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MARKET POWER IN SUPPLY CHAINS

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As supply chains have grown in sophistication and complexity, so too have the competition issues they raise. Years of consolidation and rising concentration in the critical middle segments of major supply chains have created market power "bottlenecks." These bottlenecks have a number of important implications. For example, dominant firms and oligopolies in these middle markets can often exercise market power on both the buyer side and seller side. Moreover, strong incentives for players to bulk up to counter the bargaining power of suppliers and distributors has exacerbated consolidation, with serious implications for the stability and resiliency of supply chains—as we have seen during the COVID-19 pandemic. This article examines the problem of market power in supply chains using the pharmaceutical and food & agriculture sectors as mini-case studies. It highlights weak merger control in the U.S. as a source of the problem and highlight key priorities for strengthening enforcement to address it.

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I. INTRODUCTION

Supply chains in critical sectors are becoming more complex. A number of factors may account for this, including the rise of middlemen that facilitate transactions between levels, sophisticated risk management and trading services, especially in commodities markets; large information technology platforms; value-added processing; and multi-channel distribution. Supply chains came sharply into focus during the COVID-19 pandemic.[2] In the protein sector, for example, pandemic-related disruptions forced the closure of meat processing plants, resulting in wasted food, empty grocery store shelves, and skyrocketing meat prices for consumers. As disruptions continue, it is clear that they are symptomatic of fundamental, and unique, competition issues in supply chains.

Competition issues involving supply chains have evolved with their growing sophistication. Horizontal and vertical ownership patterns have created large "wingspans" of corporate ownership in supply chains in sectors like agriculture, healthcare, and energy. Concerns over high concentration at individual levels and the emergence of dominant players and tight oligopolies in critical markets within supply chains are now common. These features create incentives for strategic competitive conduct at both individual levels and across levels in supply chains. But rising concentration also creates incentives for players in other parts of a supply chain to "bulk up" through merger to gain bargaining power vis-à-vis more powerful suppliers or customers.

This article explores the foregoing issues. The focus is on the middle levels of supply chains where there is often limited competition. These market power "bottlenecks" significantly enhance the risk of harm to consumers and producers and create instability and a lack of resiliency in critical supply chains. While these effects are becoming more visible, they have not been addressed in any coherent way through more aggressive antitrust enforcement or comprehensive competition policy. To advance this discussion, we take a closer look at two sectors, pharmaceuticals, and food & agriculture, that have been home to particularly significant changes in supply chains.

II. CONCENTRATION IN THE PHARMACEUTICAL AND FOOD & AGRICULTURE SUPPLY CHAINS

Players in the middle of supply chains implement business models with different value propositions. For example, the pharmaceutical supply chain features drug manufacturers, pharmacy benefit managers ("PBMs"), drug wholesalers and distributors, health insurers, and retail pharmacy outlets. In food and agriculture, key middle players include commodity buying, trading, and processing; food manufacturing; wholesaling and broadline food distribution; and retail grocery. The food & agriculture supply chain also features important input markets involving agricultural biotechnology, farm equipment, and fertilizers, which are essential for the production of proteins and crops.

Some middle players offer benefits to both producers and consumers through the value they add to products and services, or in facilitating connections between sellers and buyers. For example, PBMs and drug distributors can achieve scale, scope, and network economies from large drug formularies and multiple distribution channels. These organizations can reduce transactions costs by aggregating demand and negotiating favorable prices on behalf of multiple buyers. In food & agriculture, risk management and trading are mechanisms to protect market participants against commodity price volatility and facilitate exchange. Wholesalers and broadline food distributors exploit economies of scale and scope through access to broad product portfolios and lower costs through distribution network economies.

Many of the middle players in supply chains share one thing in common — the levels at which they operate are often highly concentrated. As shown in Table 1, the top three firms, Mylan, Sandoz (Novartis), and Teva, control over 65 percent of the generic drug market.[3] Pharmacy benefit management in the U.S. is dominated by three large players that control over 75 percent of the national market: CVS Caremark, Express Scripts, and Optum Rx.[4] Three firms control over 90 percent of the national drug distribution market: McKesson Corp., AmerisourceBergen Corp.,

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2 See e.g. *When COVID-19 is the Symptom and Not the Disease: Consolidation, Competition, and Breakdowns in Food Supply Chains*, American Antitrust Inst. (May 7, 2020), https://www.antitrustinstitute.org/work-product/when-covid-19-is-the-symptom-and-not-the-disease-consolidation-competition-and-breakdowns-in-food-supply-chains/.

3 Tiash Saha, *The World's Biggest Generic Pharmaceutical Companies in 2018*, Pharmaceutical Tech. (Apr. 3, 2019) https://www.pharmaceutical-technology.com/features/biggest-generic-pharmaceutical-companies-2018/.

4 José Vasquez & Gina Lohr, *Pharmacy Benefit Managers, Explained*, Advisory Board (Nov. 13, 2019) https://www.advisory.com/daily-briefing/2019/11/13/pbms.

and Cardinal Health Inc.[5] Further downstream, we see high levels of concentration in the health insurance markets where the majority of states are served by three or fewer major health insurers that account for 80 percent or more of the market.[6]

Table 1: 3-Firm Ratios in Key Segments of the Pharmaceutical Supply Chain

Market or Segment	Market Share of Top 3 Firms
Generic Pharmaceuticals (2018 global net sales)	~65 percent
Pharmacy Benefit Management (2018 prescription claims)	~75 percent
Drug Distributors (2018 revenue)	~90 percent
Health Insurance (2018 enrollments)	~80 percent

As shown in Table 2, the food & agriculture supply chain has a similar profile of concentration in critical middle segments. For example, the four largest firms, Tyson Foods, JBS SA, Cargill, and Smithfield Foods (WH Group), control about 75 percent of the meat processing market in the U.S.[7] Four firms control about 85 percent of beef processing, in particular.[8] In agrochemicals, four firms — Bayer, Corteva, BASF, and ChemChina — control about 65 percent of U.S. sales. Likewise, four firms control 80 percent of agricultural commodity trading in the U.S.: Cargill, COFCO, Archer Daniels Midland, and Bunge.[9] And four large grocers, Walmart, Schwarz Group, Kroger, and Aldi, control about 60 percent of the retail grocery market.[10]

Table 2: 4-Firm Ratios in Key Segments of the Food & Agriculture Supply Chain

Market or Segment	Market Share of Top 4 Firms
Meat processing (2019 U.S. revenue)	~75 percent
Agrochemicals (2018 U.S. sales)	~65 percent
Agricultural Commodity Trading (2018 U.S. sales)	~80 percent
Retail Grocery (2018 U.S. sales)	~60 percent

The foregoing examples illustrate the broader problem of high concentration in markets that form supply chains. This sets the stage for a better understanding of the implications of limited rivalry in critical middle segments where market power bottlenecks create competition concerns within and across markets in a supply chain, but also around the stability and security of the supply chain itself.

III. THE EFFECTS OF HORIZONTAL AND VERTICAL INTEGRATION IN SUPPLY CHAINS

High concentration in the interconnected markets in supply chains can enhance incentives to engage in exclusionary practices and anticompetitive agreements. Horizontal mergers, especially in the middle levels, drive higher levels of market concentration, potentially creating dominant firms and tight oligopolies with significantly reduced incentives to compete on price, quality, or innovation. A unique feature of concentration at middle levels of a supply chain is that a dominant firm or oligopoly can exercise market power on both the buy side and sell sides of a market. This

5 Adam J. Fein, *The Big Three Wholesalers: Revenues and Channel Share Up, Profits Down*, Drug Channels (Oct. 2, 2019) https://www.drugchannels.net/2019/10/the-big-three-wholesalers-revenues-and.html.

6 *Market Share and Enrollment of Largest Three Insurers – Individual Market* (2018), Kaiser Family Foundation, https://www.kff.org/private-insurance/state-indicator/market-share-and-enrollment-of-largest-three-insurers-individual-market/?currentTimeframe=1&selectedRows=%7B%22wrapups%22:%7B%22united-states%22:%7B%7D%7D,%22states%22:%7B%22all%22:%7B%7D%7D%7D&sortModel=%7B%22colId%22:%22Total%20Individual%20Market__Enrollment%22,%22sort%22:%22desc%22%7D.

7 Plate Tectonics: Mapping Corporate Power in Big Food, etcgroup.com (November 2019), at 18-19, https://www.etcgroup.org/files/files/etc_platetechtonics_a4_nov2019_web.pdf.

8 *Annual Report 2018*, U.S. Dept. Agric., Agric. Mktg. Serv., Packers & Stockyards Div., at Table 5. *See also*, Structure of U.S. Cattle Markets, Report: GAO-18-296, U.S. Government Accountability Office (Apr. 2018), and *2019 Top 100 Meat & Poultry Processors*, Provisioneronline.com.

9 Plate Tectonics, *supra* note 7, at 16-17.

10 *Id.* at 20.

squeezes agricultural producers, who receive less for their commodities and often pay high input prices for crop seed and fertilizer. But it also squeezes consumers, who are subject to budget constraints, through higher prices for food.

The U.S. Department of Justice's ("DOJ's") challenge to the 2009 merger of JBS and National Beef is a good illustration. The government's complaint alleged that the merger would create strong incentives for beef packers to collude, rather than compete. Indeed, the resulting tight oligopoly of packers would likely drive down prices of fed cattle paid to ranchers, *and* raise the prices of boxed beef to consumers.[11] Further consolidation since the *JBS-National Beef* merger has exacerbated market power concerns in beef packing, as indicated by pending private antitrust class actions alleging illegal price fixing by the major packers.[12]

The pattern of successive mergers in PBM markets over time also illustrates the risks of market power bottlenecks. For example, the FTC's approval of the PBM mergers of CVS and Caremark (2007) and Express Scripts and Medco (2012) effectively created a duopoly in the national PBM market. The large PBMs then turned quickly to vertical integration to broaden their control over markets in the pharmaceutical supply chain. Vertical mergers that combine firms operating in adjacent markets, such as pharmacy benefit management and health insurance, can increase incentives for a merged firm to foreclose rivals from access to inputs or customers. Harmful vertical mergers can also facilitate anticompetitive coordination between market participants through the exchange of competitively sensitive customer information shared by a small number of rival firms. High concentration in one or both markets affected by a vertical merger increases the likelihood of these anticompetitive outcomes.

For example, the vertical merger of large PBM, CVS, and leading health insurer, Aetna, was opposed by the American Antitrust Institute and other consumer advocacy organizations. High concentration in the PBM market, where CVS and Express Scripts accounted for more than 50 percent of the national market, and in the health insurance market, raised the specter or post-merger foreclosure of smaller rivals.[13] For example, a merged CVS Caremark-Aetna would have had stronger incentives to cut off smaller PBMs, mail order pharmacies, and independent pharmacies from access to Aetna as a customer, or to cut off rival health insurers from access to CVS PBM services. The potential effect of the CVS-Aetna merger would be higher prices and lower quality to consumers, and less innovation. The DOJ complaint did not address these vertical concerns, alleging only that the merger would eliminate competition in a small overlap market for Part D prescription drug plans.[14]

Observers of merger control in the U.S. and elsewhere know that other supply chains have also been home to significant horizontal and vertical integration. In the U.S., antitrust enforcers have been permissive of mergers that contribute to rising concentration and that combine firms in highly concentrated adjacent markets. Viewed through the narrow lens of traditional market-by-market analysis, this approach has set the stage for the creation of significant market power bottlenecks in the middle segments of supply chains.

IV. REACTIVE CONSOLIDATION AND THE STABILITY AND RESILIENCY OF SUPPLY CHAINS

Incentives for consolidation in supply chains are not exclusively related to the accretion of market power, or achieving alleged short-term cost savings and longer-term efficiencies around quality and innovation. The incentive to bulk up to gain bargaining power *vis-à-vis* customers and suppliers has been a significant factor in driving concentration in critical supply chains.[15] Consolidation in the interconnected markets that form supply chains, therefore, cannot be viewed in isolation. For example, this dynamic affects competition between PBMs in negotiating with health insurers on prescription drug plans, and drug manufacturers in negotiating rebates with PBMs. By growing larger through horizontal merger, retail grocery chains amass bargaining power to drive down prices charged by powerful food processors and manufacturers.

As a general matter, consolidation in the food & agriculture supply chain has been exacerbated by an apparent lack of coordination between the DOJ and FTC in reviewing mergers that affect supply chains. For example, the clearance process has resulted in the FTC reviewing transactions involving the downstream part of the supply chain, including food manufacturing and retail grocery. However, the DOJ reviews mergers in the upper part of the supply chain, such as food processing (e.g. grain milling, dairy, and meat packing) and biotechnology inputs.

11 See e.g. U.S., et al. vs. JBS SA and National Beef Packing Co. LLC, Complaint, Case No. 08CV5992 (N.D. Ill., Oct. 20, 2008), at 3-4.

12 See e.g. Memorandum Opinion & Order Granting in Part and Denying in Part Motion to Dismiss, In re Cattle & Beef Antitrust Litig., Case No. 20-1319 (D. Minn. Sept. 14, 2021).

13 See Letter to AAG Makan Delrahim Re: Competitive and Consumers Concerns Raised by the CVS-Aetna Merger, American Antitrust Inst. (Mar. 26, 2018), at 7-10, https://www.antitrustinstitute.org/wp-content/uploads/2018/09/CVS-Aetna_AAI-Letter_3.26.18.pdf.

14 *United States, et al., v. CVS Health Corporation and Aetna Inc.*, Complaint, Case No. 1:18-cv-02340 (D.D.C, Oct. 10, 2018).

15 Germaine Gaudin, *Vertical Bargaining and Retail Competition: What Drives Countervailing Power?*, 128 Econ. J. 2380, 2380 (2018).

"Dividing up" critical supply chains in between agencies limits the holistic deployment of important expertise and perspective that could strengthen enforcement.

Bargaining power is a poor defense for consolidation, yet it continues to surface in merger proposals. Its failures are notable. For example, bargaining between powerful suppliers and distributors results in prices that are set through negotiations, not by a competitive process. The quest for bargaining power within a supply chain also increases pressure to engage in "reactive" consolidation, speeding the emergence or fortification of dominant firms and oligopolies in critical markets, especially at the middle levels.[16] Finally, that a merger allows a firm to countervail bargaining power does not justify the elimination of horizontal competition, either directly through horizontal merger, or indirectly through vertical integration. Such mergers risk further entrenching market power and fostering collusion, and may raise barriers to entry to smaller market participants.[17]

The market power bottlenecks that result from reactive consolidation also affect the stability and resiliency of a supply chain. It is clear that competition plays a critical role in promoting diversity and redundancy in supply chains. Those that feature robust competition, especially in the middle levels, are far more likely to ensure the reliable and stable production and distribution of essential products. For example, if some parts of the supply chain are disrupted by extreme weather, pandemic, or conflict, more competition works to ensure that rival suppliers fill the void to meet demand. But as the COVID-19 pandemic illustrates, supply chains with concentrated middle segments are fragile and lack the resiliency to withstand external shocks.[18]

The foregoing discussion builds on the notion that high and rising concentration, especially in the middle levels of supply chains, exacerbates market power bottlenecks. It highlights that incentives for reactive consolidation, which is a phenomenon unique to the bargaining power dynamics in supply chains, worsen market power bottlenecks and contribute to the instability and lack of resiliency in critical supply chains.

V. IS MERGER CONTROL FAILING TO KEEP UP WITH MARKET POWER BOTTLENECKS?

Merger control is designed to prevent acquisitions that are likely to substantially lessen competition. This includes acquisitions of head-to-head rivals, customers or suppliers, and potential rivals. Vigorous enforcement prevents harmful outcomes by stopping illegal mergers in their "incipiency."[19] To be sure, the DOJ and FTC, especially under the Obama administration, have prevailed in a number of attempts to block major mergers in the pharmaceutical and food & agriculture supply chains. For example, the DOJ successfully prevented the merger of beef packers JBS and National Beef (2009) and health insurers Anthem-Cigna (2016) and Aetna-Humana (2016).[20] The FTC also successfully blocked the merger of the two largest broadline food distributors, Sysco and US Foods (2015).[21]

Despite these aggressive enforcement actions, there have been some notable failures. The DOJ has taken no enforcement decisions involving beef processing since 2009, including declining to move to block the acquisition of Iowa Premium by National Beef — projected to adversely affect the important cash market, which determines the base price for cattle sold on contracts or formulas.[22] The FTC approved the merger of retail grocers Safeway and Albertsons (2015), settling the case with divestitures of almost 150 stores to a regional west-coast grocer, which failed to maintain the assets and shuttered the stores.[23]

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16 See Letter to AAG William Baer Re Antitrust Review of the Aetna-Humana and Anthem-Cigna Mergers, American Antitrust Inst. (Jan. 11, 2016), at 3, https://www.antitrustinstitute.org/wp-content/uploads/2018/08/Health-Insurance-Ltr_1.11.16.pdf.

17 Laura M. Alexander, *Countervailing Power: A Comprehensive Assessment of a Persistent but Troubling Idea*, American Antitrust Inst. (Oct. 15, 2020), https://www.antitrustinstitute.org/wp-content/uploads/2020/10/AAI_CountervailingPower10-15-20.pdf.

18 *Supra* note 1.

19 15 U.S. Code § 18.

20 *United States et al. v. Aetna Inc. and Humana, Inc.* Complaint, Case 1:16-cv-01494 (D.D.C., Jul. 21, 2016); *United States v. Anthem, Inc.*, Complaint, Case 1:16-cv-01493, (D.D.C., Jul. 21, 2016).

21 *U.S. v. JBS SA and National Beef Packing, supra* note 11; and Federal Trade Commission, et al. v. Sysco Corporation and USF Holding Corp. and US Foods, Inc., Complaint, Case No.1:15-cv-00256-APM (D.D.C., Feb. 20, 2015).

22 See e.g., Wyatt Bechtel, *Purchase of Iowa Premium by National Beef Completed*, Drovers.com (Jun. 12, 2019), https://www.drovers.com/markets/purchase-iowa-premium-national-beef-completed.

23 Brent Kendall, *Haggen Struggles After Trying to Digest Albertsons Stores*, WALL ST. J. (Oct. 9, 2015).

Moreover, the DOJ allowed the vertical PBM-insurer mergers of CVS-Aetna (2018) and Express Scripts-Cigna (2019) to proceed. This created, in a matter of months, a market in which the largest PBMs were vertically integrated with major health insurers.[24] Aside from the heightened risk of exclusionary and coordinated conduct raised by these mergers, industry observers are watching carefully to assess the extent to which they have raised barriers to entry to smaller rivals that do not operate vertically integrated businesses.

More generally, merger control in both the pharmaceutical and food & agriculture supply chains has been exceptionally weak, exacerbating the emergence of market power problems in the middle of supply chains and creating pressures for reactive consolidation. For example, between 1998-2019, almost 1,300 mergers in the processing, manufacturing, and food distribution sectors were reported to the U.S. antitrust agencies.[25] The majority of those deals involved food processing and manufacturing. About 25 percent of transactions cleared to either the DOJ or FTC received a "second request" for additional information.[26] While this enforcement rate is typical across sectors, it has declined over time. Moreover, the rate at which the government challenged food & agriculture mergers is below the average across all sectors.[27]

Merger enforcement involving the pharmaceutical supply chain has also been lax. For example, a 2020 AAI study revealed that between 1994-2020, the FTC challenged 67 pharmaceutical company mergers totaling almost $1 trillion.[28] But the Commission moved to enjoin only one of those transactions and settled the rest with divestitures. Notably, about 60 percent of the relevant markets identified in complaints involved 3-2 and 2-1 mergers and about 75 percent involved 4-3, 3-2, and 2-1 mergers.[29] In the vast majority of cases, therefore, the effect of pharmaceutical mergers has been to increase concentration in already highly concentrated markets.

The AAI report also examined patterns of divestitures across challenged pharmaceutical mergers. The study reveals that many firms were purchasers of divested assets in multiple proceedings where the FTC settled challenged mergers with consent orders. Moreover, many purchasers of divested assets included firms that were party to other mergers across the period 1994-2020. These "serial" purchasers accounted for almost 70 percent of total purchases of divested assets by merging parties. The effect of the FTC's merger policy to approve mergers subject to divestitures has led to critical assets "trading hands" within a shrinking group of drug firms.[30] The effect of this policy on increasing concentration and paving the way for conduct violations is clear in the growing number of private, state, and federal non-merger antitrust litigations. Indeed, the AAI study finds that of the 70 drug companies that are current defendants in past and pending litigations, 55 percent were formerly parties to previous mergers and/or purchasers of divested assets, and non-merging buyers of assets.[31]

In sum, enforcement statistics and outcomes bear out the concern that merger control in pharmaceuticals and food & agriculture has been lax in the U.S. Massive consolidation and growing evidence of failed remedies has created strong pressures in key parts of supply chains that have contributed to market power bottlenecks. These bottlenecks, in turn, spur reactive consolidation in other parts of the supply chains, thus reinforcing concerns over their stability and security.

VI. CONCLUSIONS

This article sets the groundwork for a long overdue dialogue around the importance of widening the lens on merger control involving supply chains. It walks through a multi-part analysis that builds a compelling case for why new approaches to strengthen enforcement are needed. Among other takeaways, the article highlights several priorities, which respond to the unique features of competition in supply chains, including the phenomenon of market power bottlenecks, reactive consolidation, and their stability and resiliency. First, the unique competitive dynamics in supply chains, and the outsized effect of mergers that create incentives to exercise market power at horizontal levels emphasize the need for

24 See also *Vertical Integration Isn't Great for Health Care Consumers or Purchasers*, PBGH.org (Aug. 23, 2021), https://www.pbgh.org/despite-claims-vertical-integration-isnt-great-for-health-care-consumers-or-purchasers/.

25 *Supra* note 2.

26 *Id.*

27 *Id.* The rate of second requests and challenges is based on total transactions cleared to either agency.

28 See Diana L. Moss, *From Competition to Conspiracy: Assessing the Federal Trade Commission's Merger Policy in the Pharmaceutical Sector*, American Antitrust Inst. (Sep. 3, 2020), https://www.antitrustinstitute.org/wp-content/uploads/2020/09/AAI_PharmaReport2020_9-11-20.pdf.

29 *Id.* at 13.

30 *Id.* at 15.

31 *Id.* at 18.

stronger presumptions. This means consistent enforcement of the "structural presumption" in horizontal mergers,[32] and the need for statutory reforms that create presumptions of illegality for vertical mergers and acquisitions of nascent rivals.

Second, an apparent lack of coordination between the DOJ and FTC in reviewing mergers along the supply chain highlights the importance of a unified, coordinated enforcement system. This means more coordination between agencies on mergers that affect different parts of the supply chains, or clearing mergers involving different parts of critical supply chains to a single agency. This would minimize the risk that an agency fails to fully account in its investigations for the influence of competitive dynamics across levels across supply chain. Finally, it is vitally important for enforcers and courts to be alert to the effects of "successive" mergers on increasing concentration and to reject any defenses for mergers based on reactive consolidation, or bulking up for the purpose of gaining bargaining leverage over upstream or downstream players.

32 See e.g. *Herbert Hovenkamp & Carl Shapiro, Horizontal Mergers, Market Structure, and Burdens of Proof*, 127 Yale Law J. 1742 (May 2018).

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