-668-669 and 731-TA-1565-1566 (Preliminary) (July 21, 2021), https://edis.usitc.gov/external/attachment/748807-1672123.pdf; *Phosphate Fertilizers from Morocco and Russia*, U.S. Int'l. Trade Comm'n, Staff Report, Investigation No. 701-TA-650-651 (Final) (Feb. 26, 2021), https://edis.usitc.gov/external/attachment/735528-1613138.pdf. For example, in a 2021 survey by the International Trade Commission of 33 retailers/distributors of UAN accounting for a substantial majority of UAN purchases in the United States, most UAN purchasers (21) reported CF alone as the UAN price leader and seven reported multiple price leaders including CF (with five reporting Koch as a price leader as well). *See Urea Ammonium Nitrate Solutions from Russia and Trinidad and Tobago*, U.S. Int'l. Trade Comm'n. Determination, Investigation Nos. 701-TA-668-669 and 731-TA-1565-1566 (Final), USITC Pub. 5338 (Aug. 2022), https://edis.usitc.gov/external/attachment/777532-1879584.pdf.

[421] *See* Fitch Ratings, *PotashCorp/Agrium Merger Talks Highlight Distribution*, Fitch Wire (Sept. 1, 2016), https://www.fitchratings.com/research/corporate-finance/potashcorp-agrium-merger-talks-highlight-distribution-01-09-2016 ("The addition of strong retail operations [for PotashCorp] provides *timely market intelligence* and ability to optimize working capital throughout the value chain."). *See also* Rod Nickel, *Merged fertilizer firm Nutrien eyes U.S. farm suppliers as cash pile builds*, Reuters (Nov. 8, 2017), https://www.reuters.com/article/idUSKBN1D82DW/ (describing Nutrien's "retail franchise in the U.S." as the "crown jewel" of the combined PotashCrop-Agrium firm).

[422] *See, e.g.*, *Urea Ammonium Nitrate Solutions from Russia and Trinidad and Tobago*, U.S. Int'l. Trade Comm'n. Hearing, Investigation Nos. 701-TA-668-669 and 731-TA-1565-1566 (Preliminary) (July 21, 2021), https://edis.usitc.gov/external/attachment/748807-1672123.pdf. *See also Urea Ammonium Nitrate Solutions from Russia and Trinidad and Tobago*, U.S. Int'l. Trade Comm'n. Determination, Investigation Nos. 701-TA-668-669 and 731-TA-1565-1566 (Final), USITC Pub. 5338, at 26 (Aug. 2022), https://edis.usitc.gov/external/attachment/777532-1879584.pdf ("The pricing data show that cumulated subject imports [of UAN solution] *undersold* the domestic like product in 39 of 108 monthly comparisons, or 36.1 percent of the time, at margins ranging between 0.1 and 22.1 percent and averaging 8.0 percent. Cumulated subject imports *oversold* the domestic like product in the remaining 69 of 108 monthly comparisons, or 63.9 percent of the time, at margins ranging between 0.1 and 47.0 percent and averaging 14.3 percent. Months in which subject imports undersold the domestic product accounted for 41.9 percent of the reported volume of cumulated subject import sales (2.5 million short tons), and months in which subject imports oversold the domestic product accounted for 58.1 percent of the reported volume of cumulated subject import sales (3.5 million short tons).").

[423] CF Industries, 2023 Annual Report, https://www.cfindustries.com/globalassets/cf-industries/media/documents/reports/annual-reports/cf_industries_2023-annual-report.pdf.

[424] *See generally* Nutrien, *2023 Fact Book* (Nov. 2023), https://nutrien-prod-asset.s3.us-east-2.amazonaws.com/s3fs-public/uploads/2024-01/Nutrien_2023Fact%20Book_Update_12624.pdf. CF's UAN production capacity at its Donaldsonville facility alone accounts for over half of overall UAN capacity in the United States. *See also Urea Ammonium Nitrate Solutions from Russia and Trinidad and Tobago*, U.S. Int'l. Trade Comm'n. Hearing, Investigation Nos. 701-TA-668-669 and 731-TA-1565-1566 (Preliminary) (July 21, 2021), https://edis.usitc.gov/external/attachment/748807-1672123.pdf. In September 2024,

Koch Industries successfully completed its acquisition of the Iowa Fertilizer Company, whose output was added to Koch Industries' in these calculations. *See* Dennis Rudat, "Koch Ag completes controversial Iowa Fertilizer Company acquisition," Michigan Farm News, Sept. 4, 20224, www.michiganfarmnews.com/koch-ag-completes-controversial-iowa-fertilizer-company-acquisition.

[425] Nutrien, *2023 Fact Book* (Nov. 2023), https://nutrien-prod-asset.s3.us-east-2.amazonaws.com/s3fs-public/uploads/2024-01/Nutrien_2023Fact%20Book_Update_12624.pdf; *see also* Nutrien, 2023 Management's Discussion and Analysis, Annual Report (2023), https://www.sec.gov/Archives/edgar/data/1725964/000119312524055096/d523730dex992.htm.

[426] *See also Urea Ammonium Nitrate Solutions from Russia and Trinidad and Tobago*, U.S. Int'l. Trade Comm'n. Hearing, Investigation Nos. 701-TA-668-669 and 731-TA-1565-1566 (Preliminary) (July 21, 2021), https://edis.usitc.gov/external/attachment/748807-1672123.pdf.

[427] Nutrien Ltd., 2023 Annual Information Form, at 15 (2023), https://nutrien-prod-asset.s3.us-east-2.amazonaws.com/s3fs-public/uploads/2024-03/Nutrien%202023%20Annual%20Information%20Form.pdf ("Our North American plants are geographically well positioned to service agriculture, industrial and feed customers across Canada and the US. Our robust North American distribution network provides in-market support, during seasonal peak demand, ensuring timely product availability. *Trinidad mainly supplies our international fertilizer and industrial customers.*").

[428] Nutrien Ltd., 2023 Fact Book, at 24 (2023), https://nutrien-prod-asset.s3.us-east-2.amazonaws.com/s3fs-public/uploads/2023-11/Nutrien_2023Fact%20Book_Update_112723.pdf (showing that exports of nitrogen nutrients out of West Canada typically account for around a third of annual West Canadian production).

[429] CF Indus., 2023 Annual Report (2023), https://www.cfindustries.com/globalassets/cf-industries/media/documents/reports/annual-reports/cf_industries_2023-annual-report.pdf.

[430] CF Indus., 2023 Annual Report (2023), https://www.cfindustries.com/globalassets/cf-industries/media/documents/reports/annual-reports/cf_industries_2023-annual-report.pdf.

[431] *See* Wabash Valley Resources LLC, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 17, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1357; Nutrien Ltd., 2023 Fact Book, at 24 (2023), https://nutrien-prod-asset.s3.us-east-2.amazonaws.com/s3fs-public/uploads/2023-11/Nutrien_2023Fact%20Book_Update_112723.pdf; Cru Group, *UAN Trade Flows Shift in the USA* (Jan. 11, 2018), https://www.crugroup.com/knowledge-and-insights/insights/2018/uan-trade-flows-shift-in-the-usa/ (explaining that offshore exports from CF's Donaldsonville complex are "in the best position for USA exports [of nitrogen fertilizer], located near the New Orleans port, with competitive costs delivered to the markets in Europe and Latin America").

[432] Mosaic Co., Annual Report (Form 10-K) (Feb. 22, 2024), https://stocklight.com/stocks/us/nyse-mos/mosaic/annual-reports/nyse-mos-2024-10K-24664209.pdf.; Nutrien, 2023 Annual Audited Financial Statements (2023), https://nutrien-prod-asset.s3.us-east-2.amazonaws.com/s3fs-public/uploads/2024-03/Nutrien%202023%20Financial%20Statements.pdf.

[433] *See, e.g.*, Mosaic Co., 2021 Annual Report, at 55 (2021), https://s1.q4cdn.com/823038994/files/doc_financials/2021/ar/2021AnnualReport_FINAL.pdf ("We have concluded that the sales to Canpotex are not at arm's-length, due to the unique pricing and payment structure and financial obligations of the stockholders.").

[434] Nigel Jaquiss, *The Port of Portland's Massive Fertilizer Export Terminal Shuttered After Conveyor Collapse*, Willamette Week (May 11, 2023), https://www.wweek.com/news/business/2023/05/11/the-port-of-portlands-massive-fertilizer-export-terminal-shuttered-after-conveyor-collapse/ ("Although the Port of Portland's grain terminals may be more visible and Portland has long been the nation's largest wheat exporter, potash exports dwarf total grain shipments in volume by more than 3 to 1. Last year, ships bound for export loaded nearly 6 million tons of potash at Terminal 5, located at 15550 N Lombard St. That potash arrives via train from a mine in Saskatchewan operated by the Canadian firm Canpotex. The scope of the operation is vast: Canpotex uses specially built railcars in trains up to 205 cars long. It sends 800 "unit trains"—meaning all the cars carry potash. Many of those trains end up in Portland, about 1,200 miles from the mines. In 2018, Canpotex said it had completed a five-year, $150 million expansion of the terminal, allowing it to accommodate 390 railcars on site and export up to 7.5 million tons annually."). *See also* Canpotex, *Canpotex invests in its World-Class Supply Chain by acquiring 1,300 Railcars from National Steel Car*, Press Release (Oct. 27, 2022), https://www.canpotex.com/news/canpotex-invests-its-world-class-supply-chain-acquiring-1300-railcars-national-steel-car; Canpotex, About Us Section, https://www.canpotex.com/who-we-are/about-us (last visited July 16, 2024).

[435] Mosaic Co., Annual Report (Form 10-K) (Feb. 22, 2024), https://stocklight.com/stocks/us/nyse-mos/mosaic/annual-reports/nyse-mos-2024-10K-24664209.pdf.

[436] Mosaic Co., Annual Report (Form 10-K) (Feb. 22, 2024), https://stocklight.com/stocks/us/nyse-mos/mosaic/annual-reports/nyse-mos-2024-10K-24664209.pdf.

[437] Canpotex's ability to shape the supply of potassium fertilizers in the United States can be expected to grow significantly in the coming years, as Canadian Pacific's recent merger with Kansas City Southern has given it control over railroads stretching all the way to export terminals on the Gulf Coast. CP is already in a joint venture with Canpotex to build a Port Arthur export terminal for its potash, which would likely allow Canpotex to divert potassium fertilizer supplies from the U.S. market even more easily. *See* Keith Creel, Pres. & CEO, Canadian Pacific Railway, *Morgan Stanley 10th Annual Laguna Conference* (Sept. 15, 2022) (transcript available at MS-2022-Conference-CP-Transcript-vFinal.pdf (q4cdn.com)).

[438] Mosaic Co., Annual Report (Form 10-K) (Feb. 22, 2024), https://stocklight.com/stocks/us/nyse-mos/mosaic/annual-reports/nyse-mos-2024-10K-24664209.pdf.

[439] *See* Stephen M. Jasinski, *Phosphate Rock*, U.S. Geological Survey, Minerals Yearbook 56.2 (2018), https://pubs.usgs.gov/myb/vol1/2018/myb1-2018-phosphate-rock.pdf; The Center for Land Use Interpretation, *Industrial Fertilizer in the USA: The Ground Our Food Eats*, The Lay of the Land Newsletter No. 42 (Winter 2019),

https://clui.org/newsletter/winter-2019/industrial-fertilizer-usa; Mosaic, *Fact Sheet: Port Sutton Ammonia Terminal* (Jan. 14. 2020), https://mosaicfloridaphosphate.com/wp-content/uploads/Port-Sutton-Ammonia-Terminal-Fact-Sheet-1.pdf; Mosaic, *Fact Sheet: Hookers Point Ammonia Terminal* (May 2022), https://mosaicfloridaphosphate.com/wp-content/uploads/2022/07/Hookers-Point-Terminal-Fact-Sheet-2.pdf; Mosaic, *Fact Sheet: Tampa Marine Terminal* (Aug. 2023), https://mosaicfloridaphosphate.com/wp-content/uploads/2023/10/Tampa-Marine-Terminal-Fact-Sheet.pdf.

[440] *Cf.* Wabash Valley Resources LLC, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 17, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1357. *See Phosphate Fertilizers from Morocco and Russia*, U.S. Int'l. Trade Comm'n. Hearing, Investigation No. 701-TA-650-651 (Final) (Feb. 9, 2021), https://edis.usitc.gov/external/attachment/733491-1606429.pdf. The Center for Land Use Interpretation, *Industrial Fertilizer in the USA: The Ground Our Food Eats*, The Lay of the Land Newsletter No. 42 (Winter 2019), https://clui.org/newsletter/winter-2019/industrial-fertilizer-usa; *Phosphate Fertilizers from Morocco and Russia*, U.S. Int'l. Trade Comm'n. Determination, on remand from U.S. Court of Int'l. Trade, Investigation Nos. 701-TA-650-651 (Final) (Remand), USITC Pub. 5490 (Jan. 2024), https://www.usitc.gov/publications/701_731/pub5490.pdf. *See also Phosphate Fertilizers from Morocco and Russia*, U.S. Int'l. Trade Comm'n. Determination, Investigation Nos. 701-TA-650-651 (Preliminary), USTIC Pub. 5105, at II-4 (Aug. 2020), https://www.usitc.gov/publications/701_731/pub5105.pdf ("Based on the available information, U.S. producers of phosphate fertilizers [Mosaic, J.R. Simplot, and . . .] have the ability to respond to changes in demand with *large* changes in the quantity of shipments of U.S.-produced phosphate fertilizers to the U.S. market. The main contributing factors to this degree of responsiveness of supply are the availability of unused capacity and inventories and the ability to shift shipments from alternative markets.").

[441] Nutrien, 2022 Fact Book (2022), https://nutrien-prod-asset.s3.us-east-2.amazonaws.com/s3fs-public/uploads/2022-06/Nutrien%202022%20Fact%20Book.pdf; Nutrien, 2022 Annual Report (2022), https://nutrien-prod-asset.s3.us-east-2.amazonaws.com/s3fs-public/uploads/2023-03/2022%20Nutrien%20Annual%20Enhanced%20Report.pdf.

[442] *Phosphate Fertilizers from Morocco and Russia*, U.S. Int'l. Trade Comm'n. Determination, Investigation No. 701-TA-650-651 (Final), USITC Pub. 5172 (Mar. 2021), https://www.usitc.gov/publications/701_731/pub5172.pdf.

[443] *Phosphate Fertilizers from Morocco and Russia*, U.S. Int'l. Trade Comm'n. Determination,, Investigation No. 701-TA-650-651 (Final), USITC Pub. 5172 at 40, 46-47 (Mar. 2021), https://www.usitc.gov/publications/701_731/pub5172.pdf; *see also* Ashley Robinson, MarketsFarm, *Nutrien merger's effects ongoing a year later* (Jan. 10, 2019), https://www.agcanada.com/daily/nutrien-mergers-effects-ongoing-a-year-later ("Before the merger [between PotashCorp and Agrium], Agrium had the advantage of being the *only* retailer of Canadian phosphate products.").

[444] For example, when asked to elaborate on how CF exhibits price leadership in the domestic UAN market in an industry survey by the International Trade Commission, purchasers of UAN reported the following: (1) that CF "changes prices and other firms follo[w]"; (2) that CF is "the largest producer," is "the first to adjust prices," and "has large fill programs"; (3) that other suppliers "reference CF Industries' price and supply" and "*wait to sell until CF Industries publishes prices*"; and (4) that "CF Industries decides how much it wants to supply to purchaser's locations" and that "competitors [then] either meet CF Industries' price to secure business . . . or . . . *stay out of the market hoping to get a higher price after CF Industries has [made] the sales that CF Industries wants*." *Urea Ammonium Nitrate Solutions from Russia and Trinidad and Tobago*, U.S. Int'l. Trade Comm'n. Determination, Investigation Nos. 701-TA-668-669 and 731-TA-1565-1566 (Final), USITC Pub. 5338, at 26 (Aug. 2022), https://edis.usitc.gov/external/attachment/777532-1879584.pdf.

[445] *Urea Ammonium Nitrate Solutions from Russia and Trinidad and Tobago*, U.S. Int'l. Trade Comm'n. Conference, Investigation Nos. 701-TA-668-669 and 731-TA-1565-1566 (Preliminary), at 158 (July 21, 2021), https://edis.usitc.gov/external/attachment/747786-1664331.pdf. ("MR. HARLANDER [President Emeritus of Gavilon]: . . . CF is the dominant supplier [pf UAN solution] in the U.S. market. *CF uses its dominant position to be the price leader. The market waits for CF's announcement for price and summer fill campaign in preparation for next year's spring application season, then the market reacts to these prices.* . . . MR. PAYTON [President of Helm Fertilizer, a major importer]: . . . While quantities in these long term contracts are fixed, price is not. Instead as our customers call the price of quantities required under their supply agreement, we set a price that reflects the prevailing market prices at that time, which will then be used during invoice and shipment later. *In the U.S. market, the price of UAN is established by CF Industries, who is the dominant, largest supplier throughout the United States, and he is the undisputed price leader. CF Industries sets the price of UAN, and the other parties, including HFC, must react to it.* We are frequently advised by customers of the CF industry's price, and then given a short period of time -- often just 24 hours to meet that price or lose the sale. . . ."). *See also Id.* at 187 ("MR. HARLANDER: . . . I would say, on the Gulf Coast of the U.S. right now, we have no idea what the price was because CF was not willing to quote or ship any product to the Gulf Coast. We have customers that are anxious to buy, and we don't have the best idea on where it needs to be prices.").

[446] In a 2019 survey of U.S. purchasers of phosphate fertilizers, the International Trade Commission found that 18 out of 28 purchasers listed Mosaic as the sole price leader, while the remainder listed Mosaic as a price leader alongside a few others (including Simplot, ADM, and Koch, the latter two being phosphate importers rather than producers). *Urea Ammonium Nitrate Solutions from Russia and Trinidad and Tobago*, U.S. Int'l. Trade Comm'n. Determination, Investigation Nos. 701-TA-668-669 and 731-TA-1565-1566 (Final), USITC Pub. 5338, at 26 (Aug. 2022), https://edis.usitc.gov/external/attachment/777532-1879584.pdf. When asked to elaborate on how Mosaic exhibits price leadership, the surveyed purchasers reported the following: "control of North American production; market size; issuance of price lists that other firms follow; supply; pricing programs; and setting the barge market prices for Tampa, Florida, and New Orleans, Louisiana, by announcing price changes in those regions." *Phosphate Fertilizers From Morocco and Russia*, U.S. Int'l. Trade Comm'n. Staff Report, Investigation No. 701-TA-650-651 (Final) (Feb. 26, 2021), https://edis.usitc.gov/external/attachment/735528-1613138.pdf. *See also Phosphate Fertilizers*

From Morocco and Russia, U.S. Int'l. Trade Comm'n Hearing, Investigation No. 701-TA-650-651 (Final) (Feb. 9, 2021), https://edis.usitc.gov/external/attachment/733491-1606429.pdf ("MR. DOUGAN: . . . Mosaic is the dominant producer [of phosphate fertilizer] in the U.S. market, the dominant supplier to the U.S. market, and yet also a huge player in export markets. To the degree that U.S. prices are influenced by local market factors in addition to global trends, it is obvious that the quantity Mosaic makes available to the U.S. market versus what it ships overseas is bound to be the driving influence on U.S. prices at any given time, not the marginal supply provided by import suppliers.").

[447] Pricing data collected by the ITC between 2017 and 2020 showed that imports of phosphate fertilizers from Morocco and Russia — which accounted for over 85% of imports during the relevant period — "undersold the domestic like product in 34 of 170 instances (involving 381,132 short tons) at underselling margins ranging from 0.02 to 4.4 percent and an average underselling margin of 1.7 percent," and "oversold the domestic like product in the remaining 136 instances (involving 2.0 million short tons) at overselling margins between 0.02 and 17.6 percent with an average overselling margin of 3.7 percent." *Phosphate Fertilizers from Morocco and Russia*, U.S. Int'l. Trade Comm'n. Determination,, Investigation No. 701-TA-650-651 (Final), USITC Pub. 5172, at 28 (Mar. 2021), https://www.usitc.gov/publications/701_731/pub5172.pdf. In total, "the collected pricing data show[ed] that subject imports *oversold* the domestic product in 136 of 170 quarterly comparisons, amounting to 80 percent by instance and 83.7 percent by quantity." *Id.* at 50. "These data do not support finding significant underselling by subject imports, nor do they show a mixed picture. *To the contrary, they show pervasive overselling by subject imports*." *Id.* at 42.

[448] *See Phosphate Fertilizers from Morocco and Russia*, U.S. Int'l. Trade Comm'n. Determination,, Investigation No. 701-TA-650-651 (Final), USITC Pub. 5172, at 40, 46-48 (Mar. 2021), https://www.usitc.gov/publications/701_731/pub5172.pdf.

[449] Intrepid Potash, Inc., 2021 Annual Report (Form 10-K), at 55, https://www.sec.gov/Archives/edgar/data/1421461/000142146122000007/ipi-20211231.htm. Compass Minerals has specialized in producing Sulfate of Potash (SOP), a specialty potassium fertilizer which no other manufacturer produces in North America, so it does not compete directly with Nutrien or Mosaic. Compass Mineral International, Inc., 2023 Annual Report (Form 10-k), at 8, https://s22.q4cdn.com/834578860/files/doc_financials/2023/ar/cmp-f2023-10-k.pdf.

[450] *See* Intrepid Potash, Inc., 2021 Annual Report (Form 10-K), https://www.sec.gov/Archives/edgar/data/1421461/000142146122000007/ipi-20211231.htm; Intrepid Potash, Inc., *Overview of Intrepid's Potash Operations* (Sept. 2023), https://s28.q4cdn.com/607153883/files/doc_presentations/2023/Sep/20/_potash-operations-overview_final_9-20-2023.pdf; Intrepid Potash, Inc., *Why Invest*, https://investors.intrepidpotash.com/why-invest/default.aspx (last visited July 17, 2024); Intrepid Potash, Inc., Investor Presentation (Oct. 2012), https://media.corporate-ir.net/media_files/irol/21/218952/October2012InvestorPresentation.pdf; Intrepid Potash, Inc., Investor Presentation (May 2013), https://media.corporate-ir.net/media_files/IROL/21/218952/May2013InvestorPresentation.pdf; GC Mays, *Intrepid Potash Faces Greater Risk Than Its Larger Competitors* (June 20, 2014), https://www.fool.com/investing/general/2014/06/20/intrepid-potash-faces-greater-risk-than-its-larger.aspx; Intrepid Potash, Inc., Investor Presentation (Dec. 2008), https://www.sec.gov/Archives/edgar/data/1421461/000119312508249998/dex991.htm. Notably, Intrepid has long boasted to investors that it uses the transport, royalty/tax, and production-cost advantages derived from its location in New Mexico and its efficient solution-mining operations to earn the "highest net realized sales price per ton" of MOP fertilizer than any North American producer — averaging "35-40% higher than key peers." Intrepid Potash, Inc., *Overview of Intrepid's Potash Operations*, at 16 (Sept. 2023), https://s28.q4cdn.com/607153883/files/doc_presentations/2023/Sep/20/_potash-operations-overview_final_9-20-2023.pdf.

[451] Rod Nickel, Price, *Demand to Guide K&S Potash Output from Canada*, Reuters (June 21, 2016), https://www.reuters.com/article/cbusiness-us-k-s-potash-idCAKCN0Z72TU/. Mr. Lohr stated that K+S intended to direct 500,000 tonnes of Bethune's annual production to the U.S. through its exclusive marketing with Koch, 600,000 tonnes to industrial buyers, and the remaining 900,000 tonnes to offshore buyers in Asia and South America. *Id.*

[452] A stark example of this comes from the potash industry, where Nutrien owns, but keeps idle, a ready-to-operate mine in Carlsbad, New Mexico, which sits on what are arguably the most accessible reserves of potash in the United States and is larger — in terms of verified deposits — than a majority of Nutrien's operating mines in Canada. *See Trident Mining & Minerals, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 17, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1477*.

[453] *See, e.g.*, Nutrien, 2022 Annual Report, at 20 (2022), https://nutrien-prod-asset.s3.us-east-2.amazonaws.com/s3fs-public/uploads/2023-03/2022%20Nutrien%20Annual%20Enhanced%20Report.pdf ("Building new [potash] production capacity requires significant capital and time to bring online. Brownfield projects, especially those already completed, have a significant per-tonne capital cost advantage over greenfield projects.").

[454] Rabobank, *Playing the Potash Field*, Rabobank Industry Note #321 (Jun. 2012), at 2, http://www.miningclub.com/upload/archivos/mercado_mundial_potasio_139.pdf. *See also Jessica Miller-Smith, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 12, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0956*.

[455] *See* Stephen M. Jasinski, *Phosphate Rock*, U.S. Geological Survey, Minerals Yearbook 56.2 (2018), https://pubs.usgs.gov/myb/vol1/2018/myb1-2018-phosphate-rock.pdf; *see also* Nutrien Ltd., Annual Information Form (Dec. 31, 2023), https://www.sec.gov/Archives/edgar/data/1725964/000119312524055096/d523730dex991.htm.

[456] C. Robert Taylor & Diana L. Moss, *The Fertilizer Oligopoly: The Case for Global Antitrust Enforcement*, Am. Antitrust Inst. Working Paper No. 13-05, at 36, note. 94 (Sept. 4, 2013), https://www.competitivemarkets.com/wp-content/uploads/2013/09/WP13-5_Fertilizer_Body.pdf.

[457] C. Robert Taylor & Diana L. Moss, *The Fertilizer Oligopoly: The Case for Global Antitrust Enforcement*, Am. Antitrust Inst. Working Paper No. 13-05, at 35-36 (Sept. 4, 2013), https://www.competitivemarkets.com/wp-content/uploads/2013/09/WP13-

5_Fertilizer_Body.pdf. Notably, this 2013 analysis by the American Antitrust Institute found that "[t]he cost advantage held by PotashCorp [the predecessor to Nutrien] and Mosaic in domestic and foreign markets comes largely from control of domestic reserves of phosphoric rock, as opposed to efficiencies in production." *Id. at 36.*

[458] *See* Novaphos, Inc., Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 14, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1256; Trident Mining & Minerals, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 17, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1477.

[459] *See* Stephen M. Jasinski, Potash, U.S. Geological Survey, Minerals Yearbook 58.1 (2018), https://d9-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/s3fs-public/atoms/files/myb1-2018-potas.pdf.

[460] *See* Stephen M. Jasinski, *Phosphate Rock*, U.S. Geological Survey, Minerals Yearbook 56.2 (2018), https://pubs.usgs.gov/myb/vol1/2018/myb1-2018-phosphate-rock.pdf; *see also* Mark Thiessen, *Approval for Idaho Phosphate Mine Reversed After Judge Rules US Didn't Assess Prairie Bird Impact*, AP (June 5, 2023), https://apnews.com/article/idaho-phosphate-mine-bayer-roundup-1d15250044d8894f347f3094c20c2c66.

[461] Stephen M. Jasinski, *Phosphate Rock*, U.S. Geological Survey, Minerals Yearbook 56.2 (2018), https://pubs.usgs.gov/myb/vol1/2018/myb1-2018-phosphate-rock.pdf.

[462] Nutrien, 2022 Annual Report (2022), https://nutrien-prod-asset.s3.us-east-2.amazonaws.com/s3fs-public/uploads/2023-03/2022%20Nutrien%20Annual%20Enhanced%20Report.pdf.

[463] Stephen M. Jasinski, *Phosphate Rock*, U.S. Geological Survey, Minerals Yearbook 56.2 (2018), https://pubs.usgs.gov/myb/vol1/2018/myb1-2018-phosphate-rock.pdf.

[464] Trident Mining, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447, at 1 (July 18, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1477 ("Since we are a junior mining company, selection and engagement of one or more fertilizer partners from the secondary market are challenging. We are seeking a second-tier fertilizer firm that does not presently have a phosphatic fertilizer offering. *In one case, we contacted such a firm who cannot offer phosphatic fertilizer due to the inaccessibility of phosphoric acid. It is reported that the Big 5 will not sell phosphoric acid to this firm, and the costs of exploration, development and transportation are prohibitive for the family-owned firm*."). *See also* U.S. Int'l. Trade Comm'n., Phosphate Fertilizers from Morocco and Russia, Determination in Investigation No. 701-TA-650-651 (Preliminary), USITC Pub. 5105, at II-8 (Aug. 2020), https://www.usitc.gov/publications/701_731/pub5105.pdf ("Respondent Koch stated that it imports phosphate fertilizers because it 'cannot obtain meaningful supplies domestically,' that Mosaic has from time to time declined to sell product, respond to RFQs and to enter into any kind of commercial arrangement to support Koch's network; and that Koch's customers (which sell to farmers and retailers) purchase from Koch because in some instances, U.S. producers will not sell to them. It added that it is more "freight logical" to import than buy from domestic producers; that OCP's quality is often preferred to domestic sources, and that U.S. producers choose to export rather than sell domestically.").

[465] Key Agrium acquisitions included: Crop Production Services (1994); Western Farm Service (1995); Viridian (1996); Royster-Clark (2006); ADM's retail division (2007); United Agri-Products (2005-2008); Agriliance (2009); Miles Farm Supply (2010); Evergro Canada (2011); AWB Landmark (2011); CerealToscana (2011); Ritter Crop Services (2012), Viterra (2013); Cargill AgHorizons (2016); Southern States Cooperative (2017); Andrukow Group (2017). *See* Matt Hopkins, *Top 10 Ag Retail Acquisitions Of The Last Decade*, CropLife (Nov. 8, 2012), https://www.croplife.com/editorial/matt-hopkins/top-10-ag-retail-acquisitions-of-the-last-decade/; Global AgInvesting, *Agrium Furthers U.S. Expansion; Acquires Southern States' Retail Sites* (Aug. 30, 2017), https://www.globalaginvesting.com/agrium-furthers-u-s-expansion-acquires-southern-states-retail-unit/; Matt Hopkins, *Agrium Acquires Retails Outlets From Agrilance*, CropLife (Nov. 30, 2009), https://www.croplife.com/crop-inputs/agrium-acquires-retail-outlets-from-agriliance/; MarketScreener, Agrium Completes Acquisition of Evergro Canada (July 6, 2011), https://www.marketscreener.com/quote/stock/AGRIUM-INC-11568/news/AGRIUM-INC-Agrium-completes-acquisition-of-Evergro-Canada-13697180/#google_vignette.

[466] *See* Agrium, 2016 Annual Report, at 2 (Feb. 22, 2017), https://www.minedocs.com/17/agrium_2016_annual_report.pdf.

[467] Rod Nickel, *Merged Fertilizer Firm Nutrien Eyes U.S. Farm Suppliers as Cash Pile Builds*, Reuters (Nov. 8, 2017), https://www.reuters.com/article/idUSKBN1D82DW/. *See also,* Global AgInvesting, *Cargill Sells Retail Unit to Cargill* (July 7, 2016), https://www.globalaginvesting.com/cargill-sells-retail-unit-to-agrium/.

[468] *See* CropLife, *Nutrien Acquires CropLife 100 Retailer Van Horn* (Mar. 1, 2019), https://www.croplife.com/croplife-top-100/nutrien-acquires-croplife-100-retailer-van-horn/; Nutrien Ltd., Press Release, *Nutrien to Acquire Brazilian Ag Retailer Casa do Adubo* (2022), https://www.nutrien.com/investors/news-releases/2022-nutrien-acquire-brazilian-ag-retailer-casa-do-adubo; Nutrien Ltd., Press Release, *Nutrien Enters into Binding Agreement to Acquire Ruralco* (2019), https://www.nutrien.com/investors/news-releases/2019-nutrien-enters-binding-agreement-acquire-ruralco; Por Fernando Lopes, *Nutrien to prioritize integration of acquisitions*, International Valor (Dec. 20, 2022), https://valorinternational.globo.com/business/news/2022/12/20/nutrien-to-prioritize-integration-of-acquisitions.ghtml; Nutrien, 2023 Annual Report, at 133 (2023), https://nutrien-prod-asset.s3.us-east-2.amazonaws.com/s3fs-public/uploads/2024-03/Nutrien%202023%20Annual%20Report.pdf.

[469] *See* Statista, *Market share of agricultural retailers in the United States in 2020* (Nov. 2020), https://www.statista.com/statistics/1086026/agricultural-retail-market-share-us/; CropLife, *Top 10 Ag Retailers With the Most Facilities in 2023* (Apr. 22, 2024), https://www.croplife.com/croplife-top-100/top-10-ag-retailers-with-the-most-locations/#slide=82217-82220-9. Nutrien also has 500 retail locations outside the United States, spread across six countries. Andy Serwer, *World's Largest Ag Retailer: How the Invasion of Ukraine Will Remake the Food Supply*, Barron's (Apr. 13, 2023), https://www.barrons.com/articles/nutrien-ceo-food-supply-ecc97a65. In Australia, Nutrien also runs a wholesale distribution

business supplying other agricultural retailers in the country, which supplies over 650 stores or 45% of all Australian farm retail stores. Australian Competition & Consumer Comm'n., *Concerns about Landmark's proposed acquisition of Ruralco* (June 13, 2019), https://www.accc.gov.au/media-release/concerns-about-landmark's-proposed-acquisition-of-ruralco.

[470] Nutrien, 2023 Annual Report, at 133 (2023), https://nutrien-prod-asset.s3.us-east-2.amazonaws.com/s3fs-public/uploads/2024-03/Nutrien%202023%20Annual%20Report.pdf.

[471] *See* CropLife, *Top 10 Ag Retailers With the Most Facilities in 2023* (Apr. 22, 2024), https://www.croplife.com/croplife-top-100/top-10-ag-retailers-with-the-most-locations/#slide=82217-82220-9; J.R. Simplot Co., News Release, *J.R. Simplot Company Expands Presence in Western Canada*, https://www.simplot.com/company/news/j-r-simplot-company-expands-presence-in-western-canada (last visited July 17, 2024); J.R. Simplot Co., News Release, *Simplot Expands Turf and Horticulture Services in Midwest*, https://www.simplot.com/company/news/simplot-expands-turf-and-horticulture-services-in-midwest (last visited July 17, 2024); J.R. Simplot Co., News Release, *The J.R. Simplot Company Agrees to Acquire Pinnacle Agriculture* (Nov. 27, 2019), https://www.globenewswire.com/news-release/2019/11/27/1953347/0/en/The-J-R-SIMPLOT-COMPANY-AGREES-TO-ACQUIRE-PINNACLE-AGRICULTURE.html.

[472] *See* Douglas M. Stone, President, AgriBusiness, Simplot,, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (July 15, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1480.

[473] Except the facility recently purchased by CF Industries from Dyno Nobel, located in Waggaman, Louisiana. *See* CF Industries, 2023 Annual Report, https://www.cfindustries.com/globalassets/cf-industries/media/documents/reports/annual-reports/cf_industries_2023-annual-report.pdf.

[474] CF Industries, 2023 Annual Report, https://www.cfindustries.com/globalassets/cf-industries/media/documents/reports/annual-reports/cf_industries_2023-annual-report.pdf; *see also* CF Industries, Press Release, *CF Industries and CHS Commence Strategic Venture* (Feb. 1, 2016), https://www.cfindustries.com/newsroom/2016/cf-chs-strategic-venture.

[475] *See* CropLife, *Top 10 Ag Retailers With the Most Facilities in 2023* (Apr. 22, 2024), https://www.croplife.com/croplife-top-100/top-10-ag-retailers-with-the-most-locations/#slide=82217-82220-9; Eric Sfiligoj & Lara Sowinski, *The Big Seven of the CropLife 100: The Evolution of America's Largest Ag Retailers*, CropLife (Apr. 23, 2024), https://www.croplife.com/croplife-top-100/the-big-seven-of-the-croplife-100-the-evolution-of-americas-largest-ag-retailers/. *See also* Richard H. Schurman, COO, Rooted Leaf Agritech, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 16, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1378; Wabash Valley Resources LLC, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 17, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1357; Ronald J. Stanis, R&D Manager, GTI Energy, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 16, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1367.

[476] An upstart "green" fertilizer manufacturer, Wabash Valley Resources, recently summarized the problem of customer foreclosure in a letter to the USDA as follows:

> **Locked Market.** For a new competitor to enter the market, there are typically key customers that the plant must sell to for the "new" plant to be successful. While the new plant will need to be competitive on price to earn the business, existing suppliers may enter into multiyear longer term agreements, that can make it harder for a new plant to start and increases the risk for the new plant. Initially, this inability to access this customer makes it harder for the "new plant" to make and sell product. Banks refuse to finance projects that do not have long term offtake agreements. They want to make sure that the product, when produced, will have a market. . . .

Wabash Valley Resources LLC, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447, at 1 (May 17, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1357. Another independent fertilizer manufacturing company, Rooted Leaf Agritech, echoed WVR's concerns in its own letter to the USDA, adding emphasis on the role of exclusive contracts and minimum order requirements. *See* Richard H. Schurman, COO, Rooted Leaf Agritech, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 16, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1378.

[477] *See Urea Ammonium Nitrate Solutions from Russia and Trinidad and Tobago*, U.S. Int'l. Trade Comm'n. Hearing, Investigation Nos. 701-TA-668-669 and 731-TA-1565-1566 (Preliminary) (July 21, 2021), https://edis.usitc.gov/external/attachment/748807-1672123.pdf; *Phosphate Fertilizers from Morocco and Russia*, U.S. Int'l. Trade Comm'n. Determination, on remand from U.S. Court of Int'l. Trade, Investigation Nos. 701-TA-650-651 (Final) (Remand), USITC Pub. 5490 (Jan. 2024), https://www.usitc.gov/publications/701_731/pub5490.pdf; U.S. Int'l. Trade Comm'n., *Phosphate Fertilizers from Morocco and Russia*, Determination in Investigation No. 701-TA-650-651 (Final), USITC Pub. 5172 (Mar. 2021), https://www.usitc.gov/publications/701_731/pub5172.pdf.

[478] *Urea Ammonium Nitrate Solutions from Russia and Trinidad and Tobago*, U.S. Int'l. Trade Comm'n. Hearing, Investigation Nos. 701-TA-668-669 and 731-TA-1565-1566 (Preliminary), at 149 (July 21, 2021), https://edis.usitc.gov/external/attachment/748807-1672123.pdf. Mosaic has testified to the International Trade Commission that its long-term contract with CF Industries accounts for a third of its ammonia procurement. *Phosphate Fertilizers from Morocco and Russia*, U.S. Int'l. Trade Comm'n. Determination, on remand from U.S. Court of Int'l. Trade, Investigation Nos.

701-TA-650-651 (Final) (Remand), USITC Pub. 5490 (Jan. 2024), https://www.usitc.gov/publications/701_731/pub5490.pdf. This long-term contract gives Mosaic "a hedge against fluctuating prices," and allows Mosaic to "participate when the market is good and participate when the market is bad." U.S. Int'l. Trade Comm'n., *Phosphate Fertilizers from Morocco and Russia*, Determination in Investigation No. 701-TA-650-651 (Final), USITC Pub. 5172 (Mar. 2021), https://www.usitc.gov/publications/701_731/pub5172.pdf.

[479] *See* Wabash Valley Resources LLC, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 17, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1357 ("Producers tend to restrict/allocate supply during the fill program [a short period before planting season]. While this is a standard procedure during fill when new prices are issued, the allocations of volume also give additional market power to producers. Customers may get less volume in one year vs the next, due to the sole discretion of how producers want to allocate. This practice tends to suppress pushback from customers on terms or other negotiations given that they don't want to take the risk of their volume they receive, or their allocation being reduced by the supplier."). *See also* National Corn Growers Association, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1349 ("Our organization is not set up to gather or compile legal evidence but we have anecdotally heard repeatedly over the last two years that retailers are reluctant to publicly complain about treatment they receive from large fertilizer manufacturers for fear of reprisal").

[480] Anna Wishart, Dir. Gov't Affs. & External Rels., Monolith Inc., Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (June 15, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1447; *Phosphate Fertilizers from Morocco and Russia*, U.S. Int'l. Trade Comm'n, Staff Report, Investigation No. 701-TA-650-651 (Final) (Feb. 26, 2021), https://edis.usitc.gov/external/attachment/735528-1613138.pdf; *Urea Ammonium Nitrate Solutions From Russia and Trinidad and Tobago*, U.S. Int'l. Trade Comm'n, Staff Report, Investigation Nos. 701-TA-668-669 and 731-TA-1565-1566 (Final) (July 6, 2022), https://edis.usitc.gov/external/attachment/774904-1866705.pdf.

[481] *See* Canadian Pacific Railway Limited, Press Release: "CP and Canpotex Enter New Long-Term Agreement," www.investor.cpr.ca, (December 23, 2021); Canadian Pacific Railway Limited, Press Release: "Candian Pacific announces long-term potash agreement," PRNewswire (Jan. 23, 2012), https://www.prnewswire.com/news-releases/canadian-pacific-announces-long-term-potash-agreement-137877778.html. For information on the length and weight of Canpotex trains, *see* Canpotex, "Transportation Logistics," Canpotex.com, last accessed on Aug. 30, 2024, www.canpotex.com/how-we-move-potash/transportation-logistics.

[482] Canadian Pacific Kansas City Limited, *CPKC 2023 Annual Report* (Feb. 27, 2024), https://s21.q4cdn.com/736796105/files/doc_financials/2023/ar/cpkc-annualreport2023-final.pdf.

[483] Bill Stephens, *What does it mean for service when long trains get even longer?*, Trains Magazine (Feb. 23, 2021), https://cs.trains.com/trn/b/observation-tower/archive/2021/02/23/long-trains-will-only-get-longer-this-year.aspx; William O'Neill, Pres. Int'l. Raw Materials Ltd., Testimony Re: *Urea Ammonium Nitrate Solutions From Russia and Trinidad and Tobago*, U.S. Int'l. Trade Comm'n, Investigation Nos. 701-TA-668-669 and 731-TA-1565-1566 (Final) (June 16, 2022), https://edis.usitc.gov/external/attachment/773197-1854928.pdf (noting that "it is a matter of public record that rail service has become more expensive and less efficient for most customers as the railroads have refocused their business models on unit train movements. This trend is particularly not suited for domestic UAN customers who typically require smaller shipments in specialized tank cars to product specific tank storage.").

[484] Canadian Pacific Kansas City Limited, *CPKC 2023 Annual Report* (Feb. 27, 2024), https://s21.q4cdn.com/736796105/files/doc_financials/2023/ar/cpkc-annualreport2023-final.pdf. Notably, a former Nutrien executive that retired from the company in 2019 sits on the board of Canada's only other Class I railroad, Canadian National. Canadian National Railway Co., Board Member Profile Susan C. Jones, https://www.cn.ca/en/delivering-responsibly/governance/board-mandate-and-committees#dialog-7 (last visited July 17, 2024).

[485] *See* Canadian Pacific, Press Release, *K+S Potash Canada and Canadian Pacific Sign Deal on Rail Logistics*, PR Newswire (July 11, 2013), https://www.prnewswire.com/news-releases/ks-potash-canada-and-canadian-pacific-sign-deal-on-rail-logistics-215082521.html; Progressive Railroading, *National Steel delivers first of new domestic rail cars to K+S Potash* (June 22, 2017), https://www.progressiverailroading.com/mechanical/news/National-Steel-delivers-first-of-new-domestic-rail-cars-to-KS-Potash--51962; *K+S Potash Canada and Pacific Coast open handling and storage facility*, Mining.com (Aug. 28, 2017), https://www.mining.com/web/ks-potash-canada-pacific-coast-open-handling-storage-facility/; *K+S opens west coast terminal to ship potash from Legacy mine*, Saskatoon Star Phoenix (Aug. 28, 2017), https://thestarphoenix.com/news/local-news/ks-opens-west-coast-terminal-to-ship-potash-from-legacy-mine.

[486] The Surface Transportation Board (STB) has described the infeasibility of transporting ammonia by truck as follows: "Because [ammonia] may be transported only in specialized refrigeration or pressurization equipment by highly trained drivers, truck transportation of [ammonia] is typically limited to short-haul movements from storage terminals to nearby retailers, and these short-haul distance truck movements cost as much, and at times more, than long-haul pipeline movements. To truck [ammonia] shipments from several hundred to, in some cases, more than 1,000 miles — even if enough specialized trucks were available — would be prohibitively expensive and present substantial safety risks." *CF Indus., Inc. v. Koch Pipeline Co., L.P.*, STB Docket No. 41685, at 8 (May 3, 2000), https://dcms-external.s3.amazonaws.com/MPD/62491/BE81D1F732FF4356852568C7004512D5/30976.pdf. In the same administrative case before the STB, CF Industries exemplified the impracticality of truck transportation for ammonia by pointing out that, "to fill one 30,000 ton storage tank in the Midwest from an [ammonia] production facility 600 miles away would, at 50 miles-per-hour,

require a convoy of 50 trucks operating non-stop for over a month and would resolve only 1% of the Midwest's annual [ammonia] shortfall" of in-region ammonia capacity compared to demand. *Id*.

[487] C. James Kruse et al, Nat'l. Coop. Freight Rsch. Program, *Marine Highway Transport of Toxic Inhalation Hazard Materials*, NCFRP Report No. 18, at 32 (2012), https://nap.nationalacademies.org/download/22737 ("Carrying capacity of a typical ammonia barge is about 2,500 short tons. Usually, two or three ammonia barges are operated together in a single string as a unit tow with a dedicated towboat.").

[488] NuStar Energy LP., 2023 Annual Report (Form 10-K), https://investor.nustarenergy.com/static-files/03305a69-00f2-4a4c-a380-32216f8b9e1a.

[489] NuStar Energy LP., 2023 Annual Report (Form 10-K), https://investor.nustarenergy.com/static-files/03305a69-00f2-4a4c-a380-32216f8b9e1a.

[490] *See* Ill. Commerce Comm'n., *NuStar Ammonia Pipeline System Map*, https://icc.illinois.gov/downloads/public/edocket/428897.PDF (last visited July 17, 2024). Dyno Nobel's injection point at Waggaman, Louisiana, and delivery point near Palmyra were acquired by CF Industries in 2023 as part of its acquisition of Dyno Nobel's ammonia production facility at Waggaman. *See* Aura Informatica, *CF Industries Completes Acquisition of Incitec Pivot Limited's Ammonia Production Complex,* LinkedIn (Dec. 5, 2023), https://www.linkedin.com/pulse/cf-industries-completes-acquisition-incitec-pivot-limiteds-rt6jc/; *see also* Rod Swoboda, *New $3 billion fertilizer plant opens in Iowa*, Farm Progress (Apr. 24, 2017), https://www.farmprogress.com/business/new-3-billion-fertilizer-plant-opens-in-iowa; Katherine Sayre, *Explosives maker Dyno Nobel breaks ground on $850 million ammonia plant in Waggaman*, NOLA.com (Aug. 5, 2013), https://dynonobel.com/~/media/Files/Dyno/ResourceHub/Media%20Articles/Waggaman%20Plant.pdf; One closed injection point appears to be owned by Nutrien (Geismar). *See* Nutrien, *Geismar Decommissioning*, https://www.nutrien.com/geismar-decommissioning (last visited July 17, 2024).

[491] *See* Ill. Commerce Comm'n., *NuStar Ammonia Pipeline System Map*, https://icc.illinois.gov/downloads/public/edocket/428897.PDF (last visited July 17, 2024). In 2015-2016, NuStar sought state and local permits to build a 44-mile addition to its Ammonia Pipeline System in Illinois (called the "Decatur Lateral"), which would have included two new delivery points in Decatur and Dalton City, Illinois, which were to be owned by ADM and NuStar, respectively. *See* NuStar Pipeline Operating Partnership L.P., *Application…to Operate an Anhydrous Ammonia Pipeline…*, Ill. Commerce Comm'n., Docket No. 15-0646 (Dec. 22, 2015), https://icc.illinois.gov/docket/P2015-0646/documents/237718/files/419368.pdf; Ill. Commerce Comm'n., Order re: *Application…to Operate an Anhydrous Ammonia Pipeline…*, Docket No. 15-0646 (Aug. 9, 2016), https://www.icc.illinois.gov/docket/P2015-0646/documents/244882/files/431877.pdf; *Ammonia Distribution Terminal Planned in County*, Moultrie County News Progress (Mar. 16, 2016), https://newsprogress.com/ammonia-distribution-terminal-planned-in-county/. It is unclear if the proposed addition was ever executed.

[492] *Dyno Nobel, Inc. v. NuStar Pipeline Operating Partnership L.P.*, STB Docket No. NOR 42147 (Mar. 24, 2017), https://dcms-external.s3.amazonaws.com/MPD/62491/11243D564156A703852580ED00479001/45560.pdf.

[493] C. James Kruse et al, Nat'l. Coop. Freight Rsch. Program, *Marine Highway Transport of Toxic Inhalation Hazard Materials*, NCFRP Report No. 18, at 32 (2012), https://nap.nationalacademies.org/download/22737. At the time this report by the National Academy of Sciences was compiled in 2011, "there appear[ed] to be no plans to add to or replace any units in the fleet," as "the economics do not support new construction." *Id.* We have found no evidence of ammonia-appropriate barge construction picking up pace since 2011. *Cf.* gCaptain, *Delivery of Harvest: A Significant Milestone for the U.S. Fleet* (July 25, 2017), https://gcaptain.com/delivery-harvest-represents-significant-milestone-u-s-fleet/.

[494] C. James Kruse et al, Nat'l. Coop. Freight Rsch. Program, *Marine Highway Transport of Toxic Inhalation Hazard Materials*, NCFRP Report No. 18 (2012), https://nap.nationalacademies.org/download/22737. The National Academy of Sciences report also lists Duvall Towing, which was acquired by Southern Towing in 2021. *See Southern Towing Acquires Devall Towing*, WorkBoat (Feb. 4, 2021), https://www.workboat.com/coastal-inland-waterways/southern-towing-acquires-devall-towing. Historically, Southern Towing was aligned with CF, while Kirby Inland Marine was aligned with Koch. *See CF Indus., Inc. v. Koch Pipeline Co., L.P.*, STB Docket No. 41685, at 8 (May 3, 2000), https://dcms-external.s3.amazonaws.com/MPD/62491/BE81D1F732FF4356852568C7004512D5/30976.pdf. In 2010, the NAS found that only CF, Terra, As of 2023, CF reports that it "employ[s] a fleet of up to eleven tow boats and third-six river barges" to ship ammonia and UAN, and that this fleet is "primarily leased." CF Indus., 2023 Annual Report (2023), https://www.cfindustries.com/globalassets/cf-industries/media/documents/reports/annual-reports/cf_industries_2023-annual-report.pdf.

[495] "Marine ammonia terminals must be capable of receiving and holding anhydrous ammonia in a refrigerated state, loading out to refrigerated barges, and reheating ammonia to feed non-refrigerated pipelines, rail cars, and trucks." C. James Kruse et al, Nat'l. Coop. Freight Rsch. Program, *Marine Highway Transport of Toxic Inhalation Hazard Materials*, NCFRP Report No. 18 (2012), https://nap.nationalacademies.org/download/22737. A 2005 presentation by Chemical Marketing Services, an industry consultancy, pegged the total number of ammonia-ready storage terminals along the Mississippi, Illinois, and Ohio Rivers at 30. Ray Hattenbach, *Transportation & Delivery of Anhydrous Ammonia*, Chemical Marketing Services, Inc. (2021), https://www.ammoniaenergy.org/wp-content/uploads/2021/01/chemicalmarketingservices.pdf.

[496] *See* C. James Kruse et al, Nat'l. Coop. Freight Rsch. Program, *Marine Highway Transport of Toxic Inhalation Hazard Materials*, NCFRP Report No. 18 (2012), https://nap.nationalacademies.org/download/22737; *CF Indus., Inc. v. Koch Pipeline Co., L.P.*, STB Docket No. 41685, at 8 (May 3, 2000), https://dcms-external.s3.amazonaws.com/MPD/62491/BE81D1F732FF4356852568C7004512D5/30976.pdf.

[497] C. James Kruse et al, Nat'l. Coop. Freight Rsch. Program, *Marine Highway Transport of Toxic Inhalation Hazard Materials*, NCFRP Report No. 18 (2012), https://nap.nationalacademies.org/download/22737.

[498] Chimico Logistics, *Propelling the Movement of Goods by Land and Sea*, Interoceanic, https://ioccorp.com/home/about-us/affiliates/chimico-logistics/ (last visited July 17, 2024); Vigor Indus. LLC, *Refrigerated Liquified Ammonia Barge,* https://vigor.net/projects/harvest (last visited July 17, 2024). Between 2018 to 2022, CF told the International Trade Commission that it had contracted "several Jones Act vessels" to ship UAN solution to the East Coast, but it is unclear whether these vessels can transport anhydrous ammonia. *Urea Ammonium Nitrate Solutions From Russia and Trinidad and Tobago*, U.S. Int'l. Trade Comm'n, Staff Report, Investigation Nos. 701-TA-668-669 and 731-TA-1565-1566 (Final) (July 6, 2022), https://edis.usitc.gov/external/attachment/774904-1866705.pdf.

[499] Generally speaking, ammonia must be shipped in tank cars meeting the Department of Transportation's "DOT-112" specifications — which exceed the standard specifications for tank cars carrying Class 3 flammable liquids (known as "DOT-117") — as well as additional requirements from the Association of American Railroads' Tank Car Committee. *See* U.S. Department of Transportation, Bureau of Transportation Statistics, *Fleet Composition of Rail Tank Cars Carrying Flammable Liquids: 2023 Report* (2023), https:/doi.org/10.21949/1529270 ; Association of American Railroads, Bureau of Explosives, Field Tank Car Guide, 4th ed. (2022), https://www.aar.org/wp-content/uploads/2022/08/AAR-2022-Field-Tank-Car-Guide-FINAL-08.01.2022.pdf.

[500] *See* C. James Kruse et al, Nat'l. Coop. Freight Rsch. Program, *Marine Highway Transport of Toxic Inhalation Hazard Materials*, NCFRP Report No. 18 (2012), https://nap.nationalacademies.org/download/22737; Ray Hattenbach, *Transportation & Delivery of Anhydrous Ammonia*, Chemical Marketing Services, Inc. (2021), https://www.ammoniaenergy.org/wp-content/uploads/2021/01/chemicalmarketingservices.pdf; Greg Hutchison, Managing Dir. Logistics, Royster Clark, Presentation, *Ammonia Transportation, Distribution & Logistics* (Argonne Nat'l. Laboratory, Oct. 14, 2005), https://www.ammoniaenergy.org/wp-content/uploads/2021/01/hutchison_transport.pdf.

[501] *See Tank Trucks Benefiting in Ammonia Shipments*, Bulk Transporter (Apr. 30, 2018), https://www.bulktransporter.com/fleet-management/tank-fleets/article/21657185/tank-trucks-benefiting-in-ammonia-shipments. Overall, there appear to be over 60,000 rail tank cars in service that could, in theory, be retrofitted to ship liquified ammonia (*i.e.*, meeting DOT-112 and similar specifications). *See* Railway Supply Inst., *Tank Car 101*, https://tankcarresourcecenter.com/tankcar101/#1498238959608-542df259-7320 (last visited July 17, 2024); U.S. Department of Transportation, Bureau of Transportation Statistics, *Fleet Composition of Rail Tank Cars Carrying Flammable Liquids: 2023 Report* (2023), https:/doi.org/10.21949/1529270 . However, most of these cars are likely designed to transport compressed flammable gases like propane, not anhydrous ammonia, and cannot readily be used to ship liquified ammonia. *See* CF Indus., Inc. v. Koch Pipeline Co., L.P., STB Docket No. 41685, at 9 (May 3, 2000), https://dcms-external.s3.amazonaws.com/MPD/62491/BE81D1F732FF4356852568C7004512D5/30976.pdf.

[502] W. Anthony Will, Pres. & CEO, CF Indus., Inc., Letter to Senator John Thune re: Railroad Safety Improvement Act (RSIA) (Sept. 22, 2015), https://www.commerce.senate.gov/services/files/AA5FA481-C336-4E59-AABF-35B464468FE4.

[503] Assoc. of Am. Railroads, *Freight Rail Hazmat, Tank Car Regulations*, https://www.aar.org/issue/hazmat-tank-car-regulations/ (last visited July 17, 2024).

[504] U.S. Dept. of Agric., Agric. Marketing Serv., *Summary of Comments to Access to Fertilizer: Competition and Supply Chain Concerns*, USDA Docket No. AMS-AMS-22-0027-1447 (Jan. 2023), https://www.ams.usda.gov/sites/default/files/media/USDAFertilizerCommentSummary.pdf.

[505] *See generally* U.S. Dept. of Agric., Agric. Marketing Serv., *Summary of Comments to Access to Fertilizer: Competition and Supply Chain Concerns*, USDA Docket No. AMS-AMS-22-0027-1447 (Jan. 2023), https://www.ams.usda.gov/sites/default/files/media/USDAFertilizerCommentSummary.pdf.

[506] *Urea Ammonium Nitrate Solutions From Russia and Trinidad and Tobago*, U.S. Int'l. Trade Comm'n, Hearing, Investigation Nos. 701-TA-668-669 and 731-TA-1565-1566 (Final) (June 16, 2022), https://edis.usitc.gov/external/attachment/773743-1859335.pdf.

[507] Rod Nickel, *Storage Wars: New U.S. potash player K+S faces warehouse squeeze*, Reuters (May 1, 2017), https://www.reuters.com/article/idUSKBN17X1L0/.

[508] *See Urea Ammonium Nitrate Solutions From Russia and Trinidad and Tobago*, U.S. Int'l. Trade Comm'n, Staff Report, Investigation Nos. 701-TA-668-669 and 731-TA-1565-1566 (Final) (July 6, 2022), https://edis.usitc.gov/external/attachment/774904-1866705.pdf. *See also Urea Ammonium Nitrate Solutions from Russia and Trinidad and Tobago*, U.S. Int'l. Trade Comm'n. Hearing, Investigation Nos. 701-TA-668-669 and 731-TA-1565-1566 (Preliminary) (July 21, 2021), https://edis.usitc.gov/external/attachment/748807-1672123.pdf. There is an estimated 15 million tons of storage capacity for UAN solution in the United States. *Urea Ammonium Nitrate Solutions From Russia and Trinidad and Tobago*, U.S. Int'l. Trade Comm'n, Hearing, Investigation Nos. 701-TA-668-669 and 731-TA-1565-1566 (Final) (June 16, 2022), https://edis.usitc.gov/external/attachment/773743-1859335.pdf. ("MR. HARLANDER: . . . So, to receive, let's say, 45,000-ton tankers [of UAN], there's not many places [marine ports] where you can do that. We own two of them. There are, I'm going to say, probably a dozen ports where you can bring 20-25,000-ton ships, but all that many. . . . MR. LAMBERT: Commissioner, if I may add, it's not like you can bring [UAN] into a port that's never handled it before. You have to have tanks, you have to have hoses, you have to have infrastructure set up, and it's not going in from a vessel to a truck; it's going in directly into a tank that's then held and then distributed from that point on, whether into a rail car or a truck and further. So it's not a simple jimmy-rigged operation. It's a sophisticated operation in terms of something that's built for it. MR. O'NEILL: Commissioner, Tip O'Neill. The one additional point is they're not building any ports anymore. You're not going to be able to get Corps of Engineers' approval to build any more ports. On the West Coast, it's impossible to even think about putting a piling in the Columbia River, let alone build a port. And so, repeatedly, any new port infrastructure on the West Coast is very difficult, if not impossible. And we operate two of the deep-water ports at 45-foot -- capable port on the Columbia River, and of course a facility, a deep-water facility, in Stockton as well.").

[509] Atlas Agro, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 12, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0944.

[510] *See* U.S. Dept. of Agric., Agric. Marketing Serv., *Summary of Comments to Access to Fertilizer: Competition and Supply Chain Concerns*, USDA Docket No. AMS-AMS-22-0027-1447 (Jan. 2023), https://www.ams.usda.gov/sites/default/files/media/USDAFertilizerCommentSummary.pdf.

[511] *See* Russ Quinn, *Billion-dollar Michigan Potash Mine Project for 2025 Sparked This Farmer's Interest*, Progressive Farmer (Jan. 3, 2023), https://www.dtnpf.com/agriculture/web/ag/crops/article/2023/01/03/billion-dollar-michigan-potash-mine#:~:text=As%20one%20would%20assume%2C%20building%20a%20potash%20mine,of%20the%20mine%20would%20be%20about%20%241%20billion.; Ronald J. Stanis, R&D Manager, GTI Energy, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 16, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1367; Wabash Valley Resources LLC, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 17, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1357; Atlas Agro, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 12, 2022),https://www.regulations.gov/comment/AMS-AMS-22-0027-0944; Novaphos, Inc., Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 14, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1256; Trident Mining & Minerals, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 17, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1477; Theodore Pagano, CEO, Michigan Potash & Salt Co., Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 16, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1353; Christina Wildfire, U.S. Dept. of Energy, Nat'l. Energy Tech. Lab'y., Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (July 18, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1470.

[512] Ronald J. Stanis, R&D Manager, GTI Energy, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 16, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1367; Wabash Valley Resources LLC, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 17, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1357; Atlas Agro, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 12, 2022),https://www.regulations.gov/comment/AMS-AMS-22-0027-0944.

[513] Atlas Agro, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 12, 2022),https://www.regulations.gov/comment/AMS-AMS-22-0027-0944.

[514] *See, e.g.,* Ronald J. Stanis, R&D Manager, GTI Energy, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 16, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1367.

[515] *See* Ronald J. Stanis, R&D Manager, GTI Energy, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 16, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1367;Wabash Valley Resources LLC, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 17, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1357; Atlas Agro, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 12, 2022),https://www.regulations.gov/comment/AMS-AMS-22-0027-0944; Novaphos, Inc., Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 14, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1256; Trident Mining & Minerals, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 17, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1477; Theodore Pagano, CEO, Michigan Potash & Salt Co., Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 16, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1353; Christina Wildfire, U.S. Dept. of Energy, Nat'l. Energy Tech. Lab'y., Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (July 18, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1470. *See also* C. Robert Taylor & Diana L. Moss, *The Fertilizer Oligopoly: The Case for Global Antitrust Enforcement*, Am. Antitrust Inst. Working Paper No. 13-05 (Sept. 4, 2013), https://www.competitivemarkets.com/wp-content/uploads/2013/09/WP13-5_Fertilizer_Body.pdf; Rabobank, *Playing the Potash Field,* Rabobank Industry Note No. 321 (Jun. 2012) https://www.farminguk.com/content/knowledge/potash.pdf.

[516] *See* Ronald J. Stanis, R&D Manager, GTI Energy, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 16, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1367;Wabash Valley Resources LLC, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 17, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1357; Atlas Agro, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-

1447 (May 12, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0944; Novaphos, Inc., Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 14, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1256; Trident Mining & Minerals, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 17, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1477; Theodore Pagano, CEO, Michigan Potash & Salt Co., Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 16, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1353; Christina Wildfire, U.S. Dept. of Energy, Nat'l. Energy Tech. Lab'y., Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (July 18, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1470.

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[519] Wilborn P. Nobles, *$850 million Dyno Nobel ammonia plant completed in Waggaman*, Nola.com, Times-Picayune (Sept. 30, 2016), https://www.nola.com/news/business/850-million-dyno-nobel-ammonia-plant-completed-in-waggaman/article_c8260407-b973-5154-b432-88088756431e.html; Ben Nuelle, *$3 billion nitrogen fertilizer plant begins production in Iowa*, Agri-Pulse (Apr. 20, 2017), https://www.agri-pulse.com/articles/9177-3-billion-nitrogen-fertilizer-plant-begins-production-in-iowa?v=preview.

[520] Aura Informatica, *CF Industries Completes Acquisition of Incitec Pivot Limited's Ammonia Production Complex,* LinkedIn (Dec. 5, 2023), https://www.linkedin.com/pulse/cf-industries-completes-acquisition-incitec-pivot-limiteds-rt6jc/; Katherine Sayre, *Explosives maker Dyno Nobel breaks ground on $850 million ammonia plant in Waggaman*, NOLA.com (Aug. 5, 2013), https://dynonobel.com/~/media/Files/Dyno/ResourceHub/Media%20Articles/Waggaman%20Plant.pdf. According to Gavilon, a large nitrogen wholesaler, OCI's Wever plant was so advantageously position in terms of transport cost that, in its first year of operation, Gavilon diverted 300,000 tons of its nitrogen procurement from CF to OCI "just because we get better [rail] rates out of Wever." *Urea Ammonium Nitrate Solutions From Russia and Trinidad and Tobago*, U.S. Int'l. Trade Comm'n, Hearing, Investigation Nos. 701-TA-668-669 and 731-TA-1565-1566, at 261 (Final) (June 16, 2022), https://edis.usitc.gov/external/attachment/773743-1859335.pdf.

[521] Rod Swoboda, *New $3 billion fertilizer plant opens in Iowa*, Farm Progress (Apr. 24, 2017), https://www.farmprogress.com/business/new-3-billion-fertilizer-plant-opens-in-iowa.

[522] The Waggaman plant was built between 2013 and 2016 at a cost to Dyno Nobel and its partner, Cornerstone Chemical, of around $1.025 billion — or the equivalent of $1.29 billion in 2023 dollars. *See* Katherine Sayre, Explosive maker Dyno Nobel breaks ground on $850 million ammonia plant in Waggaman, The Times-Picayune, Aug. 5, 2013, https://dynonobel.com/~/media/Files/Dyno/ResourceHub/Media%20Articles/Waggaman%20Plant.pdf. CF Industries acquired the Waggaman plant for $1.25 billion in cash and "a long-term ammonia offtake agreement under which CF will supply up to 200,000 tons of ammonia per year to [] Dyno Nobel," an agreement which the companies valued at $425 million without explanation. CF Industries Holdings, Inc., "CF Industries Holdings, Inc., Announces Agreement to Purchase Waggaman Ammonia Production Facility from Incitec Pivot Limited," CFindustries.com, Mar. 20, 2023, https://www.cfindustries.com/newsroom/2023/cf-industries-ipl-waggaman. By the time it was finished in 2017, the construction of the Wever plant had cost OCI Global around $3 billion dollars — the equivalent of $3.73 billion dollars in 2023 dollars. *See* Rod Swoboda, "New $3 billion fertilizer plant opens in Iowa," FarmProgress, April 24, 2017, https://www.farmprogress.com/business/new-3-billion-fertilizer-plant-opens-in-iowa. Under the contract signed last December, OCI agreed to sell the "state-of-the-art facility" at Wever to Koch Industries for only $3.6 billion in cash. *See* OCI Global, "OCI Global Announces Agreement for the Sale of IFCO to Koch," oci-global.com, Dec. 18, 2023, https://oci-global.com/news-stories/press-releases/oci-global-announces-agreement-for-the-sale-of-ifco-to-koch/.

[523] CF Industries, 2023 Annual Report, at 4 (2023), https://www.cfindustries.com/globalassets/cf-industries/media/documents/reports/annual-reports/cf_industries_2023-annual-report.pdf ("[T]he Company [CF Industries] completed the acquisition of an ammonia production facility located in Waggaman, Louisiana, from Dyno Nobel Louisiana Ammonia, LLC (DNLA), on December 1, 2023. In connection with the acquisition, the Company entered into a long-term ammonia offtake agreement (the Supply Contract). *The terms of the Supply Contract were determined to be unfavorable compared to market as of the acquisition date.* Accordingly, the assets acquired and liabilities assumed were recognized based on their acquisition date fair values, including customer relationships of $455 million and a Supply Contract liability of $757 million.").

[524] Nutrien, *2023 Fact Book* (Nov. 2023), https://nutrien-prod-asset.s3.us-east-2.amazonaws.com/s3fs-public/uploads/2024-01/Nutrien_2023Fact%20Book_Update_12624.pdf. *See also See* Dennis Rudat, "Koch Ag completes controversial Iowa Fertilizer Company acquisition," Michigan Farm News, Sept. 4, 20224, www.michiganfarmnews.com/koch-ag-completes-controversial-iowa-fertilizer-company-acquisition.

[525] Farm Action analysis of Bureau of Labor Statistics Data. *See* U.S. Bureau of Labor Statistics, P*roducer Price Index by Commodity: Chemicals and Allied Products: Fertilizer Materials* (WPS0652), retrieved from FRED, Federal Reserve Bank of St. Louis, https://fred.stlouisfed.org/series/WPS0652 (last visited July 18, 2024).

[526] Farm Action analysis of Bureau of Labor Statistics Data. *See* U.S. Bureau of Labor Statistics, P*roducer Price Index by Commodity: Chemicals and Allied Products: Fertilizer Materials* (WPS0652), retrieved from FRED, Federal Reserve Bank of St. Louis, https://fred.stlouisfed.org/series/WPS0652 (last visited July 18, 2024).

[527]*Access to Fertilizer: Competition and Supply Chain Concerns*, Federal Register, Vol. 87, No. 52 (March 17, 2022) https://www.govinfo.gov/content/pkg/FR-2022-03-17/pdf/2022-05670.pdf.

[528]*Access to Fertilizer: Competition and Supply Chain Concerns*, Federal Register, Vol. 87, No. 52 (March 17, 2022) https://www.govinfo.gov/content/pkg/FR-2022-03-17/pdf/2022-05670.pdf.

[529] Roger Hadley, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 4, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0657.

[530] *See* Sarah Carden, *Big Fertilizer: Measuring the Impacts of Food and Farm System Concentration*, Farm Action Special Report (Jan. 19, 2022), https://farmaction.us/wp-content/uploads/2022/01/Big-Fertilizer_-Measuring-the-Impacts-of-Food-and-Farm-System-Concentration.pdf; Joe Maxwell, Pres., Family Farm Action Alliance, Letter to Dep't. of Just. (Dec. 8, 2021), https://farmaction.us/wp-content/uploads/2021/12/FFAA_DOJ_Fertilizer_Investigation_Final.pdf.

[531] *See Farm Action,* Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (June 10, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1407.

[532] *See* Sarah Carden, *Big Fertilizer: Measuring the Impacts of Food and Farm System Concentration*, Farm Action Special Report (Jan. 19, 2022), https://farmaction.us/wp-content/uploads/2022/01/Big-Fertilizer_-Measuring-the-Impacts-of-Food-and-Farm-System-Concentration.pdf; Joe Maxwell, Pres., Family Farm Action Alliance, Letter to Dep't. of Just. (Dec. 8, 2021), https://farmaction.us/wp-content/uploads/2021/12/FFAA_DOJ_Fertilizer_Investigation_Final.pdf.

[533] *See* Sarah Carden, *Big Fertilizer: Measuring the Impacts of Food and Farm System Concentration*, Farm Action Special Report (Jan. 19, 2022), https://farmaction.us/wp-content/uploads/2022/01/Big-Fertilizer_-Measuring-the-Impacts-of-Food-and-Farm-System-Concentration.pdf; Joe Maxwell, Pres., Family Farm Action Alliance, Letter to Dep't. of Just. (Dec. 8, 2021), https://farmaction.us/wp-content/uploads/2021/12/FFAA_DOJ_Fertilizer_Investigation_Final.pdf. This inference is also supported by various academic and governmental analyses of fertilizer price trends. For example, a 2021 article by University of Illinois economists stated that "retail fertilizer prices are highly related to corn prices, suggesting that demand conditions and assessment of farmers' abilities to pay influence nitrogen fertilizer companies' pricing decisions." Illinois Farm Bureau, Comment on USDA Request for Comments Regarding Access to Fertilizer: Competition and Supply Chain Concerns, USDA Docket No. AMS-AMS-22-0027-1447 (May 12, 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0952. Similarly, a 2015 analysis by USDA economists found that "natural gas and ammonia fertilizer prices were decoupled around the year 2008," and that ammonia fertilizer prices thereafter "became more highly correlated with the price of corn." J. Beckman & S. Riche, *Changes to the Natural Gas, Corn, and Fertilizer Price Relationships From The Biofuels Era*, 47(4) Journal of Agricultural and Applied Economics, 494-509 (2015).

[534] AlphaQuery, *The Mosaic Company EBITDA Margin (Annual)* (2023), https://www.alphaquery.com/stock/MOS/fundamentals/annual/ebitda-margin; AlphaQuery, *Nutrien Ltd. EBITDA Margin (Annual)*(2023), https://www.alphaquery.com/stock/NTR/fundamentals/annual/ebitda-margin; AlphaQuery, *CF Indust. Holdings, Inc. EBITDA Margin (Annual)*(2023), https://www.alphaquery.com/stock/CF/fundamentals/annual/pre-tax-profit-margin.

[535] Full:ratio, *EBITDA Margin by Industry*, https://fullratio.com/ebitda-margin-by-industry (last visited July 17, 2024); Fin Models Lab, *7 Proven Strategies to Boost Chemical Manufacturing Profit* (July 11, 2024), https://finmodelslab.com/blogs/profitability/chemical-manufacturing-company-profitability ("Generally, agrochemical manufacturers [including fertilizer manufacturers] can expect profit margins between 10% and 15%.").

[536] U.S. Int'l. Trade Comm'n., *Phosphate Fertilizers from Morocco and Russia*, Determination in Investigation No. 701-TA-650-651 (Final), USITC Pub. 5172, at 60, 68 (Mar. 2021), https://www.usitc.gov/publications/701_731/pub5172.pdf.

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[539] *See* Nutrien, Ltd., Press Release, *Nutrien Announces Temporary Potash Production Downtime* (Sept. 11, 2019), https://www.nutrien.com/investors/news-releases/2019-nutrien-announces-temporary-potash-production-downtime.

[540] *See* Alex MacPherson, Nutrien Extends Production Shutdown at Vanscoy Potash Mine, Saskatoon Star Phoenix (Dec. 18, 2019), https://thestarphoenix.com/news/local-news/nutrien-extends-production-shutdown-at-vanscoy-potash-mine; see also Maury Wrubleski, *Nutrien looks to increase production at Lanigan, Allan and Vanscoy mines*, Discover Humboldt (Oct. 14, 2022), https://discoverhumboldt.com/articles/nutrien-looks-to-increase-production-at-lanigan-allan-and-vanscoy-mines.

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million tonnes. Nutrien, Ltd., *Nutrien Announces Operational Changes at its Vanscoy Potash Mine* (May 14, 2019), https://www.nutrien.com/what-we-do/stories/nutrien-announces-operational-changes-its-vanscoy-potash-mine.
That operating capacity was reduced to 1.4 million tonnes by 2023, and is expected to be 1.1 million tonnes in 2024. *See* Nutrien, 2023 Annual Report, at 56 (2023), https://nutrien-prod-asset.s3.us-east-2.amazonaws.com/s3fs-public/uploads/2024-03/Nutrien%202023%20Annual%20Report.pdf.

[542] Rod Nickel, *Mosaic to buy CF's phosphate business for $1.2 billion*, Reuters (Oct. 28, 2013), https://www.reuters.com/article/us-mosaic-cfindustries/mosaic-to-buy-cfs-phosphate-business-for-1-2-billionidUSBRE99R0QP20131028/.

[543] *See* Mosaic Co., 2022 Annual Report (Form 10-K), https://s1.q4cdn.com/823038994/files/doc_financials/2022/q4/MOS-2022.12.31-10K-Final.pdf; *See* U.S. Int'l. Trade Comm'n., *Phosphate Fertilizers from Morocco and Russia*, Determination in Investigation No. 701-TA-650-651 (Final), USITC Pub. 5172 (Mar. 2021), https://www.usitc.gov/publications/701_731/pub5172.pdf; Mosaic Co., Press Release, *The Mosaic Company to Acquire Florida Phosphate Business From CF Industries for $1.2 Billion*, PR Newswire (Oct. 28, 2013), https://www.prnewswire.com/news-releases/the-mosaic-company-to-acquire-florida-phosphate-business-from-cf-industries-for-12-billion-229521141.html.

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buy opportunity for a portion of my needs is usually only open for an afternoon and then you don t know when the next opportunity will be").

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[587] It's been alleged that a full 91% of Deere's "independent" dealerships are owned by Big Dealers. *See* Complaint, *Forest River Farms v. Deere & Co.,* No. 1:22-cv-00188, , at 7 (N.D. Ill. Jan. 12, 2022), available at https://www.classaction.org/media/forest-river-farms-v-deere-and-co.pdf.
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[589] This section is largely derived from a detailed complaint to the FTC about John Deere's unfair and exclusionary business practices filed by Farm Action, National Farmers Union, six state Farmers Unions, and several right-to-repair advocacy organizations, on March 3, 2022, *see* Complaint for Action to Stop Unfair Methods of Competition and Unfair and Deceptive Trade Practices, Federal Trade Commission, farmaction.us/wp-content/uploads/2022/03/Deere-Right-To-Repair-FTC-Complaint.pdf, and a consolidated class action complaint against John Deere filed in 2021, *see* Complaint, *Forest River Farms v. Deere & Co.,* No. 1:22-cv-00188, , at 7 (N.D. Ill. Jan. 12, 2022), available at https://www.classaction.org/media/forest-river-farms-v-deere-and-co.pdf.
[590] Deere kicked off the shift toward the use of restrictive technology in tractors through a slew of acquisitions, according to investigative journalist David Dayen:

> Deere convened a Special Technologies Group in 1999, kicking off a slew of acquisitions in the [technology] space. The company bought NavCon Technologies in 2000, data management firm T-Systems in 2009, European precision planting company Monosem in 2015, and Blue River Technology, a farm-management corporation, in 2017. Deere also launched a startup collaboration program in 2019, which just added seven new companies in 2022. It [now] also has an AI partnership with Audi and Intel.

David Dayen, "Rollups: The Big Tech Monopoly Down on the Farm," The Am. Prospect, Feb. 7, 2022, https://prospect.org/power/rollups-big-tech-monopoly-down-on-the-farm/.

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[593] *See* American Farm Bureau Federation, Press Release, AFBF Signs Right to Repair Memorandum of Understanding with John Deere, Jan. 8, 2023, https://www.fb.org/news-release/afbf-signs-right-to-repair-memorandum-of-understanding-with-john-deere.

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[595] *See, e.g.*, Titan Machinery, 2023 Annual Report, Form 10-K, https://www.annualreports.com/HostedData/AnnualReportArchive/t/NASDAQ_TITN_2021.pdf, ("Over the past few years, right-to-repair legislation has been introduced in state legislatures in certain of the states in which we do business; however, this legislation has not yet been enacted into law in any of those states.. *Right-to-repair legislation generally would require the manufacturers of products to provide the purchaser and/or independent repair technicians with documents, diagnostic software, and other information that would allow the equipment to be repaired without having it returned to the dealer for repair.* It is difficult to predict whether right to repair legislation will be enacted in any of the states where we do business or, if enacted, the scope and substantive details of the legislation. *If enacted, right-to-repair legislation could have a negative impact on our parts and service business.*").

[596] *See* Peter Waldman & Lydia Mulvany, "Farmers Fight John Deere Over Who Gets to Fix an $800,000 Tractor," Bloomberg, March 5, 2020, https://www.bloomberg.com/news/features/2020-03-05/farmers-fight-john-deere-over-who-gets-to-fix-an-800-000-tractor.

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[602] *Wheat Sector at a Glance*, U.S. DEP'T. OF AG., (Mar. 27, 2024) https://www.ers.usda.gov/topics/crops/wheat/wheat-sector-at-a-glance/.

[603] *Feed Grains Sector at a Glance*, U.S. DEP'T OF AG., (Dec. 21, 2023) https://www.ers.usda.gov/topics/crops/corn-and-other-feed-grains/feed-grains-sector-at-a-glance/#:~:text=The%20major%20feed%20grains%20are,of%20corn%20in%20the%20world; *See also Oil Crops Sector at a Glance*, U.S. DEP'T. OF AG., (Oct. 23, 2023) https://www.ers.usda.gov/topics/crops/soybeans-and-oil-crops/oil-crops-sector-at-a-glance/.

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[611] *Rapid Expansion of Soybean Crush Capacity Risks Exceeding Growth of Renewable Diesel*, COBANK, at 11 (Mar. 2024), https://www.cobank.com/documents/7714906/7715335/SoybeanCrush-Mar24.pdf/4466a124-cd6f-c1d1-16f5-c86354e3e819?t=1711032596940.

[612] We define a merchandiser as company that: (a) engages in buying, storing, and selling grains or oilseeds as its principal business, or operates a subsidiary that does so; (b) owns or controls two or more elevators; (c) and owns or controls one or more subterminal, river, or port elevators.

[613] *See* Complaint, United States v. Zen-Noh Grain Corp, Docket No. 1:21-cv-01482 (D.D.C. June 1, 2021). *See also How the Global Oilseed and Grain Trade Works*, U.S. SOYBEAN EXP. COUNCIL (2015) https://ussec.org/wp-content/uploads/2015/10/How-the-Global-Oilseed-and-Grain-Trade-Works.pdf.

[614] *How the Global Oilseed and Grain Trade Works*, U.S. SOYBEAN EXP. COUNCIL, at 22 (2015) https://ussec.org/wp-content/uploads/2015/10/How-the-Global-Oilseed-and-Grain-Trade-Works.pdf. *See also* Complaint, United States v. Zen-Noh Grain Corp, Docket No. 1:21-cv-01482 (D.D.C. June 1, 2021).

[615] *How the Global Oilseed and Grain Trade Works*, U.S. SOYBEAN EXP. COUNCIL, at 22 (2015) https://ussec.org/wp-content/uploads/2015/10/How-the-Global-Oilseed-and-Grain-Trade-Works.pdf. *See also* Complaint, United States v. Zen-Noh Grain Corp, Docket No. 1:21-cv-01482 (D.D.C. June 1, 2021).

[616] *How the Global Oilseed and Grain Trade Works*, U.S. SOYBEAN EXP. COUNCIL, at 27-29 (2015) https://ussec.org/wp-content/uploads/2015/10/How-the-Global-Oilseed-and-Grain-Trade-Works.pdf. *See also* Complaint, United States v. Zen-Noh Grain Corp, Docket No. 1:21-cv-01482 (D.D.C. June 1, 2021).

[617] *How the Global Oilseed and Grain Trade Works*, U.S. SOYBEAN EXP. COUNCIL, at 28-29 (2015) https://ussec.org/wp-content/uploads/2015/10/How-the-Global-Oilseed-and-Grain-Trade-Works.pdf; *See also* Complaint, United States v. Zen-Noh Grain Corp, Docket No. 1:21-cv-01482 (D.D.C. June 1, 2021).

[618] *How the Global Oilseed and Grain Trade Works*, U.S. SOYBEAN EXP. COUNCIL, at 37-39 (2015) https://ussec.org/wp-content/uploads/2015/10/How-the-Global-Oilseed-and-Grain-Trade-Works.pdf; *See also* Complaint, United States v. Zen-Noh Grain Corp, Docket No. 1:21-cv-01482 (D.D.C. June 1, 2021).

[619] *How the Global Oilseed and Grain Trade Works*, U.S. SOYBEAN EXP. COUNCIL, at 37-39 (2015) https://ussec.org/wp-content/uploads/2015/10/How-the-Global-Oilseed-and-Grain-Trade-Works.pdf.

[620] Dr. Theo Notteboom, Dr. Jean-Paul Rodrigue and Dr. Athanasios Pallis, *Chapter 3.1 – Terminals and Terminal Operators*, PORT ECON., MGMT., AND POL'Y. (2022), available at https://porteconomicsmanagement.org/pemp/contents/part3/terminals-and-terminal-operators/. ("Dry bulk [port terminals] relates to cargo that is not packaged and transported in large quantities that are limited by ship size or existing demand. The main commodities involve coal, iron ore, and grain, which require specialized equipment and storage facilities. This specialization level implies that the terminal cannot handle bulk products other than those it was designed and equipped to handle. Thus, a grain terminal cannot handle other commodities even if the pier can accommodate any ship class.").

[621] *How the Global Oilseed and Grain Trade Works*, U.S. SOYBEAN EXP. COUNCIL, at 37-39 (2015) https://ussec.org/wp-content/uploads/2015/10/How-the-Global-Oilseed-and-Grain-Trade-Works.pdf.

[622] *See* Ben Johnson, *The Staggers Rail Act of 1980: Deregulation Gone Awry*, 85(4) W.V. L. Rev. 725 (1983); Doug Campbell, "Staggers Act benefitted railroads, not communities", Prairie Star (May 14, 2016), agupdate.com/theprairiestar/opinion/staggers-act-benefitted-railroads-not-communities/article_fef2a604-09ef-5844-b886-f8ac3058f3e3.html.

[623] *See* Complaint at 8, United States v. Zen-Noh Grain Corp, Docket No. 1:21-cv-01482 (D.D.C. June 1, 2021). ("Nor could area farmers thwart a post-transaction price decrease by selling instead to local country elevators. Country elevators simply resell grain to river and rail elevators or to other end users; if Defendants lower prices post-transaction, country elevators would be forced to lower their own price to farmers to maintain profitability. Consequently, country elevators cannot mitigate a price decrease resulting from this transaction.")

[624] Steven Johnson, *Commonly Used Grain Contracts*, Ag. Decision Maker, IA. ST. UNIV. (May, 2020) https://www.extension.iastate.edu/agdm/crops/html/a2-73.html; *See also Industry & Trade Summary: Oilseeds*, U.S. INT'L. TRADE COMM'N. (Feb. 2003), https://www.usitc.gov/publications/332/pub3576.pdf, *Industry & Trade Summary: Grain (Cereals)*, U.S. INT'L. TRADE COMM'N. (Sept. 2000), https://www.usitc.gov/publications/other/pub3350.pdf.

[625] Daniel Prager, Christopher Burns, Sarah Tulman, and James MacDonald, *Summary: Farm Use of Futures, Options, and Marketing Contracts*, U.S. DEP'T. OF AG., (Oct. 2020), https://www.ers.usda.gov/webdocs/publications/99518/eib219_summary.pdf?v=2194.8; *See also* Daniel Prager, Christopher Burns, Sarah Tulman, and James MacDonald, *Farm Use of Futures, Options, and Marketing Contracts*, U.S. DEP'T. OF AG., (Oct. 2020), https://www.ers.usda.gov/webdocs/publications/99518/eib-219.pdf?v=2194.8.

[626] Daniel Prager, Christopher Burns, Sarah Tulman, and James MacDonald, *Summary: Farm Use of Futures, Options, and Marketing Contracts*, U.S. DEP'T. OF AG., (Oct. 2020), https://www.ers.usda.gov/webdocs/publications/99518/eib219_summary.pdf?v=2194.8; *See also* Daniel Prager, Christopher Burns, Sarah Tulman, and James MacDonald, *Farm Use of Futures, Options, and Marketing Contracts*, U.S. DEP'T. OF AG., (Oct. 2020), https://www.ers.usda.gov/webdocs/publications/99518/eib-219.pdf?v=2194.8.

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[628] Daniel Prager, Christopher Burns, Sarah Tulman, and James MacDonald, *Summary: Farm Use of Futures, Options, and Marketing Contracts*, U.S. DEP'T. OF AG., (Oct. 2020), https://www.ers.usda.gov/webdocs/publications/99518/eib219_summary.pdf?v=2194.8; *See also* Daniel Prager, Christopher Burns, Sarah Tulman, and James MacDonald, *Farm Use of Futures, Options, and Marketing Contracts*, U.S. DEP'T. OF AG., (Oct. 2020), https://www.ers.usda.gov/webdocs/publications/99518/eib-219.pdf?v=2194.8.

[629] Steven Johnson, *Commonly Used Grain Contracts*, Ag. Decision Maker, IA. ST. UNIV. (May, 2020) https://www.extension.iastate.edu/agdm/crops/html/a2-73.html.

[630] William W. Wilson and Bruce Dahl, *Transnational Grain Firms: Evolution and Strategies in North America*, N. Dak. St. Univ. Dep't of Agric'l Econ. Agricultural Economics Report No. 412 (Feb. 1999).

[631] William W. Wilson and Bruce Dahl, *Transnational Grain Firms: Evolution and Strategies in North America*, N. Dak. St. Univ. Dep't of Agric'l Econ. Agricultural Economics Report No. 412 (Feb. 1999);

[632] William W. Wilson and Bruce Dahl, *Transnational Grain Firms: Evolution and Strategies in North America*, N. Dak. St. Univ. Dep't of Agric'l Econ. Agricultural Economics Report No. 412 (Feb. 1999);

[633] *See* Jane Porter and Douglas Bowers, *A Short History of U.S. Agricultural Trade Negotiations*, U.S. DEP'T. OF AG. (Aug. 1989), https://www.ers.usda.gov/webdocs/publications/41764/54005_ages8923a.pdf?v=0; Marco Haase, Heinz Zimmermann, and Matthias Huss, *Wheat price volatility regimes over 140 years: An analysis of daily price ranges*, 31 J. OF COMM. MKT., (Sep. 2023).

[634] William Robert Reilly, *A Market Structure Analysis of the Soybean Processing Industry*, at xv, xvi, available at https://www.proquest.com/docview/302123766?pq-origsite=gscholar&fromopenview=true&sourcetype=Dissertations%20&%20Theses.

[635] Michael E. Porter and A. Michael Spence, *The Capacity Expansion Process in a Growing Oligopoly: The Case of Corn Wet Milling* at 261-62, available at https://www.nber.org/system/files/chapters/c4438/c4438.pdf.

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[637] Firm Growth Processes and Structural Changes in the Grain Industries of the North Central Region, IA. ST. UNIV. (Nov. 1967), https://publications.iowa.gov/48419/1/firm_growth_grain_industries_north_central_reg_1967_OCR_.pdf.

[638] *See* Jane Porter and Douglas Bowers, *A Short History of U.S. Agricultural Trade Negotiations*, U.S. DEP'T. OF AG. (Aug. 1989), https://www.ers.usda.gov/webdocs/publications/41764/54005_ages8923a.pdf?v=0; Marco Haase, Heinz Zimmermann, and Matthias Huss, *Wheat price volatility regimes over 140 years: An analysis of daily price ranges*, 31 J. OF COMM. MKT., (Sep. 2023).

[639] *III. The Grain Trade*, 9 NACLA LATIN AM. AND EMPIRE REP. 18, 19-20 (Jun. 2, 2016), https://www.tandfonline.com/doi/pdf/10.1080/10714839.1975.11724008.

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[652] *See* Kade Grafel, *Change in Crop Exports by Port*, DECISION INNOVATION SOLUTIONS (Sep. 11, 2023), http://www.decision-innovation.com/blog/disinsights/change-in-crop-exports-by-port/; Marina R. Denicoff, Marvin E. Prater, Pierre Bahizi, *Wheat Transportation Profile*, U.S. DEP'T. OF AG., (Nov. 2014), https://www.ams.usda.gov/sites/default/files/media/Wheat%20Transportation%20Profile.pdf, Marina R. Denicoff, Marvin E. Prater, Pierre Bahizi, *Soybean Transportation Profile*, U.S. DEP'T. OF AG., (Oct. 2014), https://www.ams.usda.gov/sites/default/files/media/Soybean%20Transportation%20Profile.pdf, Marina R. Denicoff, Marvin E. Prater, Pierre Bahizi, *Corn Transportation Profile*, U.S. DEP'T. OF AG., (Nov. 2014), https://www.ams.usda.gov/sites/default/files/media/Corn%20Transportation%20Profile.pdf.
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In the Center Gulf region, Cargill comes in second place after ADM with approximately 20% of port elevator capacity, while Louis Dreyfus (16%), Bunge (12%), and CHS (12%) round out the top five. In the Texas Gulf region, ADM comes in second place after Cargill with nearly 22% of total port elevator capacity, while Hansen-Mueller (18%), Andersons (17%), and West Plains (8%) round out the top five. Finally, in the Pacific Northwest, United Grain (of Mitsui) comes in second place after Cargill, with approximately 22% of port elevator capacity, while Pacificor (an ADM-led joint venture with Viterra, Agrex, and Columbia Grain) has 15%, EGT (a Bunge-led joint venture with Pan Ocean America and Agtegra Cooperative) has 13%, Louis Dreyfus has 12% , and AGP (a large grain and oilseed processor) has the remaining 8%.

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[669] *2019 Industry Overview*, CORN REFINERS ASS'N., at 6 (2020), https://corn.org/wp-content/uploads/2020/02/CRA-Industry-Overview-2019-Final.pdf.

[670] *Highest Four-Firm Concentration Ratio (CR4) by Industry in the United States in 2017*, STATISTA, https://www.statista.com/statistics/1340820/highest-concentration-ratio-us-2017/.

[671] Angela Huffman, Joe Maxwell, and Andres Salerno, *Consolidation, Globalization, and the American Family Farm*, ORG. FOR COMPETITIVE MKTS., at 1-2 (Aug. 2017), https://competitivemarkets.com/wp-content/uploads/2017/08/Consolidation-Globalization-and-the-American-Family-Farm.pdf.

[672] Mary Hendrickson et al., *The Food System: Concentration and Its Impacts*, FARM ACTION, (Nov. 19, 2020), https://farmaction.us/wp-content/uploads/2021/05/Hendrickson-et-al.-2020.-Concentration-and-Its-Impacts_FINAL_Addended.pdf. As of 2017, the Census Bureau reports that the four largest firms control 75 percent of soybean crushing industry sales. *See Census Data*, U.S. CENSUS BUR., (2017), https://data.census.gov/table/ECNSIZE2017.EC1700SIZECONCEN?y=2017&d=ECN%20Core%20Statistics%20Economic%20Census:%20Establishment%20and%20Firm%20Size%20Statistics%20for%20the%20U.S.&n=311224. It is worth noting, however, that the Census Bureau's data may underestimate concentration in the industry. Since the Census Bureau characterizes a "firm" simply as a group of establishments (e.g., plants) that share a single Employer Identification Number (EIN), it may not count the output or sales of all the establishments that a firm controls (which may or may not share the same EIN). *See Establishment, firm, or enterprise: does the unit of analysis matter?*, U.S. BUR. OF LAB. STAT., (Nov. 2016), https://www.bls.gov/opub/mlr/2016/article/establishment-firm-or-enterprise.htm#:~:text=Firm%20Measuring%20economic%20activity%20in%20multiestablishment%20firms.%20Measures,firm%20may%20have%20multiple%20locations%20and%20multiple%20industries.

[673] *Top US milling companies*, WORLD GRAIN, https://www.world-grain.com/media/photos/187-top-us-milling-companies.

[674] Alan Guebert, *A monopoly in the flour industry?*, FARM AND DAIRY, (Jun. 5, 2014), https://www.farmanddairy.com/columns/monopoly-flour-industry/193251.html; *See also Proposed Merger Could Create Wheat*

Milling Goliath, KUNC, (Nov. 18, 2013), https://www.kunc.org/business/2013-11-18/proposed-merger-could-create-wheat-milling-goliath.

[675] *Top US milling companies*, WORLD GRAIN, https://www.world-grain.com/media/photos/187-top-us-milling-companies.

[676] *Leading Producers of Ethanol by Capacity in the United States as of 2023*, STATISTA (Mar. 2023), https://www.statista.com/statistics/828532/largest-us-ethanol-producers-by-capacity/.

[677] *Leading producers of ethanol by capacity in the United States as of 2023*, STATISTA, https://www.statista.com/statistics/828532/largest-us-ethanol-producers-by-capacity/; Clifford Krauss, *Valero Energy, the Oil Refiner, Wins an Auction for 7 Ethanol Plants*, N.Y. TIMES, (Mar. 18, 2009), https://www.nytimes.com/2009/03/19/business/energy-environment/19ethanol.html; Mario Parker, *Valero Buys Ethanol Mills From Green Plains Day After Trump Move*, BLOOMBERG, (Oct. 11, 2018), https://news.bloomberglaw.com/environment-and-energy/valero-buys-ethanol-mills-from-green-plains-day-after-trump-move; *Poet LLC says it's primed for industry consolidation*, THE GLOBE AND MAIL, (Nov. 26, 2008), https://www.theglobeandmail.com/report-on-business/poet-llc-says-its-primed-for-industry-consolidation/article663983/; *Poet LLC, America's top biofuel producer, is in buyout talks with other ethanol companies*, (Nov. 29, 2008), https://www.cleveland.com/world/2008/11/poet_llc_americas_top_biofuel.html; Mike Bryan, *With Consolidation Comes Strength*, ETHANOL PRODUCER MAGAZINE, (Sept. 14, 2014), https://ethanolproducer.com/articles/with-consolidation-comes-strength-11441.

[678] The five largest animal feed manufacturers are Cargill (19.6 million tons), Land O' Lakes (13.5 million tons), Tyson Foods (10 million tons), Alltech (6.5 million tons), and ADM (3 million tons). *See* Derya Yildiz, *U.S. Feed and Livestock Market*, FEED AND ADDITIVE (Jan. 15, 2022), https://www.feedandadditive.com/u-s-feed-and-livestock-market/.

[679] *Market Share of North America Poultry Feed Industry*, MORDOR INTELLIGENCE, https://www.mordorintelligence.com/industry-reports/north-american-poultry-feed-market/market-share; *See also* Emma Penrod, *More feed, fewer mills: feed industry consolidation*, FEED STRATEGY, (Nov. 6, 2019), https://www.feedstrategy.com/animal-feed-manufacturing/animal-feed-manufacturers/article/15440784/more-feed-fewer-mills-feed-industry-consolidation (citing new regulations under the Food Safety Modernization Act, rapid consolidation in the livestock industry, acquisitions by large "commercial feed companies," and difficulties with succession planning and management recruitment as drivers of consolidation in the feed industry); Aidan Connolly, *The future of feed: An industry in transition*, , (Dec. 2, 2015), https://www.feedstrategy.com/animal-feed-manufacturing/feed-mill-management/article/15438270/the-future-of-feed-an-industry-in-transition ("Consolidation of the over 31,000 feed mills [worldwide is expected to] continue, potentially reducing numbers by 50 percent in the next ten years.").

[680] Sophia Murphy, David Burch, and Jennifer Clapp, *Cereal Secrets: The World's Largest Grain Traders and Global Agriculture*, OXFAM, at 16 (Aug. 2012), https://oi-files-d8-prod.s3.eu-west-2.amazonaws.com/s3fs-public/file_attachments/rr-cereal-secrets-grain-traders-agriculture-30082012-en_4.pdf.

[681] CHS sold approximately 2.25 billion bushels of grains and oilseeds in 2022, out of a total U.S. grain and oilseed crop of approximately 20 billion bushels. *See 2023 Form 10-K for CHS Inc.,* U.S. SEC. AND EXCH. COMM'N. at 29 (2023), 10K-FY2023Q4.pdf (mc-607b9d1c-3283-4f31-97f8-4475-cdn-endpoint.azureedge.net*)*; *See also Crop Production 2022 Summary*, U.S. DEP'T. OF AG., (Jan. 2023), https://downloads.usda.library.cornell.edu/usda-esmis/files/k3569432s/9306v916d/wm119139b/cropan23.pdf (providing 2022 production figures for corn, soybean, wheat, and sorghum).

[682] Although CHS has one port elevator in the Center Gulf region with a 6.6-million-bushel capacity, since 1994, CHS has relied on a joint venture with Cargill (TEMCO) to access over 16.8 million bushels in port-elevator capacity in the PNW and Texas Gulf regions. *Delivering Results Through TEMCO Grain Export Terminals*, CHS (Aug. 22, 2023), https://www.chsinc.com/news/2023/08/22/temco-grain-export-terminals; *Grain & Milling Annual Report 2024*, at 22-23 (2024), https://www.nxtbook.com/sosland/gma/grain-milling-annual-2024/index.php#/p/22.

[683] John Reidy, *Pacificor Promotes Tingey to CEO*, WORLD-GRAIN (Jul. 25, 2023), https://www.world-grain.com/articles/18811-pacificor-promotes-tingey-to-ceo.

[684] *2023 CHS Annual Report*, CHS, at 8 (2023), available at https://mc-607b9d1c-3283-4f31-97f8-4475-cdn-endpoint.azureedge.net/-/media/project/chs/chs-inc/files/about-us/financials/chs-annual-report.pdf?rev=60cdf65732c2436ba35eafa577afc76f&hash=5D260ABB0D2FD69C174CEE0F4EACC18E.

[685] *See, e.g.*, *A. E. Staley,* WIKIPEDIA, (Jun. 1, 2024), https://en.wikipedia.org/wiki/A._E._Staley. ("A. E. Staley became one of the largest processors of corn in the United States, second only to Archer Daniels Midland (ADM), also based in Decatur, Illinois. It also processed soybeans under a partnership agreement with ADM at its Decatur, Illinois plant. ADM, through a subsidiary, owned 7.4% of A. E. Staley and would often assist A. E. Staley in filling corn syrup orders for CPC International when the company was in short supply of product. Both companies also had joint ventures producing corn sweeteners in Central America."); Business re-alignment to further focus on Speciality Food Ingredients (tateandlyle.com). *See also* John M. Connor, *Archer Daniels Midland: Price Fixer to the World*, PURDUE UNIV. (Dec. 2000).

[686] *See generally 2022 Form 8-K for The Andersons, Inc.,* U.S. SEC. AND EXCH. COMM'N. (2018), https://www.sec.gov/Archives/edgar/data/821026/000082102618000056/a8kcargillmarketingagreeme.htm; *See also Marketing Agreement for The Andersons, Inc.,* U.S. SEC. AND EXCH. COMM'N. (2018), https://www.sec.gov/Archives/edgar/data/821026/000082102618000056/andersons-cargill2018marke.htm, *Second Amendment to Lease and Sublease for The Andersons, Inc.,* U.S. SEC. AND EXCH. COMM'N. (2018), https://www.sec.gov/Archives/edgar/data/821026/000082102618000056/secondamendmenttoleaseands.htm. The last of these 5-year agreements appears to have been signed in June of 2018 and expired in May of 2023, but Andersons still advertise the two Cargill facilities as its own. *See* Toledo-Edwin Drive, THE ANDERSONS, https://www.andersonsgrain.com/locations/oh/toledo-edwin/; See also Maumee Grain Elevator, THE ANDERSONS, https://www.andersonsgrain.com/locations/oh/maumee/ with

Marketing Agreement for The Andersons, Inc., U.S. SEC. AND EXCH. COMM'N. (2018), https://www.sec.gov/Archives/edgar/data/821026/000082102618000056/andersons-cargill2018marke.htm.

[687] John M. Connor, *Archer Daniels Midland: Price Fixer to the World*, PURDUE UNIV., at 1 (Dec. 2000).

[688] John M. Connor, *Archer Daniels Midland: Price Fixer to the World*, PURDUE UNIV., at 11 (Dec. 2000) ("Unusual among agribusiness companies, ADM has many collaborative arrangements with parties that normally would be considered rivals. Andreas often says, "Keep your friends close and your enemies closer." So, in 1992, ADM built a 3.5 mile pipeline from its Decatur plant to A.E. Staley's plant to reduce risk as well as to help break a threatened labor strike. ADM owns significant shares in Staley's parent, Tate & Lyle, and has a fructose joint venture with Staley in Mexico. ADM also has alliances of various kinds with grain cooperatives like Growmark and GoldKist.").

[689] *Trade and Development Report 2023*, U.N. CONF. ON TRADE AND DEV., at 77 (2023), https://unctad.org/system/files/official-document/tdr2023ch3_en.pdf.

[690] Sophia Murphy, David Burch, and Jennifer Clapp, *Cereal Secrets: The World's Largest Grain Traders and Global Agriculture*, OXFAM (Aug. 2012), https://oi-files-d8-prod.s3.eu-west-2.amazonaws.com/s3fs-public/file_attachments/rr-cereal-secrets-grain-traders-agriculture-30082012-en_4.pdf; See also *Trade and Development Report 2023*, U.N. CONF. ON TRADE AND DEV. (2023), https://unctad.org/system/files/official-document/tdr2023ch3_en.pdf.

[691] Sophia Murphy, David Burch, and Jennifer Clapp, *Cereal Secrets: The World's Largest Grain Traders and Global Agriculture*, OXFAM at 12 (Aug. 2012), https://oi-files-d8-prod.s3.eu-west-2.amazonaws.com/s3fs-public/file_attachments/rr-cereal-secrets-grain-traders-agriculture-30082012-en_4.pdf.

[692] Sophia Murphy, David Burch, and Jennifer Clapp, *Cereal Secrets: The World's Largest Grain Traders and Global Agriculture*, OXFAM at 12 (Aug. 2012), https://oi-files-d8-prod.s3.eu-west-2.amazonaws.com/s3fs-public/file_attachments/rr-cereal-secrets-grain-traders-agriculture-30082012-en_4.pdf.

[693] *Trade and Development Report 2023*, U.N. CONF. ON TRADE AND DEV., at 15 (2023), https://unctad.org/system/files/official-document/tdr2023overview_en.pdf.

[694] *Trade and Development Report 2023*, U.N. CONF. ON TRADE AND DEV., at 15 (2023), https://unctad.org/system/files/official-document/tdr2023overview_en.pdf.

[695] *Trade and Development Report 2023*, U.N. CONF. ON TRADE AND DEV., at 16 (2023), https://unctad.org/system/files/official-document/tdr2023overview_en.pdf.

[696] *Trade and Development Report 2023*, U.N. CONF. ON TRADE AND DEV., at 16 (2023), https://unctad.org/system/files/official-document/tdr2023overview_en.pdf ("Empirical analysis by UNCTAD indicates abnormal use of intragroup transfers within private corporate groups."); *See also* Sophia Murphy, David Burch, and Jennifer Clapp, *Cereal Secrets: The World's Largest Grain Traders and Global Agriculture*, OXFAM at 27 (Aug. 2012) ("The traders are attractive to potential investors because of their unique and extensive knowledge of agriculture. The way that the futures markets are set up in effect means that 'insider trading' is legal for these firms' activities in the commodity futures and agricultural derivatives markets. The Wall Street Journal reported in 2009, 'In contrast to stocks, commodities trading is the only major US market where companies are allowed to act on inside information to manage risks others might not know about. In fact, that is how futures markets were designed.' And the Financial Times notes, 'Physical traders are often the first to know when crops are falling short or energy cargoes are interrupted, giving them an edge over others.'"). For a detailed description of Cargill's apparatus for collecting market intelligence and deploying it in proprietary trading and investment activity, *see* Tania Salerno, *cargill's corporate growth in times of crises:how agro-commodity traders are increasing profits in the midst of volatility*, 34 Agric. & Hum. Values 211 (2017).

[697] *See Trade and Development Report 2023,* U.N. CONF. ON TRADE AND DEV., at 88-90 (2023), https://unctad.org/system/files/official-document/tdr2023ch3_en.pdf.

[698] *See Figures 3-5. See also* David S. Jacks, *Chartbook of Real Commodity Prices, 1850-2020*, Figure 3, at 7 (Feb. 2021), https://www.sfu.ca/~djacks/data/boombust/Chartbook%20for%20From%20Boom%20to%20Bust%202102.pdf

[699] *Trade and Development Report 2023*, U.N. CONF. ON TRADE AND DEV., at 74 (2023), https://unctad.org/system/files/official-document/tdr2023ch3_en.pdf.

[700] Francisco Garrido, Minji Kim, Nathan H. Miller, and Matthew C. Weinberg, *Buyer Power in the Beef Packing Industry*, at 2 (Jan. 2024), https://www.nathanhmiller.org/cattlemarkets.pdf.

[701] Francisco Garrido, Minji Kim, Nathan H. Miller, and Matthew C. Weinberg, *Buyer Power in the Beef Packing Industry*, at 4 (Jan. 2024), https://www.nathanhmiller.org/cattlemarkets.pdf.

[702] *Feedlot 2011 Part I: Management Practices on U.S. Feedlots With a Capacity of 1,000 or More Head*, U.S. DEP'T. OF AG., at 24 (2011), https://www.aphis.usda.gov/sites/default/files/feed11_dr_parti.pdf; *See also Feedlot 2011 Part II: Management Practices on U.S. Feedlots With a Capacity of Fewer than 1,000 Head*, U.S. DEP'T. OF AG., at 17 (2011), https://www.aphis.usda.gov/sites/default/files/feed11_dr_partii.pdf.

[703] "Despite the trend toward vertical integration between the feeding and processing stages of the supply chain, linkages are still quite limited upstream from the feedlot. Feedlots report that they procure approximately 29% of their cattle from auctions and 30% via direct sale, and another 39% are not owned by the feedlot throughout the feeding process (i.e., custom fed or partially owned by the producer). Only 1% of cattle are born on the feedlot or another operation owned by the feedlot (i.e., vertically integrated upstream)." See John M. Crespi and Tina L. Saitone, *Are Cattle Markets the Last Frontier? Vertical Coordination in Animal-Based Procurement Markets*, 10 ANN. REV. OF RES. ECON. 207, 217 (2018), https://www.annualreviews.org/docserver/fulltext/resource/10/1/annurev-resource-100517-022948.pdf expires=1722558611&id=id&accname=guest&checksum=5EA83B0F7F70CBD6156EB7C7131640C2.

[704] *See* Francisco Garrido, Minji Kim, Nathan H. Miller, and Matthew C. Weinberg, *Buyer Power in the Beef Packing Industry* (Jan. 2024), https://www.nathanhmiller.org/cattlemarkets.pdf.; Letter from Bill Bullard, CEO, R-CALF USA, to William P.

Barr, U.S. Att'y Gen. 2 (Mar. 28, 2019), *available at* https://www.r-calfusa.com/wp-content/uploads/2019/03/190328-Letter-to-DOJ-re-National-Beef-and-Iowa-Premium-Beef-Merger.pdf.

[705] A point of concern about cattle bidding is that, "[b]y custom, the first packer to bid on the cattle is 'on the cattle' and is given an opportunity to revise its bid in the event that a higher bid is received. This appears to provide an incentive for packers to make a first bid, but may discourage competing bids. A recent investigation by the USDA concluded that 'most pens with bid data only showed one packer bidding.'" Francisco Garrido, Minji Kim, Nathan H. Miller, and Matthew C. Weinberg, *Buyer Power in the Beef Packing Industry* (Jan. 2024), https://www.nathanhmiller.org/cattlemarkets.pdf.

[706] Francisco Garrido, Minji Kim, Nathan H. Miller, and Matthew C. Weinberg, *Buyer Power in the Beef Packing Industry* (Jan. 2024), https://www.nathanhmiller.org/cattlemarkets.pdf.

[707] Francisco Garrido, Minji Kim, Nathan H. Miller, and Matthew C. Weinberg, *Buyer Power in the Beef Packing Industry* (Jan. 2024), https://www.nathanhmiller.org/cattlemarkets.pdf.

[708] Francisco Garrido, Minji Kim, Nathan H. Miller, and Matthew C. Weinberg, *Buyer Power in the Beef Packing Industry* (Jan. 2024), https://www.nathanhmiller.org/cattlemarkets.pdf.

[709] *Report on the Meat Packing Industry: Part I*, FED. TRADE COMM'N, at 23-27 (1919), available at https://babel.hathitrust.org/cgi/pt?id=pst.000008113016&view=1up&seq=27.

[710] *Report on the Meat Packing Industry: Part I*, FED. TRADE COMM'N, at 23-27 (1919), available at https://babel.hathitrust.org/cgi/pt?id=pst.000008113016&view=1up&seq=27.

[711] Peter Carstensen, *How to Assess the Impact of Antitrust on the American Economy: Examining History or Theorizing?*, 74 IOWA L. REV. 1175, 1203 (1989).

[712] G.O. Virtue, *The Meat-Packing Investigation*, 33 No. 4 Q. J. OF ECON. 626 (1920).

[713] *Report on the Meat Packing Industry: Part I*, FED. TRADE COMM'N, at 23-27 (1919), available at https://babel.hathitrust.org/cgi/pt?id=pst.000008113016&view=1up&seq=27.

[714] *Report on the Meat Packing Industry: Part I*, FED. TRADE COMM'N, at 23-27 (1919), available at https://babel.hathitrust.org/cgi/pt?id=pst.000008113016&view=1up&seq=27.

[715] *See* William E. Rosales, *Dethroning Economic Kings: The Packers and Stockyards Act of 1921 and Its Modern Awakening*, 2004 WIS. L. REV. 1497 (2004).

[716] *See* William E. Rosales, *Dethroning Economic Kings: The Packers and Stockyards Act of 1921 and Its Modern Awakening*, 2004 WIS. L. REV. 1497, 1516 (2004) (quoting 61 Cong. Rec. at S2617 (statement of Sen. Kendrick), *and* 61 Cong. Rec. at H4785 (statement of Rep. Schall) (1921)).

[717] G.O. Virtue, *The Meat-Packing Investigation*, 33 No. 4 Q. J. OF ECON. 626, at n. 3 (1920).

[718] G.O. Virtue, *The Meat-Packing Investigation*, 33 No. 4 Q. J. OF ECON. 626, at 631-32 (1920). Following the Congressional resolution passed in February 1917, Wilson ordered the USDA to collaborate with the FTC in conducting the required investigation, and the agencies agreed that the FTC would investigate the slaughtering and wholesaling stages, while the USDA would investigate the livestock production and retail ends of the industry. The FTC got started as soon as the appropriations became available. For unclear reasons, however, "the Department of Agriculture deferred its part of the inquiry [for several months] — a delay that was regarded as a grievance by livestock men." *See id*. While the FTC completed its inquiry within two years, the USDA delivered its report on June 30, 1919 — months after the FTC had concluded its part of the investigation.

[719] G.O. Virtue, *The Meat-Packing Investigation*, 33 No. 4 Q. J. OF ECON. 626, at 678 (1920); *See also* Thomas J. Flavin, *The Packers and Stockyards Act, 1921*, 26 GEO.WASH. L. REV. 161 (1958).

[720] *See generally* G.O. Virtue, *The Meat-Packing Investigation*, 33 No. 4 Q. J. OF ECON. 626 (1920).

[721] William E. Rosales, *Dethroning Economic Kings: The Packers and Stockyards Act of 1921 and Its Modern Awakening*, 2004 WIS. L. REV. 1497 (2004)

[722] *See* H.R. Rep. No. 67-77, at 2 (1921).

[723] *See* H.R. Rep. No. 67-77, at 2 (1921).

[724] *See* Packers and Stockyards Act, 1921, Pub. L. 67-51, 42 Stat. 159.

[725] Ralph H. Folsom, *Antitrust Enforcement Under the Secretaries of Agriculture and Commerce*, 80 COLUM. L. REV. 1623, 1630 (1980) (quoting S. Rep. No. 704, 85th Cong., 1st Sess. 7 (1957)).

[726] *Meat Packers*, CQ ALMANAC (1958), https://library.cqpress.com/cqalmanac/document.php?id=cqal58-1341764. ("Chairman Emanuel Celler (D N.Y.) of the House Judiciary Committee May 2, 1957, during Senate hearings on the meat industry, said: 'For all practical purposes there has been created a supervisory vacuum,' instead of effective regulation of the meat industry.").

[727] JIMMY SKAGGS, PRIME CUT: LIVESTOCK RAISING AND MEATPACKING IN THE UNITED STATES, 1607-1983, 187-188 (2000).

[728] *Beefpacker Concentration*, U.S. DEP'T. OF AG., at 1, available at https://www.ers.usda.gov/webdocs/publications/47232/17816_tb1874e_1_.pdf?v=0.

[729] James M. MacDonald, Michael E. Ollinger, Kenneth E. Nelson, and Charles R. Handy, *Consolidation in U.S. Meatpacking*, U.S. DEP'T. OF AG., (Feb. 2000), available at https://www.ers.usda.gov/webdocs/publications/41108/18011_aer785_1_.pdf. *See also Beefpacker Concentration*, U.S. DEP'T. OF AG., at 1, available at https://www.ers.usda.gov/webdocs/publications/47232/17816_tb1874e_1_.pdf?v=0.

[730] *See* James M. MacDonald, Michael E. Ollinger, Kenneth E. Nelson, and Charles R. Handy, *Consolidation in U.S. Meatpacking*, U.S. DEP'T. OF AG., at 8 (Feb. 2000), available at https://www.ers.usda.gov/webdocs/publications/41108/18011_aer785_1_.pdf.

[731] Mike Callicrate, *Story of the Steer and a Theft of Epic Proportions,* NO-BULL FOOD NEWS (Nov. 16, 2021) https://nobull.mikecallicrate.com/2021/11/16/story-of-the-steer-and-a-theft-of-epic-proportions/.

[732] Jon K. Lauk, *Competition in the Grain Belt Meatpacking Sector after World War II*, 57 THE ANNALS OF IOWA 135 (1998).

[733] *See* Jon K. Lauk, *Competition in the Grain Belt Meatpacking Sector after World War II*, 57 THE ANNALS OF IOWA 135, 154-56 (1998); Luke Herrine, *Cutthroat Business*, ___ N.C. L. Rev. ___, at *20-21 (forthcoming 2025), manuscript available at: papers.ssrn.com/sol3/papers.cfm?abstract_id=4936628.

[734] *See* Stephen Wayne Hiemstra, Labor Relations, Technological and Structural Change in U.S. Beef Packing and Retailing (1985) (unpublished Ph.D. dissertation, Michigan State University) (on file with author).

[735] *See* Jon K. Lauk, *Competition in the Grain Belt Meatpacking Sector after World War II*, 57 THE ANNALS OF IOWA 135, 153 (1998):

> Another competitive advantage potentially enjoyed by [New Breed] firms involved the costs of cattle and hogs. During the years of the Big Four, 80 percent of livestock were marketed through terminal markets or local auction houses, where prices were set publicly and rivals knew each others' costs. By 1984, however, only 7 percent were marketed through the terminal markets, while many were vertically contracted by farmers or feedlots directly to the packer. *IBP could, for example, underprice rivals by paying less for livestock in regional markets where the competition for supplies was reduced, which they were often accused of doing.* Such occurrences prompted farmers to organize their marketing more thoroughly throughout the postwar period.

(emphasis added). *See also* Stephen Wayne Hiemstra, Labor Relations, Technological and Structural Change in U.S. Beef Packing and Retailing (1985) (unpublished Ph.D. dissertation, Michigan State University) (on file with author).

[736] *See, e.g.*, Jon K. Lauk, *Competition in the Grain Belt Meatpacking Sector after World War II*, 57 THE ANNALS OF IOWA 135, 148 (1998):

> The most successful—and aggressive—of the new firms entering the meatpacking market was Iowa Beef Processors … . [IBP] bought large quantities of carcasses from the older packers, waited for their distribution systems to erode, then stopped buying from them. Unable to afford live cattle, and without a market, the older firms folded. In 1975, 45 percent of Dubuque Packing's carcasses went to IBP, 25 percent of Hyplains' (Kansas), 30 percent of Midwestern's, 25 percent of Platte Valley's (Nebraska), and 50 percent of Amarillo Packing's. …
>
> IBP also tried to reduce the market share of its meatpacking rivals by offering discounts to large retailers, a risky strategy given the Justice Department's quick action against John Morrell for offering gifts to retailers in 1965. At about the time Rath Packing Company was seeking Safeway's business, IBP offered discounts: 50 cents per hundredweight if it bought 500 cattle per week; 75 cents for 750; a dollar for 1,000. IBP officials knew they risked Robinson-Patman Act violations for price discrimination for not offering discounts to distributors also. Aside from potential objections from distributors, they knew that any discounts required a cost-saving justification, so they concluded that "we should have a memo in our files reaching the conclusion that a cost savings could be realized by purchases in the quantifies for which we propose to offer discounts."

[737] Jon K. Lauk, *Competition in the Grain Belt Meatpacking Sector after World War II*, 57 THE ANNALS OF IOWA 135, 150-51 (1998).

[738] JIMMY SKAGGS, PRIME CUT: LIVESTOCK RAISING AND MEATPACKING IN THE UNITED STATES, 1607-1983, 195 (2000).

[739] JIMMY SKAGGS, PRIME CUT: LIVESTOCK RAISING AND MEATPACKING IN THE UNITED STATES, 1607-1983, 195 (2000).

[740] JIMMY SKAGGS, PRIME CUT: LIVESTOCK RAISING AND MEATPACKING IN THE UNITED STATES, 1607-1983, 195 (2000).

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[742] Jon K. Lauk, *Competition in the Grain Belt Meatpacking Sector after World War II*, 57 THE ANNALS OF IOWA 135, 148 (1998).

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[893] *See Broiler Chicken Industry Key Facts 2021*, Nat. Chicken Council, https://www.nationalchickencouncil.org/about-the-industry/statistics/broiler-chicken-industry-key-facts/(last visited Jan. 11, 2023); Dan Nosowitz, *After a Decade, the USDA 'Addresses' Unfairness in Meat Production*, Mod. Farmer (Jan. 23, 2020),https://modernfarmer.com/2020/01/after-a-decade-the-usda-addresses-unfairness-in-meat-production/; James M. MacDonald, *Technology, Organization, and Financial Performance in U.S. Broiler Production*, U.S. Dep't of Agric., Econ. Rsch. Serv., Economic Information Bulletin No. 126, 29-30 (June 2014).

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[895] Lina M. Khan, Fed. Trade Comm. Chair, Comment on USDA Request for Public Comments, *Poultry Growing Tournament Systems: Fairness and Related Concerns*, USDA Docket No. AMS-FTPP-22-046, at 3-4 (Sept. 6, 2022), https://www.regulations.gov/comment/AMS-FTPP-22-0046-0143.

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[897] Lina M. Khan, Fed. Trade Comm. Chair, Comment on USDA Request for Public Comments, *Poultry Growing Tournament Systems: Fairness and Related Concerns*, USDA Docket No. AMS-FTPP-22-046, at 3-4 (Sept. 6, 2022), https://www.regulations.gov/comment/AMS-FTPP-22-0046-0143.

[898] U.S. Small Bus. Admin., Office of the Inspector Gen., *Evaluation of SBA 7(A) Loans Made to Poultry Farmers*, Evaluation Report No. 18-13, at 7, 9 (Mar. 6, 2018), https://www.sba.gov/document/report-18-13-evaluation-sbas-7a-loans-poultry-farmers.

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[902] Lina M. Khan, Fed. Trade Comm. Chair, Comment on USDA Request for Public Comments, *Poultry Growing Tournament Systems: Fairness and Related Concerns*, USDA Docket No. AMS-FTPP-22-046, at 3 (Sept. 6, 2022), https://www.regulations.gov/comment/AMS-FTPP-22-0046-0143 (citing *The Business of Broilers: Hidden Costs of Putting a Chicken on Every Grill*, Pew Charitable Trs. 1 (Dec. 20, 2013), https://www.pewtrusts.org/en/research-and-analysis/reports/2013/12/20/the-business-of-broilers-hidden-costs-of-putting-a-chicken-on-every-grill).

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[905] *See* ina M. Khan, Fed. Trade Comm. Chair, Comment on USDA Request for Public Comments, *Poultry Growing Tournament Systems: Fairness and Related Concerns*, USDA Docket No. AMS-FTPP-22-046, at 4 (Sept. 6, 2022), https://www.regulations.gov/comment/AMS-FTPP-22-0046-0143 (citing *Technology, Organization, and Financial Performance in U.S. Broiler Production*, U.S. Dep't of Agric. Econ. Rsch. Serv., Econ. Info. Bull. No. 126 at 12 (June 2014)). *See also* U.S. Small Bus. Admin., Office of the Inspector Gen., *Evaluation of SBA 7(A) Loans Made to Poultry Farmers*, Evaluation Report No. 18-13, at 2, 5, 7, 9 (Mar. 6, 2018), https://www.sba.gov/document/report-18-13-evaluation-sbas-7a-loans-poultry-farmers; Farm Action, Comment on Proposed Final Judgments, Stipulations, and Competitive Impact Statement in *United States v. Cargill Meat Solutions Corp., et al.*, Civil Action No. 22-cv-01821, at 21-22 (Nov. 15, 2022), available at https://farmaction.us/wp-content/uploads/2022/11/Farm-Action-Comment-on-Sanderson-Cargill-Wayne-Consent-Decree.pdf.

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[907] U.S. Small Bus. Admin., Office of the Inspector Gen., *Evaluation of SBA 7(A) Loans Made to Poultry Farmers*, Evaluation Report No. 18-13, at 8 (Mar. 6, 2018), https://www.sba.gov/document/report-18-13-evaluation-sbas-7a-loans-poultry-farmers.

[908] Siena Chrisman, *Under Contract: Farmers and the fine print*, viewers guide, Rural Advancement Found. Int'l. 17 (2017), https://rafiusa.org/undercontractfilm/wp-content/uploads/2017/01/Under_Contract_Viewers-Guide_2017_ReducedFileSize.pdf.

[909] Zephyr Teachout, *Break 'Em Up: Recovering Our Freedom from Big Ag, Big Tech, and Big Money* 20 (Macmillan 2020).

[910] *See Transparency in Poultry Grower Contracting and Tournaments*, 87 FR 34980, 35005 (June 8, 2022), https://www.govinfo.gov/content/pkg/FR-2022-06-08/pdf/2022-11997.pdf ("Even where multiple integrators are present, there are high costs to switching, owing to the differences in technical specifications that integrators require. The growers likely need to invest in new equipment and learn to apply different operational techniques due to different breeds, target weights and grow-out cycles.").

[911] *See Transparency in Poultry Grower Contracting and Tournaments*, 87 FR 34980, 35007 (June 8, 2022), https://www.govinfo.gov/content/pkg/FR-2022-06-08/pdf/2022-11997.pdf ("Confidentiality restrictions have historically prevented broiler growers from releasing details of contract pay and performance[.]"). *See also* Zephyr Teachout, *Break 'Em Up: Recovering Our Freedom from Big Ag, Big Tech, and Big Money* 20 (2020) ("The [contract growers], who are already forbidden to talk to each other, know that there is not a single price for a pound of chicken [in an integrator's tournament], but a changing one, and while they can see their own paycheck, they can't compare it to others. . . . It is a structure reminiscent of Jeremy

Bentham's panopticon, a vision of a jail designed to maximize control and quell dissent, where a jailer can see all the inmates, but the inmates cannot see each other.").

[912] Farm Action, Comment on Proposed Final Judgments, Stipulations, and Competitive Impact Statement in *United States v. Cargill Meat Solutions Corp., et al.*, Civil Action No. 22-cv-01821, at 23 (Nov. 15, 2022), available at https://farmaction.us/wp-content/uploads/2022/11/Farm-Action-Comment-on-Sanderson-Cargill-Wayne-Consent-Decree.pdf; Lina M. Khan, Fed. Trade Comm. Chair, Comment on USDA Request for Public Comments, *Poultry Growing Tournament Systems: Fairness and Related Concerns*, USDA Docket No. AMS-FTPP-22-046, at 3-4 (Sept. 6, 2022), https://www.regulations.gov/comment/AMS-FTPP-22-0046-0143.

[913] Farmers have long and repeatedly shared how integrators have "wielded market power to control growers through both the threat of and actual retaliation." *See* Lina M. Khan, Fed. Trade Comm. Chair, Comment on USDA Request for Public Comments, *Poultry Growing Tournament Systems: Fairness and Related Concerns*, USDA Docket No. AMS-FTPP-22-046, at 3 (Sept. 6, 2022), https://www.regulations.gov/comment/AMS-FTPP-22-0046-0143 (citing Transcript of U.S. Dep't of Justice and U.S. Dep't of Agriculture Public Workshop Exploring Competition in Agriculture: Poultry Workshop at 165 (May 21, 2010), https://www.justice.gov/sites/default/files/atr/legacy/2010/11/04/alabama-agworkshop-transcript.pdf ("Let me say that numerous growers are not attending these workshops because of being afraid of retaliation on them by their integrator. A grower this morning has already been threatened by his service person if he attends and speaks at this forum.")). For example, leading up to a proposed 2010 rule change in the Packers and Stockyards Act, then Attorney General Eric Holder and Secretary of Agriculture Tom Vilsack held a series of hearings across the U.S. to "assess the state of consolidation in agricultural markets." Tyson, Pilgrim's Pride, and others, attempted to prevent contracted farmers from attending hearings or speaking out by threatening retaliation. *See, e.g.*, Zephyr Teachout & Lina M. Khan, *Market Structure and Political Law: A Taxonomy of Power*, 9 Duke J. L. & Pub. Pol'y 37, 50-51 (2014). In at least one documented instance, Koch Foods followed through on those threats. *See* Isaac Arnsdorf, *How a Top Chicken Company Cut Off Black Farmers, One by One*, ProPublica (June 26, 2019) https://www.propublica.org/article/how-a-top-chicken-company-cut-off-black-farmers-one-by-one (Koch Foods canceled Mississippi contract poultry farmer's contract the same day he testified at a hearing in Alabama).

[914] OxFam Am., *Lives on the Line: The Human Cost of Cheap Chicken* 19, (Oct. 26, 2015), available at https://s3.amazonaws.com/oxfam-us/www/static/media/files/Lives_on_the_Line_Full_Report_Final.pdf.

[915]*See* Eli Hoff, *GRAPHIC: Meat Processing Workers earn an Average of $15.53 Per Hour*, The Counter (July 23, 2021), https://thecounter.org/graphic-meat-processing-workers-average-15-53-per-hour/ (noting average manufacturing employee earned $20.08 an hour in 2020).

[916] Between January 2015 and August 2018, the Department of Labor's Occupational Safety and Health Administration (OSHA) received 770 reports of amputations, in-patient hospitalizations, or eye loss from meat and poultry plants. These figures do not cover injuries from employers in the 22 states which have state-based OSHA programs covering private sector workers. *See* Human Rights Watch, *When We're Dead and Buried, Our Bones Will Keep Hurting: Workers Rights Under Threat in US Meat and Poultry Plants* (Sept. 4, 2019), https://www.hrw.org/report/2019/09/04/when-were-dead-and-buried-our-bones-will-keep-hurting/workers-rights-under-threat. Of the tens of thousands of companies who report injuries to OSHA, Tyson Foods is ranked fifth, Pilgrim's Pride is thirteenth, Cargill Meat Solutions is sixteenth, and JBS USA is seventeenth. Smithfield, National Beef, and Koch foods round out the top thirty. *Id*. Workers are often exposed to noxious chemicals, environmental contaminants, and biological hazards, such as feces, blood, and pathogens – workers have even been known to develop antibiotic resistance from absorbing antibiotics from chicken flesh. *Id*.; *see also* OxFam Am., *Lives on the Line: The Human Cost of Cheap Chicken* 26, (Oct. 26, 2015), available at https://s3.amazonaws.com/oxfam-us/www/static/media/files/Lives_on_the_Line_Full_Report_Final.pdf.

[917] *See* OxFam Am., *Lives on the Line: The Human Cost of Cheap Chicken* 35, (Oct. 26, 2015), available at https://s3.amazonaws.com/oxfam-us/www/static/media/files/Lives_on_the_Line_Full_Report_Final.pdf; Human Rights Watch, *When We're Dead and Buried, Our Bones Will Keep Hurting: Workers Rights Under Threat in US Meat and Poultry Plants* (Sept. 4, 2019), https://www.hrw.org/report/2019/09/04/when-were-dead-and-buried-our-bones-will-keep-hurting/workers-rights-under-threat; Katie Shepherd, *Tyson Foods Managers Had a 'Winner-take-all' Bet on How Many Workers Would Get Covid-19, Lawsuit Alleges*, Washington Post (Nov. 19, 2012). Being denied a bathroom break is so common that workers often intentionally reduce their fluid intake, or wear diapers at work to avoid urinating on themselves. See OxFam Am., *Lives on the Line: The Human Cost of Cheap Chicken* 35 (Oct. 26, 2015), available at https://s3.amazonaws.com/oxfam-us/www/static/media/files/Lives_on_the_Line_Full_Report_Final.pdf. One survey of 266 slaughter workers in Alabama found that nearly 80 percent were not allowed to take bathroom breaks when needed. Another survey of Minnesota slaughter workers revealed that 86 percent of workers were allowed fewer than two bathroom breaks per week, on average. *See* OxFam Am., *No Relief: Denial of Bathroom Breaks in the Poultry Industry* 3 (May 2016), available at https://s3.amazonaws.com/oxfam-us/www/static/media/files/No_Relief_Embargo.pdf.

[918] Trey Malone, K. Aleks Schaefer, and Jayson L. Lusk, *Unscrambling U.S. Egg Supply Chains Amid Covid-19*, 101 FOOD POL'Y. 1, at 2 (2021).

[919] Hans-Wilhelm Windhorst, *The Egg Industry of the USA in Transition*, ZOOTECHNICA INT'L. (Jul. 27, 2018), https://zootecnicainternational.com/featured/egg-industry-usa-transition/.

[920] *See generally* Simon Shane, *The State of the U.S. Egg Industry-Safety, Nutrition and Marketing Implications for SA Producers*, BEST VETERINARY SOL.-POULTRY TALK (Fall 2011), https://www.bestvetsolutions.com/media/documents/BVS_Poultry_Talk_Fall_2011_333C790C53F39.pdf.

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[922] *See* Donald D. Bell, *Eggs: Pricing*, ENCYCLOPEDIA OF ANIMAL SCIENCE 313, 313-16 (2005); Hikaru H. Peterson, *Trading Behavior in Marginal Organized Market*, 30(3) J. Agric'l. & Resource Econ. 449 (2005).
[923] *See 2022 Form 10-K for Cal-Maine Foods Inc.,* U.S. SEC. AND EXCH. COMM'N. (2023), https://calmainefoods.gcs-web.com/static-files/4fcc68f8-a380-476b-ba77-c45818ca897f.
[924] *2022 Top U.S. Egg Producers*, HENDRIX GENETICS (Jul. 14, 2022), https://www.hendrix-isa.com/en/news/top-us-egg-producer-ranking-of-2022/.
[925] *Top Companies*, WATT POULTRY, at 8 (Jan. 2021), https://www.eggindustry-digital.com/eggindustry/january_2021/MobilePagedReplica.action?utm_source=Omeda&utm_medium=Email&utm_content=DE-Egg+Industry&utm_campaign=DE-Egg+Industry_20210129_1300&oly_enc_id=4891F5381367F2Y&pm=2&folio=8#pg10. The top 5 egg companies' share of egg-laying hens depends on whether Cal-Maine's 10-million-bird breeder flock is counted towards their total number of egg-laying hens. If Cal-Maine's breeder flock is included, the CR5 for egg-laying hens is 40%. If it is not included, the CR5 is 36%.
[926] *Top Companies*, WATT POULTRY, at 8 (Jan. 2021), https://www.eggindustry-digital.com/eggindustry/january_2021/MobilePagedReplica.action?utm_source=Omeda&utm_medium=Email&utm_content=DE-Egg+Industry&utm_campaign=DE-Egg+Industry_20210129_1300&oly_enc_id=4891F5381367F2Y&pm=2&folio=8#pg10.
[927] *See* Daniel P. Scheitrum & K. Aleks Schaefer, *Farm Animal Enclosure Requirements, Industry Concentration, and Supply Chain Dynamics*, 2 Front. Anim. Sci. *4 (Nov. 2021).
[928] Deven King, *A look at trends in the egg industry*, WATT POULTRY (Mar. 29, 2019), https://www.wattagnet.com/egg/hen-housing-systems/article/15528038/a-look-at-trends-in-the-egg-industry-wattagnet.
[929] Roy Graber, *Cal-Maine Foods pursuing more acquisitions*, WATT POULTRY, (Apr. 28, 2013), https://www.wattagnet.com/egg/egg-production/article/15506694/cal-maine-foods-pursuing-more-acquisitions; *Cal-Maine Foods Investor Presentation*, (Apr. 2018), https://static.seekingalpha.com/uploads/sa_presentations/100/26100/original.pdf; *Cal-Maine completes Featherland Egg Farms acquisition*, WATT POULTRY, (Oct. 23, 2018), https://www.wattagnet.com/broilers-turkeys/article/15526694/cal-maine-completes-featherland-egg-farms-acquisition-wattagnet; *Cal-Maine Foods Acquires Remaining Interest in Red River Valley Egg Farm*, FEED & GRAIN , (May 13, 2021), https://www.feedandgrain.com/animal-feed-manufacturing/news/15387270/cal-maine-foods-acquires-remaining-interest-in-red-river-valley-egg-farm; *Cal-Maine Foods completes acquisition of egg farm*, WATT POULTRY, (Mar. 3, 2014), https://www.wattagnet.com/broilers-turkeys/article/15509325/cal-maine-foods-completes-acquisition-of-egg-farm; Deven King, *A look at trends in the egg industry*, WATT POULTRY (Mar. 29, 2019), https://www.wattagnet.com/egg/hen-housing-systems/article/15528038/a-look-at-trends-in-the-egg-industry-wattagnet; *Cal-Maine completes Mahard Egg Farm acquisition*, WATT POULTRY, (Nov. 19, 2019), https://www.wattagnet.com/egg/egg-production/article/15529884/cal-maine-completes-mahard-egg-farm-acquisition-wattagnet; Elizabeth Doughman, *Cal-Maine completes purchase of Red River Valley Egg Farm*, WATT POULTRY, (Jun. 2, 2021), https://www.wattagnet.com/egg/article/15533663/cal-maine-completes-purchase-of-red-river-valley-egg-farm; Tara Loszach, *US Top Egg Companies 2021 special report available*, WATT POULTRY, (Feb. 3, 2021), https://www.wattagnet.com/egg/article/15532850/us-top-egg-companies-2021-special-report-available; *Cal-Maine Foods Company Overview*, WATT POULTRY, https://www.wattagnet.com/top-poultry-companies/company/cal-maine-foods.
[930] Deven King, *A look at trends in the egg industry*, WATT POULTRY (Mar. 29, 2019), https://www.wattagnet.com/egg/hen-housing-systems/article/15528038/a-look-at-trends-in-the-egg-industry-wattagnet; *Company History-Rose Acre Farms, Inc.*, https://www.company-histories.com/Rose-Acre-Farms-Inc-Company-History.html.
[931] Vervosa Management, *Post-Owned Willamette Egg Farms Bought by Versova Farm Group*, FOOD MFG. (Dec. 6, 2021), https://www.foodmanufacturing.com/capital-investment/news/21940151/postowned-willamette-egg-farms-bought-by-versova-farm-group.
[932] *Daybreak Foods Acquires Hen Haven and Schipper Eggs*, DAYBREAK FOODS, (May 31, 2023), https://daybreakfoods.com/latest-news/daybreak-foods-acquires-hen-haven-and-schipper-eggs/; *See also Daybreak Foods Acquires Vande Bunte Eggs*, MERGR, (Aug. 4, 2022), https://mergr.com/daybreak-foods-acquires-konos; *Konos, Inc. Acquired by Daybreak Foods, Inc.*, DCA PARTNERS, (Aug. 19, 2022), https://dcapartners.com/konos-inc-acquired-by-daybreak-foods-inc/.
[933] *See generally 2022 Form 10-K for Cal-Maine Foods Inc.,* U.S. SEC. AND EXCH. COMM'N. (2023), https://calmainefoods.gcs-web.com/static-files/4fcc68f8-a380-476b-ba77-c45818ca897f.
[934] *Structure of the U.S. Poultry Industry, 2010*, U.S. DEP'T. OF AG. (Dec. 2011), https://www.aphis.usda.gov/sites/default/files/poultry10_dr_structure.pdf; *See also Rose Acre Farms opens new testing laboratory*, WATT POULTRY (May 22, 2019), https://www.wattagnet.com/broilers-turkeys/article/15528503/rose-acre-farms-opens-new-testing-laboratory-wattagnet.
[935] *Structure of the U.S. Poultry Industry, 2010*, U.S. DEP'T. OF AG. (Dec. 2011), https://www.aphis.usda.gov/sites/default/files/poultry10_dr_structure.pdf; *See also Rose Acre Farms opens new testing laboratory*, WATT POULTRY (May 22, 2019), https://www.wattagnet.com/broilers-turkeys/article/15528503/rose-acre-farms-opens-new-testing-laboratory-wattagnet; *Livestock Genetics*, ETC GROUP (Sept. 2022), https://www.etcgroup.org/files/files/03_livestock.pdf.
[936] *See* Donald D. Bell, *Eggs: Pricing*, ENCYCLOPEDIA OF ANIMAL SCIENCE 313 (2005); M.T. Kidd and K.E. Anderson, *Laying hens in the U.S. market: An appraisal of trends from the beginning of the 20th century to present*, 28 No. 4 J. OF APPLIED POULTRY RSCH. 771 (Dec. 2019).
[937] *See* Simon Shane, *The State of the U.S. Egg Industry-Safety, Nutrition and Marketing Implications for SA Producers*, BEST VETERINARY SOL.-POULTRY TALK at 1 (Fall 2011),

https://www.bestvetsolutions.com/media/documents/BVS_Poultry_Talk_Fall_2011_333C790C53F39.pdf; See also M.T. Kidd and K.E. Anderson, *Laying hens in the U.S. market: An appraisal of trends from the beginning of the 20th century to present*, 28 No. 4 J. OF APPLIED POULTRY RSCH. 771 (Dec. 2019).

[938] *See* Peter C. Carstensen, *The Third Circuit's Scrambling of Precedent in Processed Eggs*, 68 THE ANTITRUST BULL. 73, 75 (2023); Katie Arcieri, *Kraft, Kellogg Go After Egg Producers for Price-Fixing Scheme*, BLOOMBERG LAW, (Oct. 17, 2023), https://news.bloomberglaw.com/antitrust/kraft-kellogg-go-after-egg-producers-for-price-fixing-scheme-39.

[939] M.T. Kidd and K.E. Anderson, *Laying hens in the U.S. market: An appraisal of trends from the beginning of the 20th century to present*, 28 No. 4 J. OF APPLIED POULTRY RSCH. 771 (Dec. 2019).

[940] M.T. Kidd and K.E. Anderson, *Laying hens in the U.S. market: An appraisal of trends from the beginning of the 20th century to present*, 28 No. 4 J. OF APPLIED POULTRY RSCH. 771 (Dec. 2019).

[941] *See* Livestock, Dairy, and poultry Outlook: February 2022, Econ. Res. Serv., U.S. Dep't. of Agric. (February 15, 2022); Livestock, Dairy, and poultry Outlook: February 2022, Econ. Res. Serv., U.S. Dep't. of Agric. (January 19, 2023).

[942] *See* Livestock, Dairy, and poultry Outlook: February 2022, Econ. Res. Serv., U.S. Dep't. of Agric. (January 19, 2023).

[943] *See* Livestock, Dairy, and poultry Outlook: February 2022, Econ. Res. Serv., U.S. Dep't. of Agric. (January 19, 2023).

[944] *See* Cal-Maine Foods, Inc., Press Release, "Cal-Maine Statement on Current Egg Prices," Jan. 24, 2023, available at: https://web.archive.org/web/20230207200815/https://www.calmainefoods.com/news/cal-maine-statement-on-current-egg-prices/.

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[997] For example, the shipping cost of a truckload of iceberg (head) lettuce moving from Salinas, California, to New York City in October 2005 ranged from $5,700 to $6,200. However, during this time, the f.o.b. shipping-point price for head lettuce in the Salinas Valley average 5.05 per 50-pound carton, each containing 24 heads. Assuming an average 48-foot trailer load contains 22 pallets with 42 cartons each, the packed lettuce in the truck was valued at $4,666 (f.ob.) — $1,034 below the low-range trucking cost.

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[1028] Roberta Cook, *Three Part Series: Fundamental Forces Affecting Growers and Marketers- Part 1: Size, proximity and category management for fresh produce*, EYE ON ECON.-BLUEPRINTS, at *6 https://ucanr.edu/sites/Postharvest_Technology_Center_/files/231053.pdf.

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[1038] *See* Dr. Roberta Cook, *The Dynamic US Fresh Produce Industry*, U.C. DAVIS (Jun. 17, 2016), https://arefiles.ucdavis.edu/uploads/filer_public/10/11/10117fa4-7646-4e7e-b1ea-b7a7fceb9c8b/shtcsecookmkttrend20160620final.pdf.

[1039] AUSTIN FRERICK, BARONS 97 (2024).

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[1056] Bert Ely, *Resolving the Farm Credit System's Growing Credit-Quality Problems*, ABA BANKING J. (Dec. 17, 2019), https://bankingjournal.aba.com/2019/12/resolving-the-farm-credit-systems-growing-credit-quality-problems/#:~:text=As%20explained%20in%20an%20ABA%20whitepaper%20in%20August%2C,and%20ceases%20being%20an%20enabler%20for%20the%20FCS.
[1057] *See* FDIC, FDIC COMMUNITY BANKING STUDY (DECEMBER 2012) 1-1, 2-7 (2012) (showing that the number of community banking organizations declined from 14,408 in 1984 to 6,356 in 2011, and the percentage of banking industry assets held by community banks declined from 38% in 1984 to 14% in 2011).
[1058] *See* FDIC, QUARTERLY BANKING PROFILE: SECOND QUARTER 2021 15(3) FDIC Q. 1, 6, 17, 20 (2021) (showing that, as of end of Q2 2021, there were 4,490 community banking organizations holding $2.672 trillion, or 11.7 percent, of $22.789 trillion in total banking industry assets). *See also* FDIC, FDIC COMMUNITY BANKING STUDY (DECEMBER 2020) vi, 2-1 (2020) (showing there were 4,750 community banking organizations as of year-end 2019 holding 12 percent of total industry assets).
[1059] *See* Institute for Local Self-Reliance, *Bank Market Share by Size of Institution*, (May 14, 2019).
[1060] *See* BOARD OF GOVERNORS OF THE FEDERAL RESERVE, STATISTICAL RELEASE ON INSURED U.S.-CHARTERED COMMERCIAL BANKS THAT HAVE CONSOLIDATED ASSETS OF $300 MILLION OR MORE, RANKED BY CONSOLIDATED ASSETS (Sept. 30, 2021) (providing headquarter locations for largest 2,127 commercial banks in the United States).
[1061] *See* FDIC, FDIC COMMUNITY BANKING STUDY (DECEMBER 2020) 2-5 (2020) (showing inter-company mergers caused 2.3 percent out of a total 3.2 percent average rate of annual decline in the number of bank charters between 1985 and 2011, and 3.3 percent out of a total 4.3 percentage average rate of annual decline in the number of bank charters between 2011 and 2019).
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[1063] *See Rural Distress and the Concentration of Financial and Economic Power: Hearing on An Economy that Works for Everyone: Investing in Rural Communities Before S. Comm. on Banking, Housing, and Urban Affairs*, 117th Cong. 2 (Apr. 20, 2021) (Testimony of Stacy Mitchell, Co-Executive Director, Institute for Local Self-Reliance).
[1064] *See* BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM, PERSPECTIVES FROM MAIN STREET: BANK BRANCH ACCESS IN RURAL COMMUNITIES at 3 (Nov. 2019). *See also* Ruth Simon & Coulter Jones, *Goodbye, George Bailey: Decline of Rural Lending Crimps Small-Town Business*, WALL STREET J. (Dec. 25, 2017) (analyzing FDIC and National Center for Health Statistics data to find that rural counties have lost approximately 20% of their bank branches since 1994, leaving at least 35 counties without a single bank branch and about 115 counties with just one branch); THE CENTER FOR RURAL PENNSYLVANIA, CHALLENGES AND OPPORTUNITIES FOR COMMUNITY BANKS IN RURAL PENNSYLVANIA at 7 (Jan. 2010) ("The most notable changes in [Pennsylvania] rural [banking] markets are the decline in the number of institutions whose headquarters are located in the same market as their branches (in-market institutions) and a decline in the number of small community banks [from 141 in 1995 to 91 in 2005]."). Research also suggests that banking consolidation has starkly limited the growth of new bank branches in rural communities, with around 40% of counties with an urban population of less than 2,500, and around 22% of counties with an urban population of 2,500—19,999, seeing zero new branches established between 1996 and 2011. *See* Paul Ellinger, *Bank Branch Expansion in Rural Areas*, FARMDOC DAILY (May 25, 2012). *See also* PARTNERS FOR RURAL TRANSFORMATION,

UNLOCKING THE COMMUNITY REINVESTMENT ACT'S POTENTIAL TO ENSURE PERSISTENT PROSPERITY IN RURAL AMERICA 3 (Oct. 15, 2021) ("[R]ural persistent poverty communities are not targets for bank branch location, and in fact, are frequently casualties of optimization strategies resulting in branch closures. The Housing Assistance Council reports that three out of four counties that lost at least 10% of [their] branches are in rural areas.")

[1065] *See* Charles M. Tolbert et al., *Restructuring of the Financial Industry: The Disappearance of Locally Owned Traditional Financial Services in Rural America*, 79(3) RURAL SOC. 355, 365 (2014). *See also* F. Carson Mencken & Charles M. Tolbert, *Restructuring of the Financial Industry and Implications for Sources of Start-Up Capital for New Businesses in Nonmetropolitan Counties*, 31(1) J. RURAL SOC. SCI'S. 71, 73 (2016) ("According to the Economic Census, in 2002 the top four commercial banks owned 12.6% of all banking establishments, and by 2007, the top four expanded their ownership to 31.8% of banking establishments. In 2014, over half of all branch [bank] establishments in the United States were owned by a bank or bank holding company in another state."); THE CENTER FOR RURAL PENNSYLVANIA, CHALLENGES AND OPPORTUNITIES FOR COMMUNITY BANKS IN RURAL PENNSYLVANIA 7 (Jan. 2010) ("The average share of in-market institutions (banks that are headquartered and operate their offices in the same market) fell from 36 percent in 1995 to 25 percent in 2005 rural markets" in Pennsylvania).

[1066] *See* Charles M. Tolbert et al., *Restructuring of the Financial Industry: The Disappearance of Locally Owned Traditional Financial Services in Rural America*, 79(3) RURAL SOC. 355, 376 (2014).

[1067] *See* Carson Mencken & Charles M. Tolbert, *Restructuring of the Financial Industry and Implications for Sources of Start-Up Capital for New Businesses in Nonmetropolitan Counties*, 31(1) J. RURAL SOC.SCI'S. 71, 73 (2016) (finding that venture capital provided start-up financing to a *de minimis* percentage of rural businesses). *See also* DEBORAH MARKLEY ET AL., RURAL POLICY RESEARCH INSTITUTE, ACCESS TO CAPITAL IN RURAL AMERICA: SUPPORTING BUSINESS STARTUP, GROWTH AND JOB CREATION IN THE WAKE OF THE GREAT RECESSION: INSIGHTS FROM THE FIELD AND POLICY RECOMMENDATIONS 15 (Oct. 2012).

[1068] "Large banks prefer to rely on 'hard' information and to use standardized, 'cookie cutter' criteria for approving loans because (1) it is difficult for loan officers at large banks to gather and transmit to senior executives' 'soft' information about small businesses, and (2) complex hierarchies within large banks create control problems that encourage senior executives to prescribe quantitative criteria that give very limited discretion to loan officers." Arthur E. Wilmarth, Jr., *A Two-Tiered System of Regulation Is Needed to Preserve the Viability of Community Banks and Reduce the Risks of Megabanks*, 2015 MICH. ST. L. REV. 249, 44 n. 157 (2015) (*citing* Allen N. Berger et al., *Does Function Follow Organizational Form? Evidence from the Lending Practices of Large and Small Banks*, 76 J. FIN. ECON. 237, 239-40, 242-43 (2005); Rebel A. Cole, Lawrence G. Goldberg & Lawrence J. White, *Cookie Cutter vs. Character: The Micro Structure of Small Business Lending by Large and Small Banks*, 39 J. FIN. & QUANTITATIVE ANALYSIS 227, 229-30, 249 (2004); Scott E. Hein et al., *On the Uniqueness of Community Banks*, 90 ECON. REV. 15, 18-20 (2005)); DEBORAH MARKLEY ET AL., RURAL POLICY RESEARCH INSTITUTE, ACCESS TO CAPITAL IN RURAL AMERICA: SUPPORTING BUSINESS STARTUP, GROWTH AND JOB CREATION IN THE WAKE OF THE GREAT RECESSION: INSIGHTS FROM THE FIELD AND POLICY RECOMMENDATIONS 7 (Oct. 2012). Small businesses in rural communities are more likely than a typical small business to be "hard information-deficient" because they are typically smaller and have difficulty valuating their fixed investments and specialized assets in "thin" local re-sale markets. *See* Robert Deyoung et al., *Small Business Lending and Social Capital: Are Rural Relationship Different?*, 21(1) J. ENTREPRENEURIAL FIN. 99, 101 (2019).

[1069] *See* Charles M. Tolbert et al., *Restructuring of the Financial Industry: The Disappearance of Locally Owned Traditional Financial Services in Rural America*, 79(3) RURAL SOC. 355, 360 (2014); Craig W. Carpenter et al., *Locally owned Bank Concentration and Business Start-Ups and Closures in U.S. Metropolitan, Micropolitan, and Rural Counties from 1980-2010*, 50 REV. REG'L STUD. 17 (2020); F. Carson Mencken & Charles M. Tolbert, *Locally Owned Bank Concentration and Bank Loans for Nonmetropolitan Business Start-Ups and Expansions: A Multilevel Analysis from the 2007 Survey of Business Owners*, 83(2) RURAL SOC. 376 (2018). *See also* THE CENTER FOR RURAL PENNSYLVANIA, CHALLENGES AND OPPORTUNITIES FOR COMMUNITY BANKS IN RURAL PENNSYLVANIA 10 (Jan. 2010) ("According to the 2003 Survey of Small Business Finances (SSBF), the banking sector is the most important institutional supplier of credit to small firms in the US. This is particularly true in rural areas, where the majority of small firms use traditional bank credit to fund the ongoing operation and expansion of their businesses.") (internal citations omitted).

[1070] *See* FDIC, FDIC COMMUNITY BANKING STUDY (DECEMBER 2020) 4-13, 14, 16-18 (2020).

[1071] Loan officers at small, local banks tend to have longer tenures, are "embedded" in their communities, and can draw upon their extensive local networks to gain a wealth of "soft" information about a borrower's character, reputation, and business prospects. *See* Charles M. Tolbert et al., *Restructuring of the Financial Industry: The Disappearance of Locally Owned Traditional Financial Services in Rural America*, 79(3) RURAL SOC. 355, 360-61 (2014); Scott E. Hein et al., *On the Uniqueness of Community Banks*, 90 ECON. REV. 15, 18-20 (2005); Rebel A. Cole, Lawrence G. Goldberg & Lawrence J. White, *Cookie Cutter vs. Character: The Micro Structure of Small Business Lending by Large and Small Banks*, 39 J. FIN. & QUANTITATIVE ANALYSIS 227, 229-30, 249 (2004). Working in smaller, "flatter" organizations, they also have the discretion to act on this "soft" information in making loan decisions, whereas loan officers at larger, multi-establishment banks must follow "hard" asset, portfolio, and data policies and procedures promulgated by corporate headquarters. *See* Allen N. Berger et al., *Does Function Follow Organizational Form? Evidence from the Lending Practices of Large and Small Banks*, 76 J. FIN. ECON. 237 (2005); Kenneth P. Brevoort & Timothy H. Hannan, *Commercial Lending and Distance: Evidence from Community Reinvestment Act Data*, FEDS Working Paper No. 2004-24 (Feb. 2004); Robert Deyoung et al., *Borrower-Lender Distance, Credit Scoring, and Loan Performance: Evidence for Informational-Opage Small Business Borrowers*, 17 J. FIN. INTERMEDIATION 113 (2008); James A. Brickley et al., *Boundaries of the Firm: Evidence from the Banking Industry*, 70 J. FIN. ECON. 351 (2003). Even when small banks do use hard information to assess the creditworthiness of small busines firms, they tend to use the consumer credit score of the business owner, not the more encompassing (and difficult to build) business credit score used by large banks. *See* Allen N. Berger et al., *The Surprising Use of Credit Scoring in Small Business Lending by Community Banks and the Attendant*

Effects on Credit Availability, Risk and Profitability, 39 J. FIN. SERV. 1 (2011). This locally-oriented, relational approach to lending has been linked to lower interest rates, reduced collateral requirements, and increased credit availability for small businesses. *See* Allen N. Berger & Gregory F. Udell, *Small Business Credit Availability and Relationship Lending: The Importance of Bank Organization Structure*, 112 ECON. J. 32 (2002); Allen N. Berger & Gregory F. Udell, *Relationship Lending and Lines of Credit in Small Firm Finance*, 68 J. BUS. 351 (1995). *Cf.* Atul Ashok Teckchanda, *Building a Better Community? The Role of Banks and Voluntary Associations*, (Ph.D Dissertation, U.C. Berkeley) at 1 (Fall 2010) (finding that "the contribution of locally-owned banks that have all their branches in the focal community to employment growth [increases] with the number of businesses with low levels of tangible assets relative to total assets.").

[1072] FDIC, FDIC COMMUNITY BANKING STUDY (DECEMBER 2020) 4-16 (2020)

[1073] *See* Ruth Simon & Coulter Jones, *Goodbye, George Bailey: Decline of Rural Lending Crimps Small-Town Business*, WALL STREET J. (Dec. 25, 2017) ("The value of small loans to businesses in rural U.S. communities peaked in 2004 and is less than half of what it was then in the same communities, when adjusted for inflation, according to a Wall Street Journal analysis of Community Reinvestment Act data. In big cities, small loans to businesses fell only a quarter during the same period, mainly due to large declines in lending activity during the financial crisis. Adjusted for inflation, rural lending is below 1996 levels.").

[1074] *See* Julapa Jagtiani & Raman Quinn Maingi, *How Important Are Local Community Banks to Small Business Lending? Evidence from Mergers and Acquisitions*, Fed. Res. Bank of Phila., Working Paper No. 18-18, 18-20 (2018) (showing that acquisitions of locally-owned community banks by out-of-county institutions caused small business lending to decline in the county of the target bank by $1-3.35 million for each 10 percent increase in the market share of target bank in the overall small business lending in the county before the merger); Hoai-Luu Q. Nguyen, *Are Credit Markets Still Local? Evidence from Bank Branch Closings*, 11(1) AM. ECON. J. APPLIED ECON. 1, 3 (2019) (showing that bank mergers "lead to a sharp and persisted decline in credit supply to local small businesses" in affected census tracts, with annual tract-level small business loan originations declining by an average $453,000, off a baseline average of $4.7 million); Allen N. Berger et al., *The Effects of Bank Mergers and Acquisitions on Small Business Lending*, 50 J. FIN. ECON. 187, 217, 222 (1998) (finding that mergers involving large banks between 1977 and 1992 were associated with decreases in small business lending); Steven G. Craig & Pauline Hardee, *The Impact of Bank Consolidation on Small Business Credit Availability*, 31 J. BANKING & FIN. 1237, 1248-58 (2007) (concluding that bank consolidation has reduced credit availability for small businesses); Paola Sapienza, *The Effects of Banking Mergers on Loan Contracts*, 68 J. FIN. 329, 364 (2002) (finding that acquisitions by large banks decrease the supply of loans to small businesses).

[1075] *See* Charles B. Dodson & Bruce L. Ahrendsen, *Farm and Lender Structural Change: Implications for Federal Credit*, 77(1) Agric'l. Fin. Rev. 78 (2017).

[1076] *See* Aditya R Khanal & Omobolaji Omobitan, *Rural Finance, Capital Constrained Small Farms, and Financial Performance: Findings from a Primary Survey*, 52(2) J. Agric'l. & Applied Econ. 288 (2020) (citing Charles B. Dodson & Bruce L. Ahrendsen, *Farm and Lender Structural Change: Implications for Federal Credit*, 77(1) Agric'l. Fin. Rev. 78 (2017)).

[1077] *See* Aditya R Khanal & Omobolaji Omobitan, *Rural Finance, Capital Constrained Small Farms, and Financial Performance: Findings from a Primary Survey*, 52(2) J. Agric'l. & Applied Econ. 288 (2020).

[1078] *See, e.g.*, 12 U.S.C. § 2001 ("It is the objective of [the Farm Credit Act of 1971] to continue to encourage farmer- and rancher-borrowers participation in the management, control, and ownership of a permanent system of credit for agriculture which will be responsive to the credit needs of all types of agricultural producers having a basis for credit[.]").

[1079] *How Well Is the Farm Credit System Serving Young, Beginning, and Small Farmers?*, NAT'L. SUSTAINABLE AG. COAL., (Jun. 17, 2016), https://sustainableagriculture.net/blog/farm-credit-system-100-years-later/; *See also 2019 Annual Report of the Farm Credit Administration*, FARM CRED. ADMIN, at 30 (2019), https://www.fca.gov/template-fca/about/2019AnnualReport.pdf.

[1080] Mike Stokke and Emily Yaghmour, *Fact sheet on Farm Credit System young, beginning, and small (YBS) farmer lending results for 2020*, FARM CREDIT SERV. OF AM. (Aug. 13, 2021), https://www.fca.gov/template-fca/news/YBSFactSheet2020.pdf.

[1081] *2023 Farm Bill Platform*, NAT'L. SUSTAINABLE AG. COAL., (2023), https://sustainableagriculture.net/wp-content/uploads/2022/11/2023-Farm-Bill-Platform.pdf.

[1082] Loka Ashwood et al., *From Big Ag to Big Finance: a market network approach to power in agriculture*, 39 Agric. & Hum. Values 1421 (2022).

[1083] *2023 Farm Bill Platform*, NAT'L. SUSTAINABLE AG. COAL., (2023), https://sustainableagriculture.net/wp-content/uploads/2022/11/2023-Farm-Bill-Platform.pdf.

[1084] AIPs are supposed to compete with each other for the opportunity to underwrite farmers' crop insurance policies. Unlike a typical private-sector insurance product, AIPs cannot compete by offering different premium pricing. USDA sets premium prices, and all AIPs must offer the same premium rates to any given farmer. Moreover, AIPs do not have direct relationships with their farmer customers. Farmers work with an insurance agent, who may in turn contract with multiple AIPs. Insurance agents can play a key role in determining which AIPs underwrite the policies for the farmers that the agents represent. Therefore, instead of competing based on price, AIPs compete primarily based on (1) the service they provide to the insurance agents, and (2) the compensation they provide to insurance agents. *See Federal Crop Insurance, A Primer*, CONG. RSCH. SERV. at 27-28 (Feb. 18, 2021), available at https://crsreports.congress.gov/product/pdf/R/R46686.

[1085] Conning, "*How Consolidation Has Changed Crop Insurance Sector,*" Insurance Journal (Nov. 17, 2017) https://www.insurancejournal.com/news/national/2017/11/17/471553.htm.

[1086] Conning, "*How Consolidation Has Changed Crop Insurance Sector,*" Insurance Journal (Nov. 17, 2017) https://www.insurancejournal.com/news/national/2017/11/17/471553.htm.

[1087] Stephanie Rosch, "*Federal Crop Insurance: A Primer*" Congressional Research Service (Feb. 18, 2021) https://crsreports.congress.gov/product/pdf/R/R46686.

[1088] United States Department of Agriculture Risk Management Agency, *Approved Insurance Provider List* (Accessed August 8, 2024) https://public-rma.fpac.usda.gov/AipListing/InsuranceProviders.

[1089] Best's Review, "*Largest Multiperil Crop Insurers - 2023 Edition."* (March 2023) Volume 124, Issue 3. https://bestsreview.ambest.com/edition/2023/march/Bests-Rankings-Private-Crop-and-Structured-Securities.html?altsrc=2.

[1090] Marcia Zarley Taylor, "*Silveus to Buy Cargill Crop Insurance Agency*" Progressive Farmer (Dec. 29, 2015) https://www.dtnpf.com/agriculture/web/ag/news/article/2015/12/29/silveus-buy-cargill-crop-insurance.

[1091] About Accession Risk Management Group | Insurance - Risk Mitigation (accessionrmg.com); Risk Strategies Acquires Silveus Insurance Group, Inc. (globenewswire.com)

[1092] *See* Stephanie Rosch, "*Federal Crop Insurance: A Primer*" Congressional Research Service 14-15 (Feb. 18, 2021) https://crsreports.congress.gov/product/pdf/R/R46686. Statement also supported by analysis of data on size of farms enrolled in crop insurance program in 2017 Census of Agriculture (Table 71).

[1093] Conning, "*How Consolidation Has Changed Crop Insurance Sector,*" Insurance Journal (Nov. 17, 2023) https://www.insurancejournal.com/news/national/2017/11/17/471553.htm.

[1094] "The compensation that AIPs provide to agents can affect the types of policies that agents choose to recommend to their farmer clients, the incentive agents have to provide outreach to farmers who may have been previously underserved by the FCIP, and the incentive agents have to become familiar with new FCIP product offerings, such as insurance options for organic producers and other new offerings. For example, some stakeholders have suggested that one reason for low uptake of whole farm revenue protection policies is due to limited promotion of the policies by insurance agents. The SRA limits the amount AIPs are allowed to pay agents to not more than 80% of A&O and CAT LAE by state. However, an AIP may pay compensation up to 100% of A&O and CAT LAE by state if certain conditions are met. There is no limitation on how much any given agent may receive so long as it is within the maximum amount allowable per state." *See* Stephanie Rosch, "*Federal Crop Insurance: A Primer*," Congressional Research Service 28 (Feb. 18, 2021) https://crsreports.congress.gov/product/pdf/R/R46686.

[1095] *See* Esther Akwii et. al., "*Farm Viability,"* Farm Bill Law Enterprise, at 10 (July 2022) https://www.farmbilllaw.org/wp-content/uploads/2022/07/Farm-Viability-Report.pdf ("A frequently noted challenge to access to and uptake of WFRP is the dearth of crop insurance agents knowledgeable of and interested in or willing to sell such policies.").

[1096] *See* Esther Akwii et. al., "*Farm Viability,"* Farm Bill Law Enterprise, (July 2022) https://www.farmbilllaw.org/wp-content/uploads/2022/07/Farm-Viability-Report.pdf.

[1097] *See* Esther Akwii et. al., "*Farm Viability,"* Farm Bill Law Enterprise, at 9-10 (July 2022) https://www.farmbilllaw.org/wp-content/uploads/2022/07/Farm-Viability-Report.pdf. *See also* Small-Scale, Local Producers Get Improved Insurance through New Micro Farm Policy, Risk Mgmt. Agency (Nov. 30, 2021), https://www. rma.usda.gov/en/News-Room/Press/National-News-Archive/2021-News/2021-News/Small-Scale-Local-Producers-Get-Improved-InsuranceCoverage-through-New-Micro-Farm-Policy.

[1098] *See* Esther Akwii et. al., "*Farm Viability,"* Farm Bill Law Enterprise, at 9-10 (July 2022) https://www.farmbilllaw.org/wp-content/uploads/2022/07/Farm-Viability-Report.pdf.

[1099] *See* National Sustainable Agriculture Coalition, "*Whole-Farm Revenue Protection Analysis: A Few Bad Apples*" (April 20, 2022) https://sustainableagriculture.net/blog/whole-farm-revenue-protection-analysis-a-few-bad-apples/.

[1100] *See* National Sustainable Agriculture Coalition, "*Whole-Farm Revenue Protection Analysis: A Few Bad Apples*" (April 20, 2022) https://sustainableagriculture.net/blog/whole-farm-revenue-protection-analysis-a-few-bad-apples/.

[1101] National Sustainable Agriculture Coalition, "*Whole-Farm Revenue Protection Analysis: A Few Bad Apples*" (April 20, 2022) https://sustainableagriculture.net/blog/whole-farm-revenue-protection-analysis-a-few-bad-apples/.