



Consumer Federation of America

**MEGA-MERGERS IN THE U.S. SEED AND AGROCHEMICAL SECTOR
THE POLITICAL ECONOMY OF A TIGHT OLIGOPOLY ON STEROIDS
AND THE SQUEEZE ON FARMERS AND CONSUMERS**

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ABSTRACT

It is widely recognized that the increase in concentration in the cottonseed market resulting from the proposed Monsanto-Bayer merger violates the Department of Justice’s recently revised *Horizontal Merger Guidelines* by a wide, historically unprecedented margin. The companies argue that the economic efficiency resulting from the vertical integration of traits, seeds and agrochemicals offsets the harms to competition. This paper shows that the immense increase in vertical leverage and the ability to coordinate behaviors across multiple crops including cotton, corn, soybeans and canola magnifies the market power of the small number of firms that dominate the global field crop sector. The merger represents a dramatic increase in the market power of a sector that is already a “highly concentrated, vertically integrated, tight oligopoly on steroids” that raises prices, distorts innovation, and squeezes farmers and consumers. The only answer to this merger that makes economic sense is a loud and clear NO! While many anticompetitive practices will remain, a denial of the merger will prevent them from getting much worse and should signal the beginning of a broader effort to address the underlying economic problems and begin to break the political stranglehold that these firms have on the policymaking process.

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I. INTRODUCTION

From the point of view of the *Horizontal Merger Guidelines*,¹ as recently revised by the Department of Justice and the Federal Trade Commission, the Monsanto-Bayer merger is a slam dunk, “just say no.” The margins by which it exceeds the quantitative thresholds for concluding that it will harm competition and lead to the abuse of market power are unprecedented in recent years, literally an order of magnitude higher. While the statistical presumption under the *Guidelines* carries a great deal of weight, the *Guidelines* make it clear that qualitative evidence can overcome the presumption of the quantitative analysis.

This paper reviews the evidence on the increase in horizontal market power resulting from the mergers and adds two layers of additional evidence. It shows that the qualitative evidence not only fails to reverse or rebut the basic finding from market structure analysis, but that qualitative evidence suggests that the merger will be much more likely to harm competition and consumers than the simple horizontal market structure analysis indicates.

A NOTE ON POLITICAL ECONOMY

The paper views the mergers and the structure of the product markets affects through the lens of political economy. Political economy is a scientific **discipline** with deep roots in social analysis. As Pearce puts it:

Until recent times [it was] the common name for the study of the economic process. The term has connotations of the interrelationship between the practical aspects of political action and the pure theory of economics. It is sometimes argued that classical political economy was concerned more with this aspect of the economy and that modern economists have tended to be more restricted in the range of their studies.²

Political economy stands on three legs. First, it requires solid, real world economic analysis, rather than vacuous theory or unrealistic assumptions, so that we can comprehend how the economic system works. Second, political economy recognizes that policy defines what makes economic sense in a given context. Property rights, particularly intellectual property, labor rights, economic values and relationships, antitrust approaches to market concentration, etc. are not given in nature, they are socially defined. Third, pragmatic policy action lies at the intersection of these analytic activities. activities.

Thus, there is no separation between analytical and political practice. Piketty urges social scientists to engage in the “old-fashioned” practice of political economy. He argues that economics is set apart from the other social sciences “by its political, normative and pragmatic purpose. . . . The question it asks is: What public policies and institutions bring us closer to the ideal society?”³ We hope that our analysis is “objective” in the sense that it correctly depicts reality, but there is no escaping the fact that subjectivity is inherent in all thought, nor should

¹ U.S. DOJ/FTC, 2010.

² Pearce, 1984, p. 342.

³ Piketty, 2014, p. 574.

there be any effort made to hide the fact that we seek to influence the structure and function of the political economy through analysis and action.

Of necessity, the analysis must start with the problem of horizontal concentration – concentration and oligopoly. However, the paper emphasizes the steroids part by focusing attention on vertical integration and other factors that facilitate cooperation and diminish competitive rivalry, thereby magnifying the likely abuse of market power.

The merger wave afflicting the industry, of which Monsanto-Bayer is a large part, is not only creating a more highly concentrated, tighter oligopoly in valuable and important crops that are the backbone of the U.S. agricultural sector, the market power it is creating is magnified by key characteristics of the industry. It is a very highly concentrated, very tight oligopoly on steroids.

OUTLINE

Section II lays out the analytic approach. Section II describes the oligopoly in the seed-agrochemical sector. Section IV ties political oligarchy to economic oligopoly.

II. ANALYZING INDUSTRIAL ORGANIZATION AND EVALUATING MERGERS

In order to evaluate the impact of the proposed Monsanto-Bayer merger on American agriculture and consumers, we must begin with the framework used by U.S. antitrust authorities in describing market structure and market power. The analysis by the antitrust authorities is grounded in welfare economics and the structure, conduct performance paradigm, which has been the leading approach to analysis of industrial organization for over a century.

THE WELFARE ECONOMICS OF THE ABUSE OF MARKET POWER

To appreciate the focus of antitrust analysis on market performance and the interconnection between prices, profits, efficiency, and equity, we turn to a standard analysis of the welfare economics of market or monopoly power. This framework is used by economists covering the full range of policy orientations from conservative to liberal. The incentive for dominant firms to raise prices and increase profits is basic to a balanced economic evaluation of market performance and public policy, and a central pillar of economic analysis.

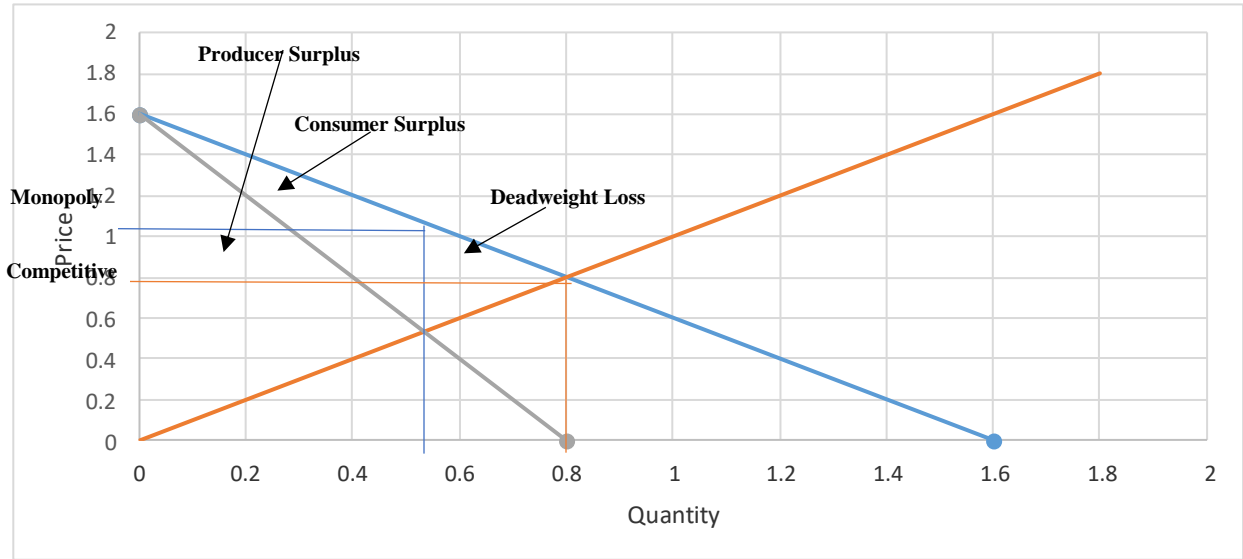
When a firm with market power raises prices, it loses some sales (determined by the elasticity of demand). Why would it risk that? It will do so if the increase in revenue from the remaining sales is larger than the lost revenue from forgone sales, net of costs. The framing of the answer, shown in the upper graph in Figure II-1, appears in every basic textbook on economics, including all of the sources cited herein. In a competitive market, firms must sell at the competitive price, and “share” the economic surplus between the consumer and the producer.

As shown in the lower graph of Figure II-1, firms with market power raise prices, shooting for the point where the marginal revenue equals marginal costs. This maximizes their profits. It lowers consumer surplus but increases producer surplus. It creates some deadweight

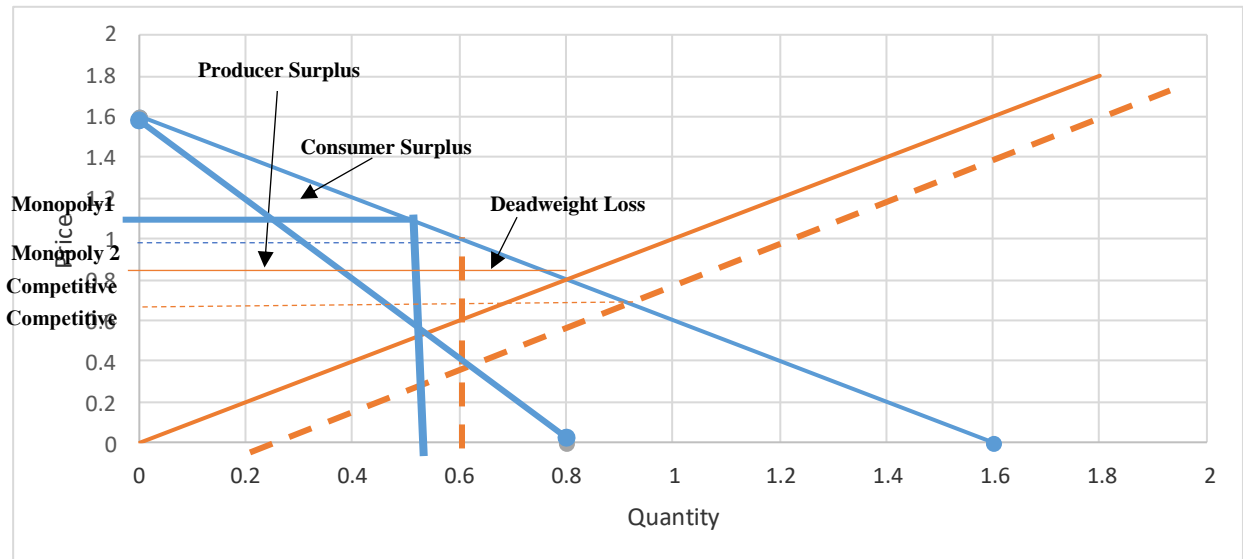
loss (inefficiency) and the total social surplus is diminished, but that is not the concern of the producers. They care only about their profits and increasing producer surplus.

FIGURE II-1: ABUSE OF MARKET POWER

Increasing Prices, Wealth Transfers, and Efficiency Losses



Declining Cost and the use of Market Power



Source: Scherer, F.M. and David Ross, *Industrial Market Structure and Economic Performance* (Boston: Houghton Mifflin, 1990), p. 34; William G. Shepherd, *The Economics of Industrial Organization* (Englewood Cliffs, NJ: Prentice Hall, 1985), p. 31; Viscusi, Kip, John M. Vernon, and Joseph E. Harrington Jr., *Economics of Regulation and Antitrust* (Cambridge: MIT Press, 2000), p. 79; John B. Taylor, *Economics* (Boston: Houghton Mifflin, 1998), p. 71.

In a competitive market, when the cost of producing goods declines, as a result of technological progress, for example, the supply curve shifts and the total surplus expands. Both consumers and producers should enjoy the benefits of an increase in surplus. The distribution of the gains (called the incidence, and frequently analyzed as tax incidence) is determined by the elasticities of demand and supply. Market power enables the sellers to capture a disproportionate share of the increase in surplus.⁴ Prices may go down, but they do so less than they would in a competitive market. Consumer surplus increases less than it otherwise would, while producer surplus increases more than it should. Deadweight loss increases. If demand were more elastic or entry of competitors easier, consumers would get a larger share (because producers would compete harder to keep their business by passing through more of the cost savings).⁵

STRUCTURE, CONDUCT, PERFORMANCE

The dominant paradigm over the last century – the one behind the *Merger Guidelines* – is the Structure-Conduct-Performance (SCP) paradigm. As shown in Figure II-2, the structure of the market is affected by basic economic conditions. Market structure is assumed to have a major impact on the conduct of sellers and buyers in the market. Conduct determines the performance of the market to a significant degree. However, note that policy has a pervasive effect on market structure and conduct and that there are the feedback loops in which conduct affects market structure and policy. Needless to say, these are the foundation the link between the economic and the political.

The upper graph is taken from Viscusi, Vernon, and Harrison, who note, “While the structure-conduct-performance relationship is subject to debate, it nevertheless provides a useful framework for organizing a number of important concepts.”⁶ The middle graph is from Scherer and Ross, who argue that “what society wants from producers of goods and services is good market performance. Good performance is multidimensional.”⁷ They conclude that markets should (1) be efficient in the use of resources and responsiveness to consumer demand, (2) be progressive in taking advantage of science and technology to increase output and provide consumers with superior new products, (3) promote equity in the distribution of income so that producers do not secure rewards in excess of what is needed to call forth services supplied, and consumers get reasonable price stability, and (4) facilitate stable, full employment of resources, especially human resources.

⁴ A graph focusing on the division of surplus and the most complete discussion can be found in Viscusi, Vernon, and Harrington, 1998, pp. 77–78; Shepherd, 1985, pp. 19–21; and Scherer and Ross, 1990, pp. 24–29.

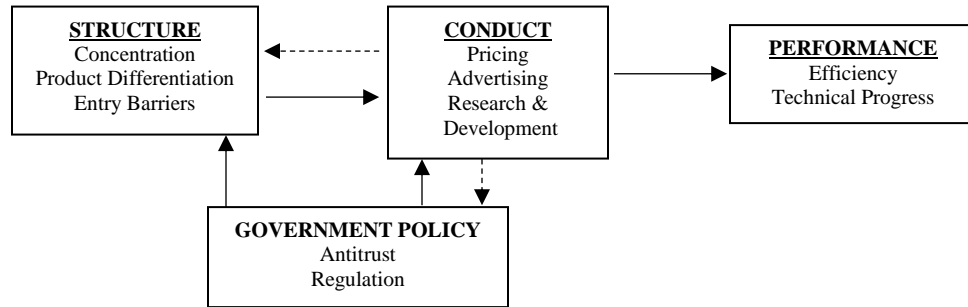
⁵ Taylor, 1998, pp. 275–278, 378–381, discusses these dynamics of welfare economics.

⁶ Viscusi, Vernon, and Harrington, 1998, pp. 62–63.

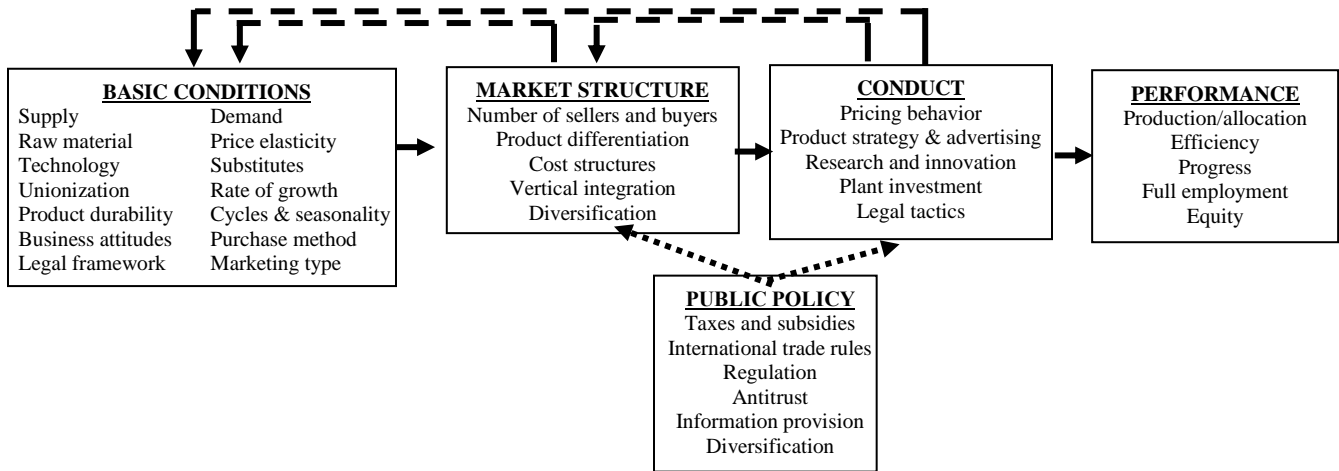
⁷ Scherer and Ross, 1990, p. 4.

FIGURE II-2: THE STRUCTURE-CONDUCT-PERFORMANCE PARADIGM: KEYED TO CABLE

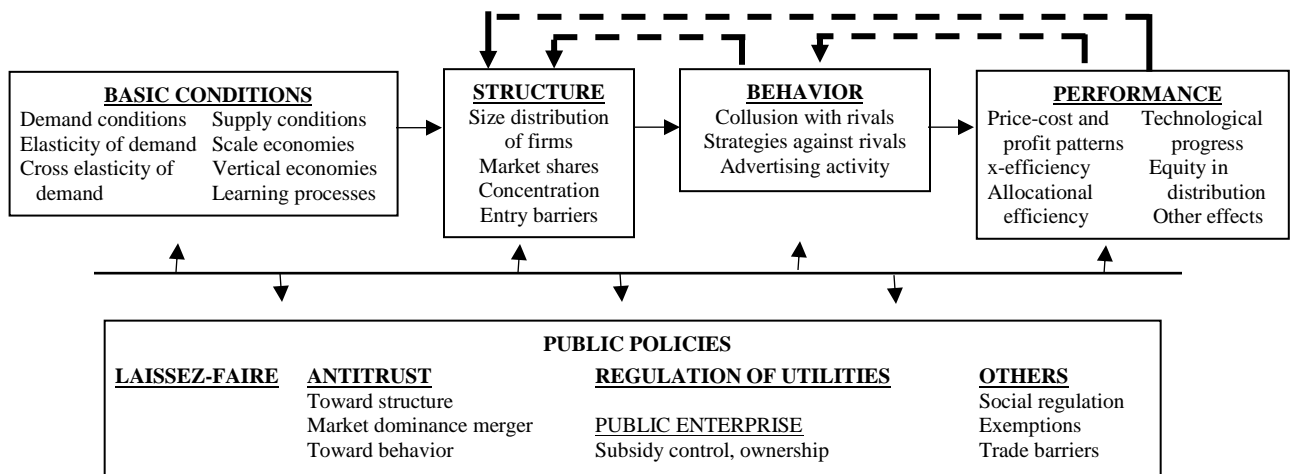
Kip Viscusi, John M. Vernon, and Joseph E. Harrington, Jr., *Economics of Regulation and Antitrust* (Cambridge: MIT Press, 2000), p. 62



F.M. Scherer & David Ross, *Industrial Market Structure and Economic Performance* (Houghton Mifflin, 3rd ed., 1990), p. 5.



William G. Shepherd, *The Economics of Industrial Organization* (Englewood Cliffs, NJ: Prentice Hall, 2nd ed., 1985), p. 5



HORIZONTAL MERGER ANALYSIS

The general approach to merger analysis has been summarized in a set of *Horizontal Merger Guidelines* that has been in use for fifty years.⁸ They have been updated from time to time to reflect economic thinking and antitrust experience. The most recent update was just seven years ago, so they are very current (see Table II-1).

TABLE II-1: ANTITRUST CHARACTERIZATION OF MARKET STRUCTURE AND THRESHOLDS

Type of Market	Dominant Firms Share	HHI Post merger	Equivalent in Equal-sized firms	4-Firm Share (CR4)	Anticompetitive effect of increases in market power: significant, non-transitory increase in price (5%) for two years
Monopoly ^{a/}	100%	10,000	1	100	Change In HHI Simple HHI-based Price increase (SSNIP)
Duopoly ^{b/}	≥ 50%	5,000	2	100	
(Old) Dominant Firm	65% share	4,650	2	100	
<u>New Highly Concentrated</u>		2,500	4	100	HHI increase: 200 points—presumed to be likely to increase market power, 100–200 points—potentially raises significant competitive concerns
(Old) Highly Concentrated		1,800	5.5	72	HHI increase: 200 points—potentially raises significant competitive concerns
<u>New Moderately Concentrated</u>	Tight Oligopoly	1,500	6.6	60	HHI increase: 200 points—potentially raises significant competitive concerns
Monopsony Power	>30%				
(Old) Moderately Concentrated	Loose Oligopoly	1,000	10	40	
Unconcentrated	Atomistic Competition	100	50	8	

Sources and Notes: Market shares rounded to 5; HHI and HHI change rounded to 10. (a) Antitrust practice finds monopoly firms with market share in the 65% to 75% range. (b) HHI is calculated with 2-equal-sized firms. U.S. Department of Justice, *Horizontal Merger Guidelines*, revised August 2010, for a discussion of the HHI thresholds; William G. Shepherd, *The Economics of Industrial Organization* (Englewood Cliffs, NJ: Prentice Hall, 1985), for a discussion of four-firm concentration ratios.

The *Merger Guidelines* describe how markets should be defined in terms of the products included (which must be good substitutes) and the geographic area from which products can be drawn. The key criteria for inclusion is that the product could be delivered to the market at a cost (including transportation) that prevents the post-merger firm from raising prices. The price increases about which the DOJ/FTC are concerned are “Small but Significant Non-Transitory Increases in Price (or “SSNIP).” The price increases that trigger concerns are relatively small (5%), sustained for a relatively short period (as little as two years).⁹ Abuse of market power can have harms other than price, including, of particular importance for agricultural seeds and chemicals, reduced incentives to innovate or distortion of the direction of technological development to promote the interest of the firm at the expense of the consumer and public interest.

⁸ A merger is said to be “horizontal” when it involves products that are in the same product and geographic market.

⁹ DOJ/FTC, 2010, p. 9, uses the 5% in the example, while p. 10 states it as a general proposition.

The core concern in merger analysis is the potential to increase market power. A summary measure of market structure used by antitrust agencies is the Hirschman/Herfindahl Index (HHI).¹⁰ As shown in Table II-1, the *Guidelines* take a very strong position with respect to “mergers resulting in highly concentrated markets that involve an increase in the HHI of more than 200 points,” which “will be presumed to be likely to enhance market power. The presumption may be rebutted by persuasive evidence showing that the merger is unlikely to enhance market power.”¹¹

As shown in Table II-1, the thresholds used in the *Guidelines* were recently raised and have “common sense” referents in the economic literature. A market with ten equal-size firms would have an HHI of 1,000 and would be considered competitive under the 1992 *Guidelines*.¹² A market was considered moderately concentrated when it fell between the highly concentrated and unconcentrated thresholds (i.e., had an HHI between 1,000 and 1,800). This reflected a belief that when the number of firms falls into the single digits, there is cause for concern.

Up to six firms one has oligopoly, and with fifty firms or more of roughly equal size one has competition; however, for sizes in between it may be difficult to say. The answer is not a matter of principle but rather an empirical matter.¹³

In fact, a shorthand way to describe market structure is to give the number of firms, with simple rules of thumb, like “four is few and six is many.”¹⁴ As suggested above, the HHI can be easily converted into equivalents of “equal-sized” firms for these purposes.

Under the recently revised guidelines, the unconcentrated threshold was raised to 1,500 while the highly-concentrated threshold was raised to 2,500, or the equivalent of four equal-size firms. These thresholds (old and new) generally correspond to long-standing characterization of the ability of firms to increase prices to raise profits. Shepherd describes these thresholds in terms of four-firm concentration ratios as follows:¹⁵ The empirical literature shows that when the top 4 firms have a market share over 60%, known as a “tight oligopoly,” the firms have the ability to easily collude or implicitly engage in parallel behavior to increase prices.

- A dominant firm, with almost two-thirds of the market, would create a highly-concentrated market and be a particular source of concern.
- Two firms splitting the market in a duopoly also creates highly concentrated markets and raises strong concerns.
- Tight Oligopoly: The leading four firms combined have 60–100% of the market. Collusion among them is relatively easy.

¹⁰ The HHI Index is calculated by taking the market share of each firm, squaring it and clearing the fraction:

$$HHI = \sum_{i=1}^n s_i^2 * 10,000$$

¹¹ DOJ/FTC, 2010, p. 19.

¹² The HHI can be converted to equal-size equivalents as follows: Equal-size voice equivalents = (1/HHI) * 10,000.

¹³ Friedman, 1983, pp. 8–9.

¹⁴ Selten, 1973; Davies and Olczak, 2008; Horstmann and Kramer, 2015.

¹⁵ Shepherd, 1985, p. 4.

- Loose Oligopoly: The leading four firms combined have 40% or less of the market. Collusion among them to fix prices is virtually impossible.

The upper bound of a moderately concentrated market would correspond to a tight oligopoly, which is defined as a market where the top four firms (the four-firm concentration ratio, or CR4) has more than 60% of the market.¹⁶ The lower bound of a moderately concentrated market with 10 equal-size firms would fall at the loose oligopoly threshold. In other words, oligopoly involves fewer than 10 firms and a tight oligopoly, with a four-firm concentration of 60% or more, are the primary concern. That said, it is important to note that the analysis of cartels (which involves explicit, anti-competitive behavior in violation of the law), finds the average to be 6-10 firms.¹⁷ Therefore, one needs to be cautious about “giving a pass to” or creating a “safe harbor for” markets with firms in the high single digits.

The leading firm proviso appears to have been dropped not because such a firm is not a source of concern but because that concern was subsumed in the broad category of “unilateral effects.” A market with a dominant firm is well above the highly concentrated threshold. A merger involving a dominant firm (with a 65% market share) would violate the *Guidelines* if it sought to acquire a competitor with only a 1.5% market share. Therefore, just about any horizontal merger is likely to violate the *Guidelines*, and “be presumed to be likely to enhance market power.” Dominant firms wield immense market power. While not directly relevant to the analysis of the current agricultural sector mergers being examined in this paper, this standard does give insight in to the level of concentration at which “collective dominance” in a tight oligopoly becomes a concern.¹⁸

Another threshold associated with single firm shares in antitrust practice is the level at which a firm can exercise market power as a buyer of goods or services. A firm with a 30% market share is large enough to gain power to affect prices for the inputs it buys, known as monopsony power.¹⁹ It is the obverse of monopoly power. Although the concept is not directly relevant to the mergers being discussed here, it does suggest the market size at which market power becomes a concern.

VERTICAL INTEGRATION AND LEVERAGE

Horizontal mergers are not the only concern of antitrust and competition authorities. Non-horizontal mergers, above all vertical mergers, are also a source of concern. In fact, although the horizontal impact of the mergers attracts the greatest attention and have important impacts, by market shares, the Monsanto-Bayer and Dupont-Dow mergers are as vertical as they are horizontal.

¹⁶ In the case of 5.5 equal-size firms, the four-firm concentration ratio would be 72%.

¹⁷ The gap between theory and reality is particularly great in the analysis of cartels, as one recent study put it. Davies and Olczak, 2007. Experimental tests of the tacit collusion model so far find that, while collusion sometimes occurs with two firms, behavior is close to Nash play in markets with three or more firms. Yet the empirical reality of antitrust enforcement is different: cartels usually involve many firms... Empirical evidence on cartels suggests that the median number of cartel members lies between six and ten.

¹⁸ Canoy and Onderstal, 2003; OPTA/EAT, 2006.

¹⁹ DOJ/FTC, 2010, p. 2, The Agencies employ an analogous framework to analyze mergers between rival purchasers that may enhance their market power as buyers

Vertical integration has received an increasing amount of attention in recent years. Although the U.S. *Nonhorizontal Merger Guidelines* that were issued in 1984 have not been updated, unlike the *Horizontal Guidelines*, there has been a loud call for such an update to reflect several strong developments in the economic and antitrust literatures.²⁰ European antitrust and competition authorities have updated their guidelines to address many of the weaknesses that have been pointed out in the outdated view of vertical integration in the 1984 Guidelines.²¹

Vertical integration is a key characteristic of some industries,²² where the act of producing a good or service can be readily separated from its distribution and sale. Production is referred to as the upstream, distribution and sale are referred to as the downstream. Because vertical integration involves the elimination of a (presumably market-based) transaction between two entities, it has been the focal point of a great deal of analysis. Vertical mergers raise concerns of anticompetitive effects across markets – foreclosure, price squeeze, vertical restraints, exclusion, tying of products, evasion of regulation. Economic efficiencies are frequently claimed for vertical integration due to the elimination of transaction costs. Others fear inefficiency and potential abuse of the ability to leverage vertical market power that can result from excessive or unjustified vertical integration.²³

In fact, the discussion of vertical mergers and anticompetitive practices in the Viscusi, Vernon and Harrington text is longer than the discussion of mergers generally. In part, this reflects the fact that the potential benefits of vertical mergers and relationships are discussed, the unique vertical concerns must be balanced with analysis of potential benefits – efficiency, quality control, reduced transaction costs on their rivals or degrade their quality of service to gain an advantage.²⁴

Moreover, vertical integration may become the norm in the industry, making it difficult for unintegrated producers to survive. Vertically integrated entities may capture the market for inputs, inhibiting independent entities from obtaining the factors of production necessary to deliver competing products. Cross-owned products succeed, not because they win on the merits, but because they are favored by their owners who control a key (downstream) choke point. Also, with vertically integrated entities dominating a sector, reciprocity and forbearance rather than competition may become the norm. More importantly, vertical relationships are central because compatibility and interoperability are crucial to the value of products. Therefore, vertical integration and leverage are a heightened concern.²⁵ Vertical integration facilitates price squeezes and enhances price discrimination.²⁶

²⁰ Pitofsky, 208, Salop and Culley, 2015.

²¹ E.U. 2008.

²² Scherer and Ross, 1990, pp. 526-527; Shepherd, 1985, p.280 – 304; Asch and Senaca, 1985, p. 248; Krattenmaker and Salop, 1986); Ordoover, Sykes and Willig, 1985 in F. M. Fisher (Ed.), *Antitrust and Regulation* (Cambridge: MIT Press, 1985).

²³ Scherer and Ross, 1990, p. 522. Relaxation of the simplifying assumptions shows that monopoly power *may be* (but is not necessarily) enhanced through vertical combinations.

²⁴ Id., pp.526-527.

²⁵ Scherer and Ross, 1990, pp. 526-527; Shepherd, 1985, p.280 – 304; Asch and Senaca, 1985, p. 248; Krattenmaker and Salop, 1986); Ordoover, Sykes and Willig, 1985 in F. M. Fisher (Ed.), *Antitrust and Regulation* (Cambridge: MIT Press, 1985).

²⁶ Scherer and Ross, 1990, p. 526.

The final behavioral effect is to trigger a rush to integrate and concentrate. Being a small independent firm at any stage renders a company extremely vulnerable to a variety of attacks.²⁷

Triggering: If there are 10 nonintegrated firms and only one of them integrates, then little effect on competition might occur. But if this action induces the other to do the same, the ultimate impact of the first “triggering” move may be large. Any increase in market power is magnified.²⁸

Beyond the broad conceptual debate, there is a great debate in the vertical integration space about the extent to which the efficiencies of integration outweigh the costs of reduced competition. Before we wade into that debate with respect to seed bundles, we will briefly discuss the third area of extreme importance in the analysis of industrial organization and the impact of mergers – coordination effects. The manner in which both horizontal concentration and vertical integration affect the ability of firms to explicitly or implicitly coordinate behaviors is, in a sense, the payoff to mergers and merger analysis in the form of coordinated effects. Moreover, there is a very strong correlation between vertical integration and coordination, as the factors that cause concern about each of them are very similar.

COORDINATION EFFECTS AND INCIPIENT COMPETITION

The *Merger Guidelines* devote a considerable amount of attention to the effect a merger can have in facilitating coordination among the firms in a sector. The *Guidelines* describe the competitive concern about coordination as follows.

A merger may diminish competition by enabling or encouraging post-merger coordinated interaction among firms... Coordinated interaction involves conduct by multiple firms that is profitable for each of them only as a result of the accommodating reactions of the others. These reactions can blunt a firm’s incentive to offer customers better deals by undercutting the extent to which such a move would win business away from rivals. They also can enhance a firm’s incentive to raise prices, by assuaging the fear that such a move would lose customers to rivals.²⁹

The *Guidelines* identify three types of coordination: (1) Coordination can be explicit (which in itself would violate the antitrust laws), (2) a “common understanding that is not explicitly negotiated but would be enforced by detection and punishment of deviation” and (3) “parallel accommodating conduct not pursuant to a prior understanding.”³⁰

Although the *Guidelines* note that “coordinated interaction includes conduct not otherwise condemned by the antitrust laws,” they argue that merger review should reach this behavior because the merger could produce conditions in the market that make it extremely vulnerable to harmful coordination. By so dramatically altering the overall competitive structure of the market, the merger can violate the antitrust laws. As the *Guidelines* explain:

²⁷ Scherer and Ross, 1990, pp. 526-527.

²⁸ Shepherd, 1985, p. 290.

²⁹ DOJ/FTC, 2010, p. 24.

³⁰ *Id.*

Under some circumstances, a merger can result in market concentration sufficient to strengthen such responses or enable multiple firms in the market to predict them more confidently, thereby affecting the competitive incentives of multiple firms in the market, not just the merged firm.

Therefore, the Agencies evaluate the risk of coordinated effects using measures of market concentration (see Section 5) in conjunction with an assessment of whether a market is vulnerable to coordinated conduct.³¹

The importance of coordination underscores another aspect of merger review – the role of incipient competition and maverick firms. The *Guidelines* mention incipiency twice – once in the general introduction and once in the section on “coordination.”³² The Section on coordination introduces the concern with reference “to the Clayton Act’s incipiency standard,”³³ because an individual firm can play a particularly important role in providing competition. This role can be heightened in the situation of systemic stress to the business model.³⁴ The disruptive behavior of mavericks is the antithesis of coordination. A market that possesses conditions favorable to coordination is likely to a severe challenge for mavericks.

III. MEGAMERGERS IN THE SEED AND AGROCHEMICAL SECTOR

CONCENTRATION

Table III-1 inserts the basic statistics on the horizontal mergers in the seed/agrochemical sector into the analytic framework introduced in the previous section. Measured by the revised *Merger Guidelines* of the Department of Justice (DOJ) and the Federal Trade Commission (FTC), the Monsanto-Bayer merger would create a very highly concentrated market in cotton seed. As shown in Table III-1, the merger would cause the HHI in the cotton seed market to rise over 2400 points to a post-merge level of 5200. We use these estimates because they are from an academic study that ties concentration to price increases. Others provide somewhat lower

³¹ *Id.*, p. 25.

³² Given this inherent need for prediction, these Guidelines reflect the congressional intent that merger enforcement should interdict competitive problems in their incipiency and that certainty about anticompetitive effect is seldom possible and not required for a merger to be illegal. (DOJ/FTC, 2010, p. 1) Pursuant to the Clayton Act’s incipiency standard, the Agencies may challenge mergers that in their judgment pose a real danger of harm through coordinated effects, even without specific evidence showing precisely how the coordination likely would take place. The Agencies are likely to challenge a merger if the following three conditions are all met: (1) the merger would significantly increase concentration and lead to a moderately or highly concentrated market; (2) that market shows signs of vulnerability to coordinated conduct (see Section 7.2); and (3) the Agencies have a credible basis on which to conclude that the merger may enhance that vulnerability. (DOJ/FTC, 2010, p. 25)

³³ *Id.*

³⁴ The Agencies consider whether a merger may lessen competition by eliminating a “maverick” firm, i.e., a firm that plays a disruptive role in the market to the benefit of customers. For example, if one of the merging firms has a strong incumbency position and the other merging firm threatens to disrupt market conditions with a new technology or business model, their merger can involve the loss of actual or potential competition. Likewise, one of the merging firms may have the incentive to take the lead in price cutting or other competitive conduct or to resist increases in industry prices. A firm that may discipline prices based on its ability and incentive to expand production rapidly using available capacity also can be a maverick, as can a firm that has often resisted otherwise prevailing industry norms to cooperate on price setting or other terms of competition (DOJ/FTC, 2010: 3-4).

numbers (post-merger HHI of 3750 resulting from a 1600-point increase). Although they are lower, they still violate the guidelines by a wide margin.³⁵

TABLE III-1: THE SEED/AGROCHEMICAL MERGERS THROUGH THE LENS OF THE ANTITRUST CHARACTERIZATION OF MARKET STRUCTURE AND THRESHOLDS

Type of Market	Dominant Firms Share	HHI Post merger	Equivalent in Equal-sized firms	4-Firm Share (CR4)	Anticompetitive effect of increases in market power: significant, non-transitory increase in price (5%) for two years		
					Change In HHI	Simple HHI-based Price increase (SSNIP)	
Monopoly ^{a/}	100%	10,000	1	100			
Duopoly ^{b/}	≥ 50%	5,000	2	100			
(Old) Dominant Firm	65% share	4,650	2	100			
Monsanto-Bayer, U.S.							
Cotton	≈ 60%	5,210		≈90	2400	Mon. 19.2	Bayer 17.4
Dupont – Dow, U.S.							
Corn	≈ 40%	3,100		≈90	410	Dup. 1.6	Dow 6.3
Monsanto-Bayer, Dow-Dupont, U.S.							
Soy	≈ 70%	2,710		≈80	350	1.3	5.8
Canola major	≈100%						
<u>New Highly Concentrated</u>		2,500	4	100	HHI increase: 200 points—presumed to be likely to increase market power, 100–200 points—potentially raises significant competitive concerns		
(Old) Highly Concentrated		1,800	5.5	72			
Monsanto-Bayer, Dow-Dupont, Global							
Seed	≈60%	1,600		≈65	460		
All Ag. Related	≈45%	1,500		≈75	500		
Agrichemical	≈60%	1,430		≈70	430		
<u>New Moderately Concentrated</u>	Tight Oligopoly	1,500	6.6	60	HHI increase: 200 points—potentially raises significant competitive concerns		
Monopsony Power	>30%						
(Old) Moderately Concentrated	Loose Oligopoly	1,000	10	40			
Unconcentrated	Atomistic Competition	100	50	8			

Sources: For market structure definitions and thresholds, see Table II-1. Field crop statistics and merger impacts are from “Testimony of Diana L. Moss,” American Antitrust Institute, *Consolidation and Competition in the U.S. Seed and Agrochemical Industry*, Before the Senate Judiciary Committee, September 20, 2016; “Testimony of Roger Johnson,” National Farmers Union, *Consolidation and Competition in the U.S. Seed and Agrochemical Industry*, Before the Senate Judiciary Committee, September 20, 2016; Bryant, Henry, Aleksandre Maisashvili, Joe Outlaw and James Richardson, 2016, *Effects of Proposed Mergers and Acquisitions Among Biotechnology Firms on Seed Prices*, Agricultural & Food Policy Center Department of Agricultural Economics, Texas A&M.

Ironically, the Bayer-Monsanto merger reconstitutes a dominant market player by rejoining two firms that the Department of Justice recently split during the course of a different

³⁵ Moss, 2016, p.7.

merger just ten years ago.³⁶ In the canola market, the two mega-mergers (Monsanto-Bayer and Dow-Dupont) would create a duopoly.³⁷

There is no doubt that this merger violates the *Guidelines* by a wide margin. The Monsanto-Bayer merger clearly creates a very tight oligopoly, with the dominant firm alone having a market share close to 60% and the top four firms having a market share above 90%.³⁸ Combining these two measures of market concentration and market power, it is clear that the Monsanto-Bayer merger would create a very highly concentrated, very tight oligopoly in cotton seed. The merger would pair the number one firm and the number three firm.³⁹ Such mergers within the top four firms are invariably opposed by antitrust authorities since they so severely diminish competition.

PRICE INCREASES

Table III-1 also shows the expected price increases based on the increase in the HHI caused by the merger. This is a simple and standard calculation that does not take other factors like vertical integration into account. Nevertheless, four of the six projected price increases (company x product) exceed the threshold level for SSNIP.⁴⁰ The impact of the Monsanto Bayer merger on corn prices is very large, almost four times the threshold and three times as large as the Dow Dupont merger.

The specific analysis of the Monsanto-Bayer merger is consistent with an earlier analysis that treated a potential merger across traits or integrating seed and chemicals.⁴¹ At the time, the paper cautioned that it was a purely hypothetical, “counterfactual” analysis since no such merger had been proposed or taken place. Since it was written, however, one such mergers has taken place and another has been proposed. Figure III-1 shows the projected price increases for the market impacts of these types of mergers. Half of the modelled price increases were statistically

³⁶Johnson, 2006, p. 6 Cotton provides an important example. FiberMax and Stoneville are the two cotton brands in Bayer’s portfolio. Deltapine is Monsanto’s flagship cotton brand. As part of the acquisition of Deltapine by Monsanto in 2006 the Department of Justice required that Monsanto divest Stoneville. The DOJ order recognized that the combined company would dominate the traited cottonseed market in the United States, with nearly 95 percent of all cottonseed sales in the high-value cotton-growing regions of the MidSouth.¹⁶ Today, we are standing in front of a proposal that would join the two cotton brands back together and further widen it through the additional brand FiberMax. This would certainly be to the detriment of cotton farmers across the south.

³⁷ Id., p. 6, Cotton overlap is not the sole concern. As I mentioned earlier, canola is an important crop in my area. Monsanto has two canola varieties under its Genuity brand, one for spring and one for winter canola. Bayer also has a single product line under the InVigor brand that has 7 varieties. Reductions in either brand would be a significant reduction in choice. But underscoring the lack of choice is also the lack of diversity. Between Dow-DuPont and Bayer-Monsanto, major canola varieties will only be sold by two companies if the mergers are allowed to move forward.

³⁸Moss, 2016, p. 7.

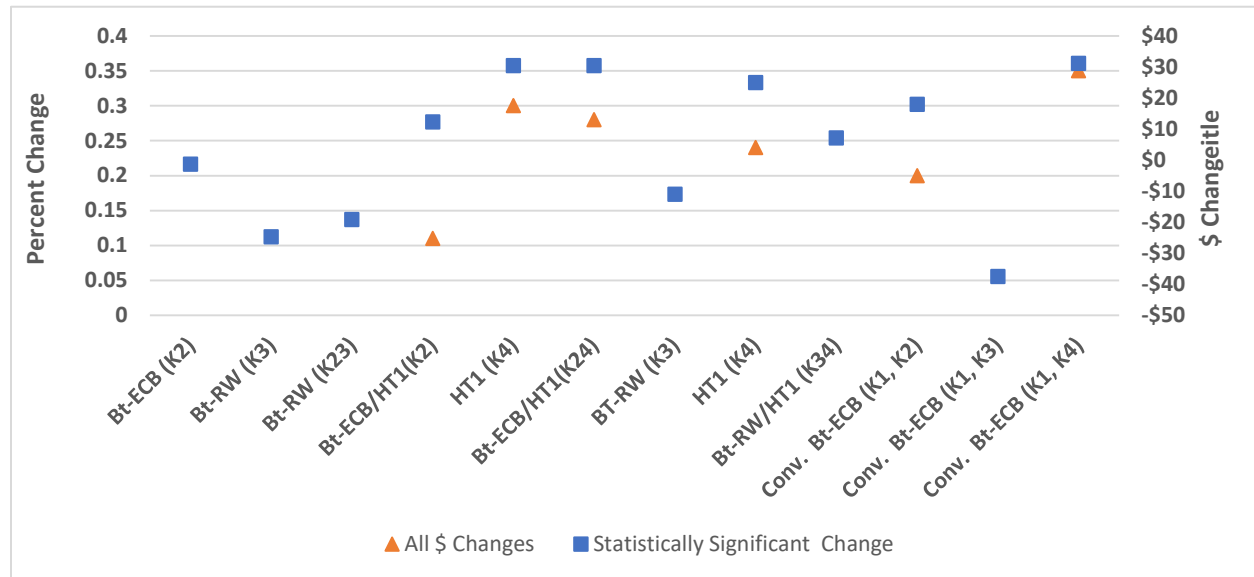
³⁹ Johnson, 2016, p. 4, “It is also important to note that the prospective merger of Monsanto and Bayer would combine the 1st and 3rd largest firms. The two mergers together would therefore create a Big 4, dominated by a Monsanto-Bayer and Dow-DuPont duopoly.”

⁴⁰ DOJ/FTC, 2010, p. 9, underscore that the threshold applies to individual products if it “likely would impose at least a small but significant and non-transitory increase in price (“SSNIP”) on at least one product in the market, including at least one product sold by one of the merging firms.

⁴¹ Shi and Stiegert, 2008.

significant. These significant effects ranged from 10% to 35%, two to seven times the threshold. The average is 25%. The average, across all of the products is 11%.

FIGURE III-1: PRICE IMPACTS OF CROSS-TRAIT AND SEED-CHEMICAL MERGERS



Source: Shi, G., J.-P. Chavas., and K. Stiegert, 2008, *An Analysis of Bundling: The Case of the Corn Seed Market*, Staff Paper 529, University of Wisconsin-Madison., Table 4 and 6.

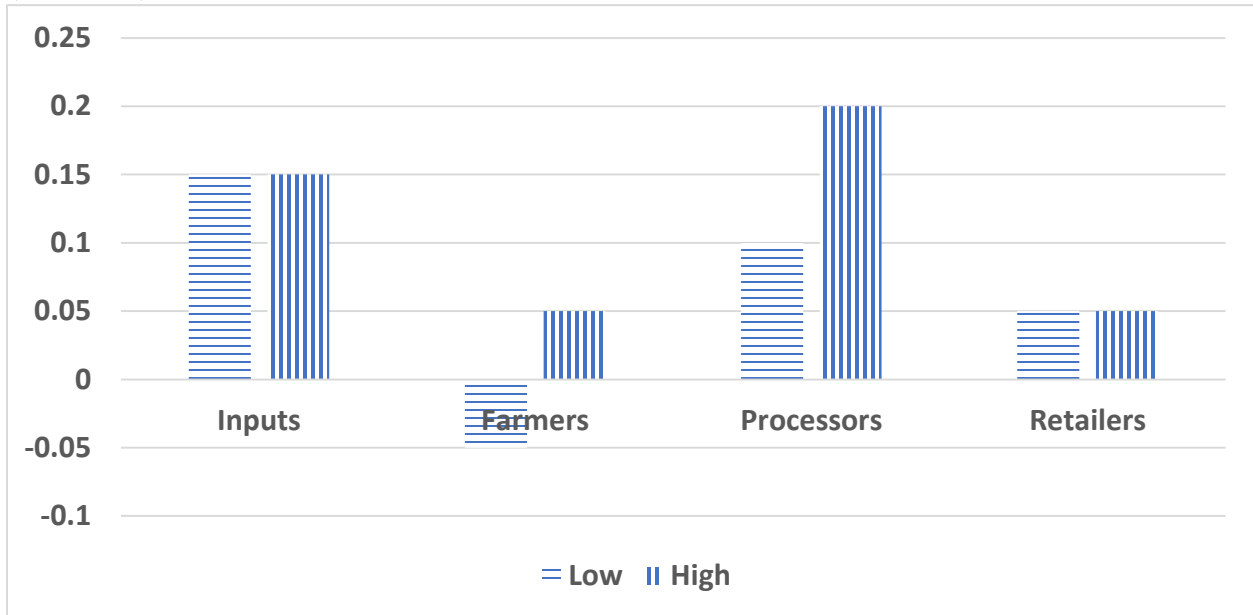
The effects are somewhat larger than in the analysis above that dealt with specific mergers because the effects were modelled here are a merger to monopoly. The Monsanto-Bayer post-merger markets are between a duopoly and a monopoly, so the effects might be somewhat smaller. They would exceed the threshold.

PROFITS

One frequent measure of the exercise of market power is the rate of profit. While we have not seen any estimates for profit by crop of line or business of the U.S. products affected by the merger, a recent estimate of profits in the global industry, broken down by stage of production is consistent with the anecdotal evidence (see Figure III-2). Farmers (and traders) have a very low rate of profit compared to input sellers (seed providers) and food processors. Farmers are squeezed and consumers pay too much.

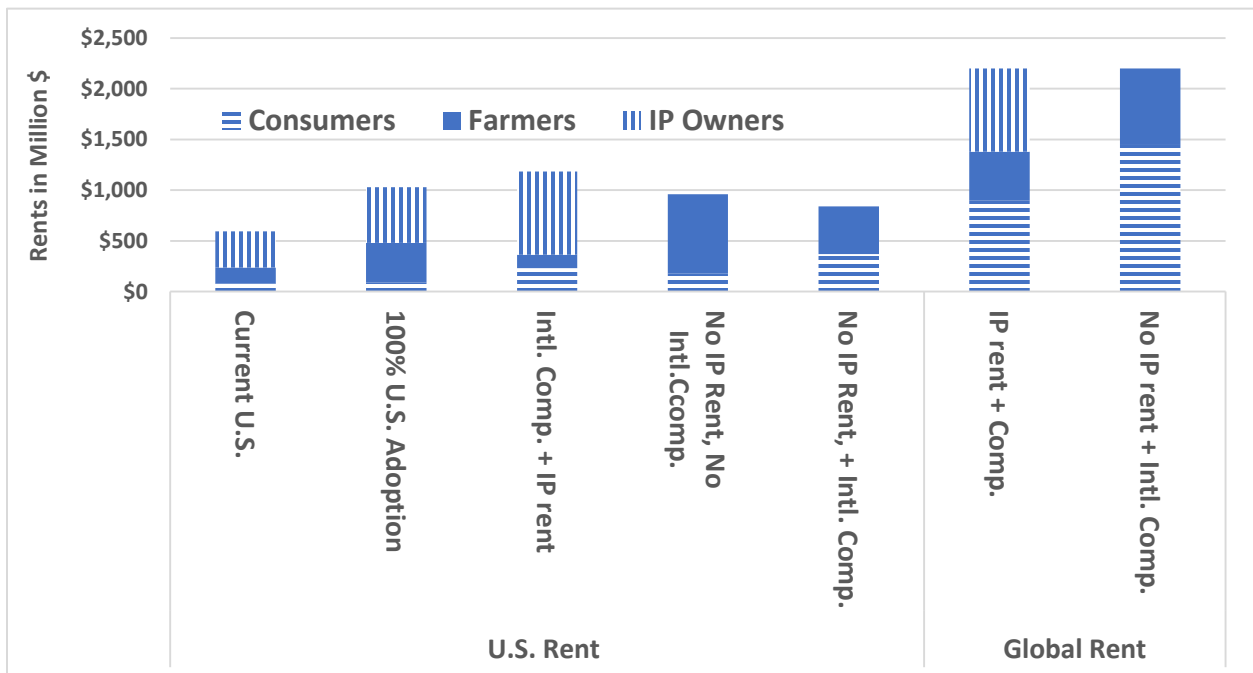
A more extensive analysis of the use of Roundup in soybean cultivation leads to similar conclusions and provides much more detail, as shown in Figure III-3. The authors start from the current use of the chemicals. They hypothesize its spread to 100% use and consider alternative types of competition. Along one dimension, international farmers adopt the technology and compete with U.S. farmers. Along a second dimension, the intellectual property monopoly on the technology is lifted. The authors then describe the distribution of rents between consumers, farmers and IP owners in the U.S. and globally.

FIGURE III-2: EARNINGS BEFORE INTEREST TAXES DIVIDENDS AND AMORTIZATION (EBITDA)



Sources: Ioannis Lianos, 2016, “Superior bargaining power and the global food value chain: The wuthering heights of holistic competition law?” *Concurrences* N° 1, 2016, On-Topic I *Competition law and policy and the food value chain*, p. 22.

FIGURE III-3: DISTRIBUTION OF RENTS IN SOYBEAN/ROUNDUP ECONOMICS



Source: Moschini, Giancarlo, Harvey E. Lapan and Andrei Sobolevsky, 1999, Roundup Ready Soybeans and Welfare Effects in the Soybean Complex,” *Economic Staff Paper Series Economics*, 337; Moschini, GianCarlo, 2001, Economic Benefits and Costs of Biotechnology Innovations in Agriculture, Center for Agricultural and Rural Development, Iowa State University, *Working Paper 01-WP 264*, January.

The current allocation of rents in the U.S. is described as 60% IP owners, 26% farmers and 14% consumers. With full adoption of the technology in the U.S., surplus almost doubles. IP owner share declines to 53%, while farmer share increases to 38% and consumer share decreases to 9%. Both of these reflect the highly skewed situation of the current exercise of market power.

Introducing competition has dramatic effects on the distribution. Under every competition scenario U.S. consumers and global consumers are better off. U.S. farmers are better off under all scenarios except where international farmers adopt the technology with the IP constraints and compete with U.S. farmers. Even here their loss is small. Farmers are best off when the rents are squeezed out of the intellectual property but international farmers do not adopt the technology, so they are unable to compete.

Given the assumptions of the analysis (low elasticities), there is no difference in the global total surplus. Assuming no international competition based on the technology, i.e. restricting the technology to the U.S., the case with intellectual property has total social surplus about 7% higher, which is not nearly enough to offset the distributional losses for farmers and consumers. This is consistent with the general observation that where demand elasticities are low, the dead weight loss compared to the wealth transfer is small.

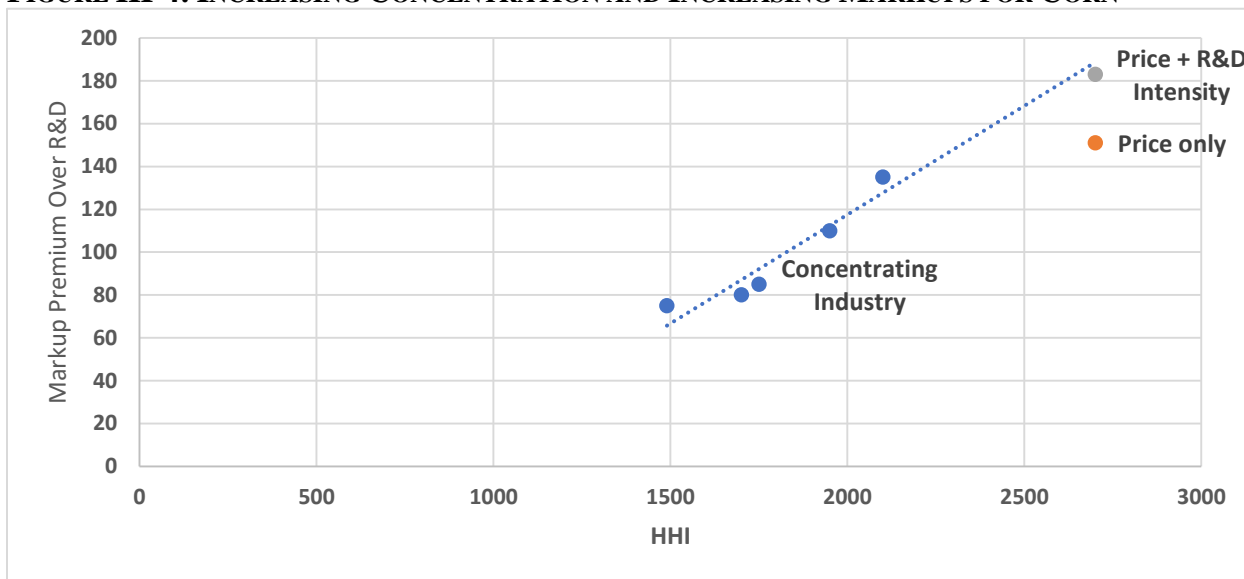
Figure III-4 provides another perspective on the concentration/price/profit relationship. A study that covered the late 1990s-early 2000s, shows that the markup of price did not cover R&D costs (treated as an expense), until the mid-2000s. From the low point of concentration in 2004 through 2008, there is a strong upward trend in concentration that is highly correlated with increasing margins, as theory predicts. By 2008, markup is about 30% above R&D spending. That was only the beginning of the story. Since that period corn seed costs have doubled. If R&D costs had remained constant, the markup would be over 50%, prior to the Dow-Dupont merger. In fact, R&D intensity has been declining. If only the one-year decline in 2009 from a USDA study is factored in, the margin would be about 80% above costs. This increasing margin is consistent with the underlying trend of concentration. High margins like these are another indicator of the abuse of market power.

A GLOBAL PERSPECTIVE

This analysis raises important issues with respect to the global market, which it sees as primarily a source of rent for U.S. IP owners and secondarily a potential export market for farmers. The analysis of mergers tends focus on country specific impacts, the specific U.S. seed-centered markets. These are the product and geographic markets that are and should be the primary focal point for U.S. antitrust authorities.

Table III-1, above, also shows some statistics for much broader global markets. While they are not the primary focus, antitrust authorities frequently look at these broader markets to add depth to the analysis. In this case the global figures are revealing. The fact that the broadly defined product and global markets are tight oligopolies themselves and the merging firms would be in the dominant four firm oligopoly, post-merger, suggests that there are few, if any, firms to play the role of potential entrants that could threaten to restrain abuses resulting from the increase in market power.

FIGURE III-4: INCREASING CONCENTRATION AND INCREASING MARKUPS FOR CORN



Sources: Concentrating period from: Kalaitzandonakes, N., A. Maginer., and D. Miller, 2010, “A Worrisome Crop,” Regulation 33. Price Increase from Johnson, Roger, 2016, “Testimony of Roger Johnson,” President National Farmers Union, *Consolidation and Competition in the U.S. Seed and Agrochemical Industry*, Before the Senate Judiciary Committee, September 20. , Fuglie, Keith O. et al., 2011, Research Investments and Market Structure in the Food, Processing, Agricultural Input and BioFuels Industries Worldwide, U.S. Dep’t of Agric., Econ. Res. Serv. Rep. No. 130, December.

Mergers like these also raise concerns of a chain reaction, where allowing one megamerger leads to other megamergers, as the participants in the market seek to bulk up to meet the larger firm. That is the case with respect to the broader market in seed and chemicals. The Monsanto-Bayer merger would create a huge dominant player in the cottonseed market. The Dow-Dupont merger created a very highly concentrated, very strongly vertically integrated, tight oligopoly in corn seed and soy beans.⁴²

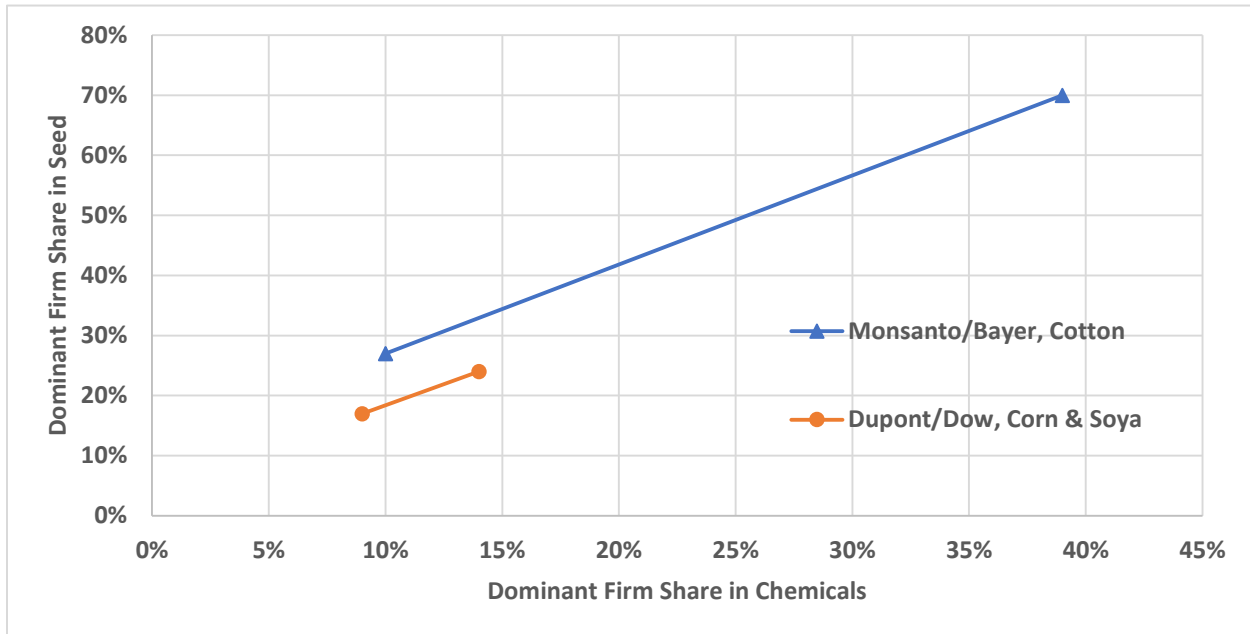
A HIGHLY CONCENTRATED, VERTICALLY INTEGRATED TIGHT OLIGOPOLY ON STEROIDS

Structurally, both the proposed Bayer-Monsanto merger and the recently approved Dow-Dupont merger have strong vertical aspects (see Figure III-5). The mergers increase both vertical and horizontal market share in roughly the same proportion. These are important because separate, but related products exhibit strong complementarities in genetic traits, seed and chemicals.⁴³ Chemicals are in a separate market that has become strongly complementary to seeds because of the development of directly linked chemicals.

⁴² Moss, 2016, p. 6.

⁴³ Johnson, 2016, p. 6. The issue of choice also comes into play when examining the recently announced acquisition of Monsanto by Bayer. Monsanto has 21 brands related to seeds and traits. Bayer has fewer traits and seed lines with a total of 7. In this case, Bayer is much more invested in crop protection than seed. On its surface, one could contend that this acquisition will align to provide producers integrated solutions for planting. However, there is significant overlap between the two portfolios and the merger will result in fewer choices available to farmers and higher prices.

FIGURE III-5: HORIZONTAL AND VERTICAL ASPECTS OF AGRICULTURAL MERGER



Source: H. Shand, 2012, “The Big Six: A profile of corporate power in seeds, agrochemicals & biotech,” *The*

In theory, the same firms do not have to produce the chemicals (if other firms had access to the genetic traits of the seeds). At each of the interfaces – between traits and seed and between seed and chemicals – access to the underlying intellectual property could be licensed, at fair, reasonable and non-discriminatory terms and conditions. This would allow independent, non-integrated entities to build products at the next stage. This would support a competitive environment. While this is an issue that has always affected network industries (e.g. interconnections in telecommunications, interline movements in railroads), it has become much more hotly debated in the knowledge economy where intellectual property plays a much larger role (e.g. the Microsoft antitrust case was largely about access to application interfaces (APIs) and the applications barrier to entry).⁴⁴

Basic Conditions

These are huge product markets, accounting for about \$100 billion of output, or half of total U.S. agricultural output. The merger wave is so profound that it would even impact the global market.⁴⁵ Interestingly, the joint production of the two firms in these seeds, would be split 60% segregated product bundles and 40% overlapping product bundles. The simple arithmetic of market concentration in these three crops tells a frightening story of the potential for the abuse of market power. We have argued that situations such as these are more harmful than the simple arithmetic. We call this a tight oligopoly on steroids because it has key economic characteristics that magnify the market power of the firms, as shown in Table III-2.

⁴⁴ Cooper, 2001.

⁴⁵ Johnson, 2016, p. 4, in 2014, the ranking of the Big 6 in total global agriculture-related revenue was: Monsanto (\$16 billion), Syngenta (\$14 billion), Bayer (\$12 billion), DuPont (\$11 billion), Dow (\$7 billion) and BASF (\$7 billion). The proposed merger of Dow and DuPont would combine the 4th and 5th largest rivals, creating a firm that would surpass Monsanto as the current leader.

TABLE III-2: FACILITATING COORDINATION: CULTIVATING MARKET POWER STEROIDS

GENERAL FACTOR	U.S. EVALUATION		E.U. EVALUATION
Structure			
Concentration	High & Persistent		Horizontal & Vertical
Seller #	Few		Structure
Seller size	Large w/High market share		Dominant Position
Product	Segmented		Market Power
Complements	Strong		
Technology	Specialized		
Entry barriers	High		Competitive Response
	Economies of scale and scope		Entry unlikely, Dual market
	Network effects		Weak competitors
	Licenses		Capacity constrained
	Lack of significant or disruptive entrants		Inability to invest in R&D
	Artificial Barriers (e.g. lock in contracts)		Acceptance of Limit pricing
History	Limited		History
Timeliness	Late		Coordination
Likelihood	Low		Abusive Practices
Sufficiency	Low		
Vertical integration	Extensive		Vertical
	Technological specialization		Reinforces horizontal
	Mature technology		Leverage
	Vertical restraints		
	Vertical Links		
	Shared Resources		
	Cost Info		Information on market
	Customer info		Information on customers
Demand Conditions			
Product Differentiation	Bundled differentiated products		Product Differentiation
	Segmentation		Tying
	Focal point on high discount rate		
	Transparency		Access to customers
	Communications		Denial
	Enforceability		Direct cost
Price elasticity	Low		Lost economies
Substitutes	Limited		Low
High switching costs	Technological, Financial, Search		Limited
	Brand loyalty		High
	Lock in contracts		Complements
Demand growth	Stable		
No countervailing buyer power	Strong Complementarity		Stable
	Customers small relative to total		Absent
			Stable
Conduct			
Capacity constraint (ambiguous)	Lumpy but not whole-hog		
	Strategic variable		Access to inputs
Capacity Management	Yes		Exclusion
Exclusion	Pervasive		Mandatory
Process (Facilitating practices)	Structural links (e.g joint ventures)		Take or Pay
	Market Division (tacit non-compete)		
	Repeated interaction		Multi-market contact
	Symmetry		
Raising Rival's Cost	Important		Raising Rival's Cost
	Critical		Important
			Critical
Coordination			
Facilitating Practices			Access to customers
Negotiated	Occasional		Foreclosure
Accommodating	Frequent		Network effects
Parallel behavior	Reciprocity		Loss of scale
Conditions facilitating			Ability to coordinate
Predictability			Symmetric - aligning incentives
Past practices	Yes		Internal
Monitoring			External
Other markets	Multiple contact		Recognize common interest
Collective market power	High		Monitor
			Discipline

Sources: U.S.: U.S. Department of Justice, 1984, *Merger Guidelines*, June 1, Non-horizontal mergers. U.S. Department of Justice and Federal Trade Commission, 2010, *Horizontal Merger Guidelines*, August; Salop, Steven C. and Daniel P. Culley, 2015, "Revising the U.S. Vertical Merger Guidelines: Policy Issues and an Interim Guide for Practitioners," *Journal of Antitrust Enforcement*. European Union, 2004, *Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings*, Official Journal of the European Union, European Union, 2008, *Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings*, Official Journal of the European Union; Marcel Canoy and Sander Onderstal, 2003, *Tight Oligopolies: In Search of Proportionate Remedies*, CPB Netherlands Bureau for Economic Analysis, February; OPTA/EAT, 2006, *Is Two Enough*. Economic Policy Note, No. 6, September, 2006. Body of European Regulators for Electronic Communications, 2015, BEREC Report on oligopoly analysis and regulation, BoR (15) 195, November 27; Body of European Regulators for Electronic Communications, 2017, BEREC view on non-cooperative oligopolies in the Electronic Communication Code, BoR (17) 84.

The conditions under which coordination is a concern are the exact conditions that we find in the agricultural sector and they are the conditions that are deeply affected by the merger. In addition to prices and the squeeze on farmers' income by rising prices for inputs, these mergers could have negative impacts on dynamic innovation processes, consistent with the aspects of market power raised by *Guidelines*.⁴⁶ To describe the magnification of market power we return to the structure-conduct-performance paradigm discussed in Section II

Intellectual property rights create monopoly power through patents that allow rights holders to restrict the use of their products. Policy exhibits a combination of traits that is lethal to competition, combining overbroad intellectual property rights⁴⁷ with lax antitrust enforcement, even when the problems of the abuse of market power are acknowledged.⁴⁸ The tension that is supposed to exist between the monopoly conferred by IP rights and the competition that is favored under the antitrust laws disappeared.⁴⁹ Expanding IP right shifts incentives to integrate⁵⁰ and rewarding anti-social incentives to increase profits rather than advance efficiency and productivity.⁵¹ The exploitation of IP right involves conduct on the part of the rightsholders, but the fundamental problem is the failure of antitrust and regulatory authorities to restrain the abuses.

Structure

In practice chemicals have become closely tied to seed through the use of intellectual property rights and exclusions. Seeds and chemicals have become a bundle. Sometimes called a platform, because the core product provides the basis (the platform) on which complements must stand. Consumers, in this case farmers, have little or no alternative but to buy the bundled chemicals from the firms that manufacture the seeds and the complementary products.

Therefore, post-merger, the cotton seed market would not only be a very highly concentrated, very tight oligopoly, it would also be very strongly vertically integrated.⁵² Corn and soy would be highly concentrated, very tight, vertically integrated oligopolies. While the two giants are located in separate markets for key products, cotton and corn, they overlap in soybeans. Post-merger the two dominant firms would be roughly equal in size in soy beans accounting for about two-thirds of the market between them.⁵³

While it is generally recognized that bundles and platforms can raise barriers to entry – forcing firms to enter at more than one level – which enhances market power,⁵⁴ our view is that

⁴⁶ Moss, 2016, p. x, consolidation will eliminate competition in agricultural biotechnology innovation markets and reduce opportunities for procompetitive research and development (R&D) collaborations.

⁴⁷ Howard, 2015, p. 2, Without policy changes to enable broader intellectual property protections, strong enforcement of these protections, and reduced antitrust enforcement, these firms would not have been able to increase their power to such a great extent.

⁴⁸ Department of Justice, 2012, Philpot, 2012.

⁴⁹ Moss, 2016, p. 21

⁵⁰ Graff, et al., 2001, Goodhue, et al., 2002.

⁵¹ Schurman and Munro, 2010.

⁵² As would the Canola market (Johnson, 2016).

⁵³ In soybeans, Monsanto has a 28% share, while DuPont has 33%, Dow has 5%, Syngenta has about 10%, and AgReliant has about 3%.

⁵⁴ Moss, 2016, p. xx, the combinations would create substantial vertical integration between traits, seeds and chemicals. The resulting “platforms” will likely be engineered for the purpose of creating exclusive packages of

this is only part of the problem. Of equal importance is the ability of firms to reduce rivalry as technological specialization, product differentiation, and market segmentation make it easier to manage multiple market contact and engage in reciprocal behavior.⁵⁵

The dominant incumbents enjoy numerous large, structural advantages that they acquired by mergers, rather than winning them in the marketplace. They enjoy size and scale advantages on both the supply and demand side (network effects). The high level of concentration and technological specialization gives the dominant firms both the incentive and the ability to engage in parallel, reinforcing activity and reciprocity. Meeting in many markets creates familiarity and makes the recognition of common interests easier. Careful cross licensing and management of R&D maintains comity, while keeping disrupters out.

Having acquired these advantages through merger, the dominant firms exploit them through high fees and profits, R&D scale and targeting and engaging in extensive foreclosure activities against entrants. Customers are locked in, competitors are locked out.

Conduct

The pattern of development of the collective dominance is familiar.⁵⁶ The leading firm pressures others to support its pricing strategy.⁵⁷ Conflict bubbles up, sometimes in price wars, but in the IP space it takes the form of patent infringement suits.⁵⁸ The rivals recognize their mutual interest and resolve the disputes with cross licensing agreements and joint ventures⁵⁹ that share rents and power, while freezing out disruptive competition.⁶⁰ The synergistic and mutually reinforcing nature of dominant institution actions creates a snowball effect, in which the big get bigger and even more powerful.⁶¹ The impending expiration of multiple patents has called forth an effort, commensurate with the threat, to create private contractual agreements that extend and protect the intellectual property of the rightsholders, rather than allow them to be exposed to competition.⁶²

Patent thickets⁶³ and extensions⁶⁴ inhibit competition and strengthen control over products and research, advancing the value of strategies that focus resources on those aspects of

traits, seeds and chemicals for farmers that do not “interoperate” with rival products. This will likely raise entry barriers for smaller innovators and increase the risk that they are foreclosed from access to technology and other resources needed to compete effectively.

⁵⁵ Johnson, 2016, p. x, suggests the importance of this aspect vertical leverage for the potential for abuse of market power in “Cross-licensing is extremely prevalent in the industry and can allow for cartel-style behavior. It raises the bar for new entrants because in addition to the substantial research and development resources required to bring a product online, new entrants would also need to pay the existing market participants in order to license existing traits.”

⁵⁶ The Lysine cartel provides a much studies parallel and analogy.

⁵⁷ Borger, 2003.

⁵⁸ Moss, 2016, pp. 23-25

⁵⁹ Howard, 2015, ETC, 2013.

⁶⁰ Gillam, 2013.

⁶¹ Howard, 2015, p. 2.

⁶² ETC, 2013b.

⁶³ Boyd, 2003, Glenna and Cahoy, 2009.

⁶⁴ Stumo, 2009.

the bundle (seeds) that afford the greatest control,⁶⁵ even though they may not be the aspects that promise the greatest efficiency.⁶⁶ At the extreme it is possible “to leverage wider intellectual property claims, such as the insertion of a single patented gene as a means to place restriction on the entire seed.”⁶⁷ The extremely broad and aggressive assertion of intellectual property rights has led some to complain that they are being exploited far beyond their original purpose to stifle competition and innovation. Faced with little real chance of escaping from the thicket, in a development analogous to software disputes, the effort to open interfaces takes a different course, an “open source” approach tries to take root.⁶⁸

Competitors are locked out with high barriers to entry.⁶⁹ There are many ways dominant firms can use IP to reduce competition. patent trolling (strategic patents that tie up large numbers of patents), extensions (by altering single traits and migrating customers to “new” products) and patent thickets. Licensing bans independents from developing new traits atop old (anti-stacking)⁷⁰ and restrictive cross licensing controls innovative activity.⁷¹ Competitors are also disadvantaged by the incumbent’s access to detailed product and customer information.

Customers are locked in with exclusive bundles that incorporate technological and contractual ties. The technological ties are cemented with bans on resale and seed-saving. The contractual ties include take-or-pay volumetric and other loyalty mechanisms. Consumers are locked in using tying agreements that also pump up prices.⁷² Switching costs are naturally high and raised by contractual practices.⁷³

Performance

There is increasingly strong evidence that, if the benefits of integration ever did outweigh the costs, they no longer do. Over the past decade, with growing integration of traits, seed and chemicals and increasingly rigid bundling, the benefits have declined measurably both in terms of price and innovation.⁷⁴ The increases in yield have slowed relative to the increases in price. In fact, input prices doubled, while prices for the farmers output declined. Some have argued that the value proposition for the dominant firms has shifted from one of increasing yields to preventing losses.⁷⁵ The quantity and quality of research and innovation has declined. At a more qualitative, but perhaps more important level, there is growing evidence that the escalating arms race of chemicals goes beyond simple economics of cost and yield and may do profound harm, as an externality, to the food ecosystem.⁷⁶ As the economics and environmental value of the

⁶⁵ Howard, 2009, 2105.

⁶⁶ Schurman and Munro, 2010.

⁶⁷ Howard, 2015, p. 2.

⁶⁸ Cooper, 2006. Luby, et al, 2015, Kloppenburg, J. 2010, 2104.

⁶⁹ Pray, Oemke and Nasseem, 2005.

⁷⁰ Moss, 2106, pp. 3-4.

⁷¹ Johnson, 2016, p. 6.

⁷² Howard, 2015, Blake, 2003, Goulson, 2013, Stevens and Jenkins, 2014.

⁷³ Wessler, 2004, Weaver and Wessler, 2004.

⁷⁴ Fernandez and Just, 2007; Fernande and Schimmelpfennig, 2004; Schimmelpfennig, et al., 2004. Heisey, King, and Rubenstein, 2005,

⁷⁵ Miller, 2013; Shi, Chavez and Lauer, 2013.

⁷⁶ Stevens and Jenkins, 2014, review 19 peer reviewed studies and cite two dozen articles that raise these issues.

agrochemical approach are challenged, the question emerges as to whether alternative might have been/are preferable.⁷⁷

V. ECONOMIC OLIGOPOLY AND POLITICAL OLIGARCHY

No discussion of monopoly and concentration in the U.S. economy would be complete without recognizing the strong link between economic market power and political power. The identification of policies above that created the conditions that allow a tight oligopoly on steroids to grow and sustain it, are testimony to this link.

In fact, Scherer and Ross argued that the first reason to adopt competitive markets is their compatibility with and link to a democratic polity.⁷⁸ They offer several reasons for the close association between competitive markets and democracy: “The atomistic structure of buyers and sellers required for competition decentralizes power...[I]imiting the power of both government bodies and private individuals to make decisions that shape people’s lives and fortunes... [C]ompetitive market processes solve the economic problem *impersonally*, and not through the personal control of entrepreneurs and bureaucrats.... [The] merit of a competitive market is its freedom of opportunity.”

The abuse of market power undermines this link. The current administration should lay to rest any doubt that the link between economic oligopoly and political oligarchy is powerful and operates to the detriment of small producers and consumers.

Many others have made the broader point about the important linkage between inclusive policies in the economy and the polity. Here we stress that viewed through this lens, antitrust and regulation strive for equitable growth, which is not an afterthought of economic analysis or a political nuisance appended to the economy.

Equitable growth is a core value and driver of policy to create stable long-term progress in the economy and stability in the polity. It makes resources available to support mass consumption and mobility through the expanding division of labor. The draining away of resource leads to insufficient demand to support output. The maldistribution of resources leads to a labor force that is ill-suited for the sectors that are leading economic expansion. Obviously, equity ensures the legitimacy of the political economy through democratic expression and the fair distribution of the surplus, but its political functions should not obscure its critically important economic role.⁷⁹

Two antitrust scholars, Baker and Salop have described the link between economic market power and inequality through the important role that political power plays in magnifying the abuse of market power:

Capitalism does not self-correct toward equality—that is, excess wealth concentration can have a snowball effect if left unchecked... The returns from

⁷⁷ Gray, 2011.

⁷⁸ Scherer and Ross, 1990, p. 18,

⁷⁹ Acemoglu and Robinson, 2012.

market power go disproportionately to the wealthy—increases in producer surplus from the exercise of market power accrue primarily to shareholders and top executives... The wealthiest have a disproportionate influence on public policy. This gives them the ability and incentive to skew public investment and government policies to favor themselves... These policies also may harm others. The exercise of market power tends to raise the return to capital, increasing the divergence between that return and the rate of economic growth. By discouraging innovation and productivity on balance, moreover, market power will also tend to slow the rate of growth, further increasing the divergence.⁸⁰

We frequently hear about the abuse of economic power through its abuse of political power. That is certainly a critically important issue, but here we want to relate economic oligopoly to political oligarchy as it affects the performance of the economy. Just as those who have market power are willing to reduce output in order to raise the rate of profit and their share of total social surplus, regardless of the deadweight economic losses they impose on society, so too they are willing to use their political power to reinforce their economic gains. This increases the distortion of the distribution of surplus and lowers total social surplus through increased deadweight loss.⁸¹

These points can be related directly back to the welfare economics and market structural framework discussed earlier. As shown in Figure V-1, economic oligopoly, which gives rise to the abuse of market power, is linked to political oligarchy, in which policies are manipulated to reinforce market power.

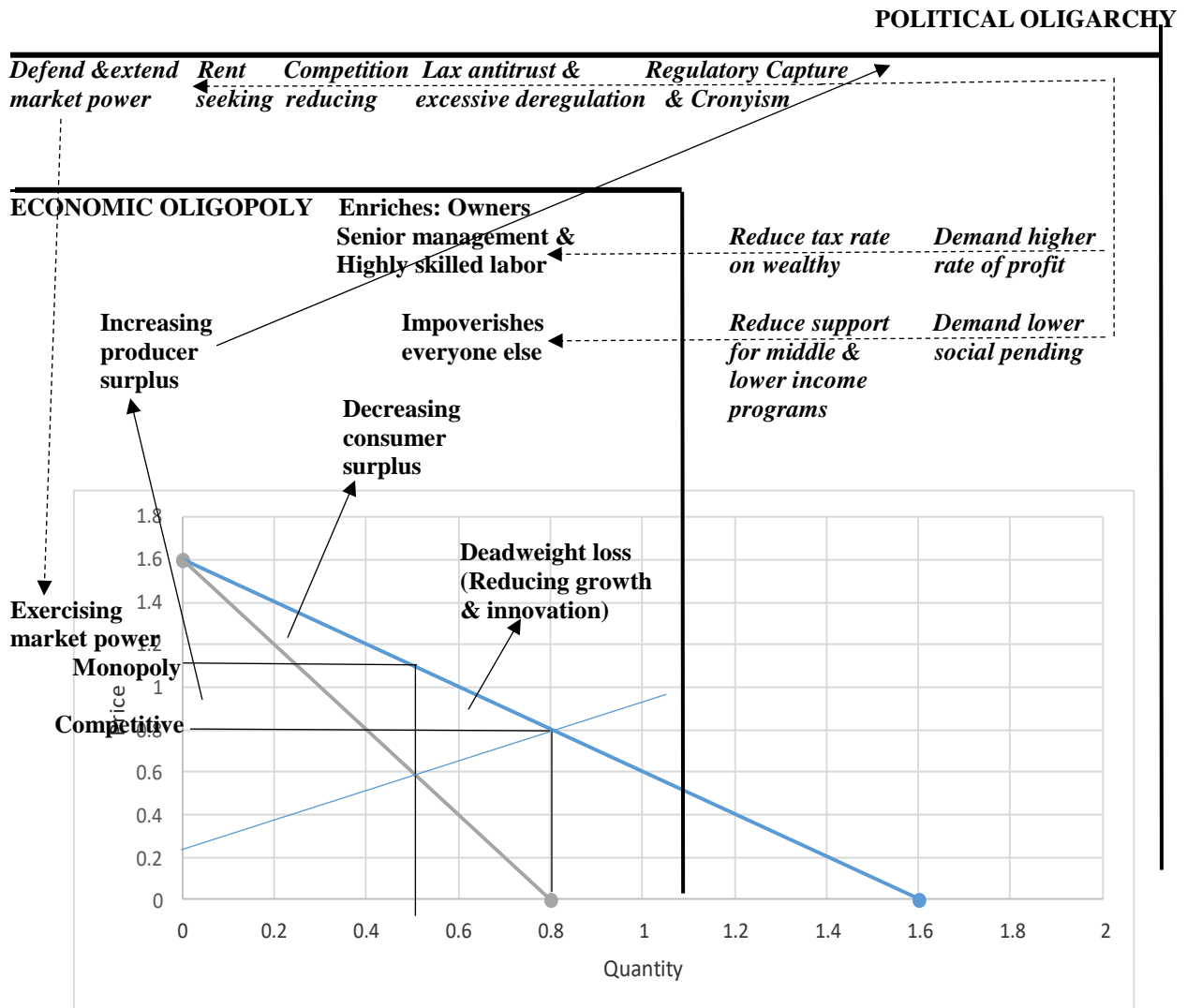
Starting at the bottom left of Figure V-1, the two welfare economic effects of the abuse of market power transfer consumer surplus from consumers to producers. Owners, senior management, and highly technically skilled labor are the beneficiaries of the wealth transfers, and they gain enough to be unaffected by the deadweight losses. Everyone else suffers from both the wealth transfers and the inefficiencies.

Moving up and toward the right in Figure V-1, the winners use their advantage to fund a political system in which they have greater power (as well as a bigger advantage and a greater stake in securing such a system). The power of the political oligarchy is used to adopt policies that favor their interests. At the same time, they argue for policies that reinforce the redistribution of wealth toward the most well off. There is a powerful feedback loop that, if left unchecked, reinforces the political economy of oligopoly/oligarchy

⁸⁰ (2015, pp. 4, 6, 7).

⁸¹

FIGURE V-1: WELFARE ECONOMICS OF MARKET POWER AND INEQUALITY: POLITICAL OLIGARCHY REINFORCES ECONOMIC OLIGOPOLY



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