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## Monopoly and Monopsony: Antitrust Standing, Injury, and Damages

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## MONOPOLY AND MONOPSONY: ANTITRUST STANDING, INJURY, AND DAMAGES

*Tirza J. Angerhofer\** and *Roger D. Blair\*\**

### I. INTRODUCTION

The major processors of beef, chicken, pork, salmon, and tuna have come under antitrust scrutiny in the last few years. What they all have in common is the structure of their markets. For example, meat packers buy cattle from a large number of cattle ranchers and sell the processed beef to a wide array of customers. In contrast to the input market and the output market, the meat packing stage is highly concentrated. Four meat packers—Tyson Foods, Inc., JBS SA, Cargill Meat Solutions, and National Beef Inc.—account for 80 percent of the business.<sup>1</sup> Much the same can be said for chicken, pork, salmon, and tuna. Additionally, the healthcare industry and power companies may also have similar market structures.<sup>2</sup>

This market structure lends itself to much mischief by the participants. Processors may collude in the input market, thereby acting collectively as would a monopsonist. Alternatively, processors may collude in the output market, thereby acting collectively as would a monopolist. Or they can do both.

In ongoing antitrust litigation involving the beef industry, cattle ranchers allege that the major meat packers are depressing the prices that they receive for their cattle.<sup>3</sup> At the same time, customers are complaining that the meat packers are raising prices for beef.<sup>4</sup> This appears to be a

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\*\* Professor, Department of Economics and Affiliate Faculty of Law, University of Florida. We have benefitted from past collaboration with our colleagues Kelsey Clemons, Christine Durrance, Jeffrey Harrison, Jessica Haynes, Richard Romano, and Wenche Wang. We also appreciate the thoughtful comments of Daniel Sokol and Richard Romano. We owe a special debt of gratitude to John Lopatka for some much needed advice on standing and for his insightful suggestions. Finally, we are grateful for all the help provided by the editors of the Law Review. We thank them all but hold them blameless for what follows. In the text of this article, we confine our analysis to geometry. The mathematics behind the figures has been placed in footnotes for those enthusiastic readers who want analytical details.

<sup>1</sup> Victoria Graham, *States Urge DOJ to Probe Meat Packers over Price Manipulation*, BLOOMBERG LAW (MAY 5, 2020), [https://www.bloomberglaw.com/document/X9ENBS64000000?udv\\_expired=true](https://www.bloomberglaw.com/document/X9ENBS64000000?udv_expired=true).

<sup>2</sup> Hospitals may collude in the output market by restricting the quantity of acute care services they provide. At the same time, they may collude in the nurse labor market. Additionally, the case of an electric utility company that has monopoly power in the local distribution of electricity and monopsony power in the purchase of electricity has been analyzed by John D. Wilson, Mike O'Boyle, & Ron Lehr, *Monopsony Behavior in the Power Generation Market*, 33 *The Electricity J.* (2020).

<sup>3</sup> *In re Cattle Antitrust Litig.*, No. 19 1222, 2020 U.S. Dist. LEXIS 177526, at \*3 (D. Minn. Sept. 28, 2020).

<sup>4</sup> Eleven U.S. Attorneys General encouraged the DOJ to investigate price fixing in the beef market. Press

classic double whammy that enriches the meat packers at the expense of both cattle ranchers and beef consumers. If the allegations are proven, the colluding meat packers may suffer a variety of sanctions.<sup>5</sup> A similar array of suits has been filed against the major chicken processors.<sup>6</sup>

In principle, the damages owed to input suppliers, who have suffered monopsonistic underpayments, and consumers, who have experienced monopolistic overcharges, can be identified quite clearly. In practice, separating the two creates an interesting econometric challenge.

In order to make the exposition more tangible, this Article couches its analysis in terms of the allegations in the beef industry. The economic analysis is far more general as it informs all similar allegations of collusion in both an input market and an output market. Part II of this Article begins by assuming that the meat packers compete with one another in the provision of beef products and in the market for cattle.<sup>7</sup> Supreme Court precedent suggests that only competitors and consumers in the relevant market have standing to sue for damages.<sup>8</sup> If the meat packers collude in the beef market, the retailers will be injured and will have standing to sue. But the cattle ranchers, who will also be injured, will not have standing to sue. If the meat processors collude in the cattle market, the cattle ranchers will be injured and will have standing to sue. Although retailers will also be injured, they will not have standing to sue since they are not a part of the relevant market. If, however, the meat processors collude in both markets, both retailers and cattle ranchers will have suffered antitrust injury and will have standing to sue for some, but not all, of the injury that they suffer.<sup>9</sup>

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Release, Iowa Dep't of Justice, Miller, *10 AGs Urge Federal Investigation of Meatpacking Practices* (MAY 5, 2020), <https://www.iowaattorneygeneral.gov/newsroom/meatpackers-antitrust-barr-justice>.

<sup>5</sup> In the tuna case, Bumble bee paid a \$25 million criminal fine. The government asked the Court to impose a \$100,000 fine on Bumble Bee's CEO and sentence him to prison for 8-10 years. *United States v. Lischewski*, No. 18-cr-00202-EMC-1, 2020 U.S. Dist. LEXIS 51893 (N.D. Cal. Mar. 24, 2020); *see also Former Bumble Bee CEO Sentenced to Prison For Fixing Prices of Canned Tuna*, U.S. DEP'T OF JUST., <https://www.justice.gov/opa/pr/former-bumble-bee-ceo-sentenced-prison-fixing-prices-canned-tuna>.

<sup>6</sup> Farmers allege that chicken processors, Tyson, Pilgrim's Pride, Perdue, Koch, Sanderson, and others colluded to depress their wages with the use of Agri Stats, which disseminated important industry information about prices, quantity, and other things among the industry. *Haff Poultry, Inc., et al. v. Tyson Foods, Inc., et al.* Case No. 17-cv-033-SPS (2017). Additionally, the chicken processors are facing private suits from buyers of processed chicken, such as grocery retailers and food distribution companies, who allege the chicken processors colluded to fix prices. *In re Broiler Chicken Antitrust Litig.*, No. 16 C 8637, 2020 U.S. Dist. LEXIS 36202 (N.D. Ill. Mar. 3, 2020).

<sup>7</sup> The hypothetical we employ, although grounded on allegations of misconduct, is not meant to capture the actual operations of meat packers or the complexities of the cattle market. Our exposition ignores many institutional details for the sake of simplicity. In an actual case, these may be extremely important, but their inclusion would make our exposition complicated without any gain in understanding of the problems that we are addressing.

<sup>8</sup> *Associated General Contractors v. California State Council of Carpenters*, 459 U.S. 519 (1983).

<sup>9</sup> Feinstein and Teng have observed that some antitrust cases involve both monopoly and monopsony issues. "If a case involves both sell-side and buy-side issues, plaintiffs and enforcers typically focus on

In the next Part, this Article focuses on Section 4 of the Clayton Act, which provides a private right of action for the victims of antitrust violations. The critical importance of antitrust injury and antitrust standing is examined in the context of the hypothetical problem being addressed. Part III of this Article introduces collusion in the beef market and identifies who has standing as well as who does not. Next, this Article analyzes the effect of further collusion in the cattle market. Once again, we identify all of those who are injured and the extent of their injuries. Part IV begins with competition in both markets, but reverses the collusive sequence. Initially, collusion is introduced in the cattle market. Subsequently, collusion is extended to the beef market. Then, this Article repeats the economic analysis of sequential collusion by identifying the victims and the extent of their antitrust injuries.

In Part V, this Article discusses the surprising result that the sequence of collusive agreements does affect the compensable damages of retailers and cattle ranchers, although it leads to the same welfare losses. In Part VI, this Article considers simultaneous, rather than sequential, conspiracies, and shows that the economic results are identical to those found earlier. That is, output price and quantity, input price and quantity, and the social welfare losses are the same as those emerging from sequential collusion. Identifying the cognizable damages, however, is elusive. In Part VII, this Article raises several procedural concerns regarding private damage suits when both monopoly and monopsony are present. This Article closes with some concluding remarks in Part VIII.

## II. PRIVATE ANTITRUST ENFORCEMENT

Violations of the antitrust laws cause public harm, which is the underlying rationale for antitrust policy. But antitrust violations can also cause private harm to their victims. In order to provide redress for these victims, Congress included a right of private action in the antitrust laws. Specifically, under Section 4 of the Clayton Act (“Section 4”), firms and individuals who have been injured by antitrust violations may have standing to sue for the injuries they have suffered. Section 4 reads:

“[A]ny person who shall be injured in his business or property by reason of anything forbidden in the antitrust laws may sue therefor... without respect to the amount in controversy, and shall recover threefold the damages by him sustained, and the cost of suit, including a reasonable

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the former, given the straightforward story they can tell about the impact on consumers.” Ignoring monopsony in such cases will lead to under deterrence and undercompensation of antitrust victims. Debbie Feinstein & Albert Teng, *Buyer Power: Is Monopsony the New Monopoly?*, 33 ANTITRUST 2 (2019).

attorney's fee.<sup>10</sup>

At first blush, this provision for private actions appears to be quite clear; but appearances are sometimes deceiving. As with many statutes, the courts have had to interpret the antitrust laws and thereby give meaning to what seems to be plain English. With respect to Section 4, the courts have put limits on who may sue for damages and have clarified the types of injuries that are cognizable under Section 4.

### A. Antitrust Standing

If the phrase “any person” were read literally, private damage actions would be unmanageable because the effects of an antitrust violation ordinarily ripple through the economy. As an example, consider the consequences of an agreement among the country's chicken processors to reduce the quantity of chicken supplied, thereby raising the price of chicken. Wholesalers, grocery stores, restaurants, and consumers of chicken would be injured as the chicken passed down the distribution chain. Additionally, the increased price of chicken reduces the demand for chicken and, therefore, injures chicken farmers, farm laborers, and suppliers of feed, packaging, and other inputs. It is plain to see that the Supreme Court had to rein in the definition of “any person” to make private damage actions manageable.

The judiciary has restricted the definition of “any person” in two important ways. First, indirect buyers of a price-fixed good or service do not have standing. Second, input suppliers do not have standing unless they are the focus of the antitrust violation. Consequently, in our chicken hypothetical, the indirect purchasers (i.e., the grocery stores, restaurants, and consumers) would not have standing to pursue damages under Section 4. Similarly, the farm laborers, chicken farmers, and suppliers of feed, packaging, and other inputs would not have standing.

The elimination of indirect buyers from “any person” can be traced to the Supreme Court's ruling in *Illinois Brick Company v. Illinois*.<sup>11</sup> Its purpose in eliminating indirect purchasers was to reduce complications in proving damages when the guilty parties do not sell directly to the would-be plaintiff.<sup>12</sup> First and foremost, the *Illinois Brick* Court wanted to ensure that antitrust violators would be punished, thus they did not allow “pass on theories” that would have complicated the legal proceedings and reduced incentives for private enforcement.<sup>13</sup> A defendant cannot claim

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<sup>10</sup> 15 U.S.C. § 15.

<sup>11</sup> *Ill. Brick Co. v. Illinois*, 431 U.S. 720 (1977).

<sup>12</sup> *Id.* at 737. Whole new dimensions of complexity would be added to treble-damages suits, undermining their effectiveness if the use of pass-on theories under Section 4 were allowed.

<sup>13</sup> *Id.* at 746. “[F]rom the deterrence standpoint, it is irrelevant to whom damages are paid, so long as

that part of his or her overcharge was passed on to downstream buyers. Nor can a plaintiff recover for overcharges that were passed on to him or her.<sup>14</sup> The so-called *Illinois Brick* rule limits “any person” to direct buyers, thereby improving the manageability of private enforcement under Section 4.<sup>15</sup>

The logic of *Illinois Brick* seems to extend to private antitrust suits involving sellers who are victims of unlawful monopsony (i.e., collusion among buyers to depress prices below the competitive level). Before *Illinois Brick*, the Supreme Court recognized the right of sellers to recover antitrust damages if they suffered at the hands of a buyer cartel.

In *Mandeville Island Farms v. American Crystal Sugar Company*,<sup>16</sup> sugar beet farmers were allowed to sue for collusive underpayments from the sugar beet refiners. To be consistent with *Illinois Brick*, only the direct sellers to the colluding buyers would have standing to sue. If, for example, the retailers of consumer electronics collude in purchasing televisions, the wholesale distributors of televisions would be the direct sellers and would have standing. The manufacturers of the televisions would be injured by the collusion, but would be indirect sellers and, therefore, would lack antitrust standing. In price-fixing cases among sellers, only direct purchasers have standing to sue.<sup>17</sup> If the conspiracy involved buyers, the underpaid suppliers would be the direct victims and, therefore, have standing to sue for damages.<sup>18</sup>

The second way in which the judiciary has limited “any person” is by generally eliminating all injured parties who are outside the affected market.<sup>19</sup> Significantly, this includes input suppliers. In our chicken hypothetical, we noted that chicken farmers, farm laborers, and suppliers of feed, packaging, and other inputs were injured by the collusion in the output market, but do not have antitrust standing, because they are neither consumers nor rival chicken processors who were foreclosed by the

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someone redresses the violation.”

<sup>14</sup> For a thorough economic analysis of *Illinois Brick*, see William M. Landes & Richard A. Posner, *Should Indirect Purchasers Have Standing to Sue Under the Antitrust Laws? An Economic Analysis of the Rule of Illinois Brick*, 46 U. CHI. L. REV. 602 (1979). For a contrasting view, see Robert G. Harris & Lawrence A. Sullivan, *Passing on the Monopoly Overcharge: A Comprehensive Policy Analysis*, 128 U. PA L. REV. 269 (1979).

<sup>15</sup> The most notable exception to *Illinois Brick* involves fixed quantity, cost-plus contracts. For an excellent analysis, see Herbert Hovenkamp, *The Indirect Purchaser Rule and Cost-Plus Sales*, 103 HARV. L. REV. 1717 (1990).

<sup>16</sup> *Mandeville Island Farms v. Am. Crystal Sugar Co.*, 334 U.S. 219 (1948).

<sup>17</sup> For an evaluation, see Roger D. Blair & Jeffrey L. Harrison, *Reexamining the Role of Illinois Brick in Modern Antitrust Standing Analysis*, 68 GEO. WASH. L. REV. 1 (1999).

<sup>18</sup> See *Mandeville Island Farms*, 334 U.S. 219.

<sup>19</sup> Hovenkamp has pointed out that the favored classes are customers and competitors in the case of monopoly. Other parties are disfavored, but on occasion, may be awarded standing. HERBERT HOVENKAMP, *FEDERAL ANTITRUST POLICY: THE LAW OF COMPETITION AND ITS PRACTICE*, ¶16.4b (4th ed. 2011).

monopolist's behavior.<sup>20</sup> In general, standing is confined to those who participate in the market affected by the antitrust violation.<sup>21</sup> There are a number of favored and disfavored classes that have been identified by the courts under Section 4. In general, the favored classes, which would be the customers and competitors of the violator, have standing, but disfavored classes can be granted standing if the courts deem there is a practical reason for doing so.<sup>22</sup> The most notable exception occurred in *Blue Shield of Virginia v. McCready*, where the Court granted standing to a plaintiff not in the relevant market, but whose injury was “inextricably intertwined” with the harm to the other victims.<sup>23</sup>

In price-fixing cases among sellers, output necessarily shrinks below the non-collusive level. Consequently, input suppliers suffer reduced sales and may be injured in an economic sense. Nonetheless, the input suppliers are denied standing since they are not a part of the affected market. In price-fixing cases among buyers, output falls with reduced employment of inputs. Customers in the output market would face higher prices and thereby be injured in an economic sense,<sup>24</sup> but the consumers would be denied standing as they are not participants in the input market(s). There are good reasons for this limitation on standing: first, the courts want to eliminate claims for damages that would be difficult to prove; second, courts want to avoid “duplicative damages” that may arise if more than one party is suing for the same violation<sup>25</sup>; and third, allowing more plaintiffs would increase the workload of the courts, which could overwhelm them with damage suits. However, as we will illustrate in Parts III through VI below, the limitation on input suppliers produces some anomalous economic results.

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<sup>20</sup> Other classes that have been excluded would be stockholders, landlords, creditors, truckers, among others. PHILIP AREEDA, HERBERT HOVENKAMP, ROGER D. BLAIR & CHRISTINE PIETTE DURRANCE, *ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION* ¶ 339 (Vol. IIA 2014).

<sup>21</sup> Judge Posner observed in *Asahi Glass Co. v. Pentech Pharms., Inc.*, 289 F. Supp. 2d 986, 990 (N.D. Ill. 2003), that “the general rule is that [input] suppliers do not have standing... to complain about a violation of the antitrust laws at the customer level.” In this case, Asahi was the main producer of the active ingredient in paroxetine, which Pentech Pharms, Inc. produced. Asahi sued Pentech because its market division scheme reduced output of paroxetine and thus reduced Asahi's sales. Asahi was denied standing because it was an input supplier. In *Associated Gen. Contractors of Cal. v. Cal. St. Council of Carpenters*, 459 U.S. 519 (1983), a union was denied standing because it “was neither a consumer nor a competitor in the market in which trade was restrained.” In *Contreras v. Grower Shipper Vegetable Ass'n of Cent. Cal.*, 484 F.2d 1346 (1973), agricultural workers (input suppliers) were denied standing, when their employers (lettuce growers) colluded in the lettuce market and consequently employed fewer workers.

<sup>22</sup> HERBERT HOVENKAMP, *FEDERAL ANTITRUST POLICY: THE LAW OF COMPETITION AND ITS PRACTICE*, ¶16.4b (4<sup>th</sup> ed. 2011).

<sup>23</sup> *Blue Shield of Va. v. McCready*, 457 U.S. 465, 476 n.12 (1982).

<sup>24</sup> Whether one defines these injuries as antitrust injuries or not seems to be a matter of semantics.

<sup>25</sup> *Supra* note 22.

In summary, antitrust standing has been limited by the courts. As we noted above, the economic effects of an antitrust violation in one market ripple through the economy and injure many parties. Granting standing to all who are injured because of these ripple effects would undermine the manageability and effectiveness of private enforcement. Thus, the phrase “any person” had to be limited to cope with this potential problem. The courts have accomplished this in two ways. First, indirect purchasers from seller cartels and, presumably, indirect sellers to buyer cartels are not allowed to sue for damages. Second, the courts have generally excluded all potential plaintiffs who did not participate in the market directly affected by the antitrust violation,<sup>26</sup> including all input suppliers.

### B. Antitrust Injury

In order to have standing under Section 4, a plaintiff must have suffered antitrust injury. However, antitrust injury is a necessary, but not sufficient condition for antitrust standing. The Supreme Court introduced the concept of *antitrust injury* in its *Brunswick* decision.<sup>27</sup> This concept is useful in defining compensable injuries as it limits private suits to those who have suffered an injury that flows from the anticompetitive consequences of an antitrust violation. The *Brunswick* Court explained “[p]laintiffs must prove *antitrust injury*, which is to say injury of the type the antitrust laws were intended to prevent and that flows from that which makes defendants’ acts unlawful. The injury should reflect the anticompetitive effect either of the violation or of anticompetitive acts made possible by the violation.”<sup>28</sup>

The antitrust injury doctrine appears to be straightforward in practice. First, one must identify the anticompetitive effects that flow from a particular violation. Then, one must infer the logical economic consequences of those anticompetitive effects. If a plaintiff has been injured in his or her business or property due to the anticompetitive effects of an antitrust violation, then he or she would have suffered antitrust injury under the *Brunswick* rule. Any injury that is not a consequence of the anticompetitive effects of an antitrust violation does not constitute an antitrust injury. Such an injury, therefore, would not be compensable under the remedial provisions of Section 4.

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<sup>26</sup> As Hovenkamp observed, some disfavored plaintiffs are occasionally granted standing if it seems appropriate to do so. Hovenkamp, *supra* note 19.

<sup>27</sup> *Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc.*, 429 U.S. 477 (1977). For an economic analysis of antitrust injury, see William H. Page, *Antitrust Damages and Economic Efficiency: An Approach to Antitrust Injury*, 47 U. CHI. L. REV. 467 (1980). In addition, see Roger D. Blair & Jeffrey L. Harrison, *Rethinking Antitrust Injury*, 42 VAND. L. REV. 1539 (1989), and Roger D. Blair & William H. Page, *The Role of Economics in Defining Antitrust Injury*, 17 MANAGERIAL & DECISION ECON. 127 (1996).

<sup>28</sup> *Brunswick Corp.*, 429 U.S. 477.

In the case of collusion among sellers, the buyers are injured by the illicit overcharges. In the case of colluding buyers, the sellers are injured due to the illicit underpayment. Antitrust injury is clear in these cases.

### C. Antitrust Damages<sup>29</sup>

Antitrust damages serve both a remedial and deterrent function. When addressing the question of how to properly measure damages, courts have focused on damages as a means of compensating antitrust victims. If a firm or a consumer has paid too much for a good or service due to an antitrust violation, the suit will be for the overcharges.<sup>30</sup> If a supplier has been underpaid as a result of monopsony power or a buying cartel, the supplier will be able to sue for that underpayment.<sup>31</sup> In either case, the measure of damages is roughly equal to the wealth transferred to the monopolist from the buyers or to the monopsonist from the sellers.

In order to deter collusion among sellers or buyers, which is unlawful *per se* under Section 1 of the Sherman Act, the law must make collusion unprofitable. If the probability of detection and conviction were equal to one, single damages would suffice. But collusion is a clandestine affair and, therefore, the probability of detection and conviction is less than one. In its trebling provision, the Clayton Act implicitly assessed the probability of detection and conviction at one third.<sup>32</sup> By trebling the damage award, the expected award will be equal to the actual damage. Presumably, this makes collusion unprofitable.

The social welfare loss associated with monopolistic pricing measures the damages suffered by those consumers who did not buy the product because they were priced out of the market. It also captures the damage suffered by those who bought some of the product at the monopoly price, but would have bought more at the competitive price. The deadweight welfare loss is the net social cost of monopoly,<sup>33</sup> but plays no role in the calculation of private antitrust damages. To the extent that the antitrust laws are supposed to improve social welfare, this focus on the wealth

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<sup>29</sup> For an examination of antitrust damages, See Areeda, *supra* note 20, at ¶¶ 390-99. See also ABA SECTION OF ANTITRUST LAW, ANTITRUST LAW DEVELOPMENTS 752 (8th ed. 2017); Daniel L. Rubinfeld, *Antitrust Damages*, in RESEARCH HANDBOOK ON THE ECONOMICS OF ANTITRUST LAW (Einer Elhauge ed., 2012).

<sup>30</sup> *Reiter v. Sonotone Corp.*, 442 U.S. 330 (1979).

<sup>31</sup> *Mandeville Island Farms v. Am. Crystal Sugar Co.*, 334 U.S. 219 (1948).

<sup>32</sup> Congress may have included a trebling provision as a means of punishing wrongdoers rather than compensating for a low risk of detection and conviction.

<sup>33</sup> In some cases, socially unproductive investments on the part of the monopolist to maintain their monopoly power would add to the net social cost of monopoly, even though it is not a part of the deadweight loss. For an analysis of this behavior, see Richard A. Posner, *The Social Cost of Monopoly and Regulation*, 83 J.L. POL. ECON. 807 (1975).

transfer may be viewed as a flaw in the law's construction. On the other hand, if anticompetitive pricing is deterred by requiring the guilty party to pay three times the overcharge (or three times the underpayment), the welfare loss will disappear as competitive pricing is maintained or restored. In *Bigelow v. RKO Radio Pictures*, the Supreme Court determined that damages would be calculated "by comparison of profits, prices and values as affected by the [antitrust violation], with what they would have been in its absence under freely competitive conditions."<sup>34</sup>

In an overcharge case, the antitrust damages ( $\Delta$ ) will be the difference between the price actually paid ( $P_a$ ) and the price that would have prevailed but for the antitrust violation ( $P_{bf}$ )<sup>35</sup> times the actual purchases ( $Q_a$ ):

$$\Delta = (P_a - P_{bf})Q_a.$$

In the case of monopsonistic underpayments, the antitrust damage ( $\Delta$ ) is the difference between the price that would have been paid but for the antitrust violation ( $w_{bf}$ ) and the price actually paid ( $w_a$ ) times the quantity actually sold ( $q_a$ ):

$$\Delta = (w_{bf} - w_a)q_a.$$

In either damage calculation, ordinary business records may be relied upon for the actual values, but the but for values must be estimated. In modern antitrust cases, sophisticated econometric methods are used to isolate the impact of the antitrust violations while controlling for the influence of other exogenous factors.<sup>36</sup>

### III. SEQUENTIAL COLLUSION I

We next consider the economic effects of sequential collusion among the meat packers in three periods. In the base period, we begin with competition among meat packers in the beef market as well as in the cattle market. This competitive benchmark provides the foundation for analyzing the effects of monopoly and monopsony, as well as subsequent welfare comparisons. In period one, we introduce collusion in the meat packer's output market, i.e., beef products. The impact on beef prices and quantity sold, and the consequences for both retailers<sup>37</sup> and cattle ranchers

<sup>34</sup> *Bigelow v. RKO Radio Pictures*, 327 U.S. 251, 264 (1946).

<sup>35</sup> All other influences on price must be taken into account in order to isolate the effect of the antitrust violation(s).

<sup>36</sup> For a brief examination of econometrics, see Areeda, *supra* note 20, at ¶394. For a more extensive treatment, see Robert E. Hall & Victoria A. Lazear, *Reference Guide on Estimation of Economic Losses in Damages*, in FED. JUD. CTR. REFERENCE MANUAL ON SCI. EVIDENCE (2000).

<sup>37</sup> We use retailers as the direct purchasers of beef products. Wholesalers, grocery stores, or restaurants may also be direct purchasers, which we ignore in this example. If wholesalers are the direct buyers, then, retailers, grocery stores, and restaurants may be indirect purchasers who would not have standing to sue due to the *Illinois Brick* rule.

are identified. We also identify the effect on social welfare. In period two, we add collusion in the cattle market. We examine the additional consequences for both retailers and cattle ranchers, as well as the impact on social welfare. We identify antitrust injury and damages in both periods one and two.

#### *A. Base Period: Competitive Benchmark*

If the meat packers compete in both the input and output markets, the price of beef will be equal to its marginal cost of production and delivery.<sup>38</sup> In the input markets, the marginal value of each head of cattle will be equal to its price, which we denote as  $w$ . In the competitive equilibrium, social welfare is maximized.<sup>39</sup>

Figure 1 shows the competitive results of the meat packers in the output market. The competitive price is found where marginal cost ( $MC_1$ ) is equal to the demand ( $D$ ).<sup>40</sup> Thus, the competitive price is  $P_1$ , and the meat packers will collectively produce  $Q_1$  units of beef. Social welfare in the output market is maximized and equal to the triangular area,  $abc$ , in Figure 1. Retailers experience consumer surplus of  $abP_1$  and the meat packers generate surplus equal to area  $P_1bc$ .<sup>41</sup>

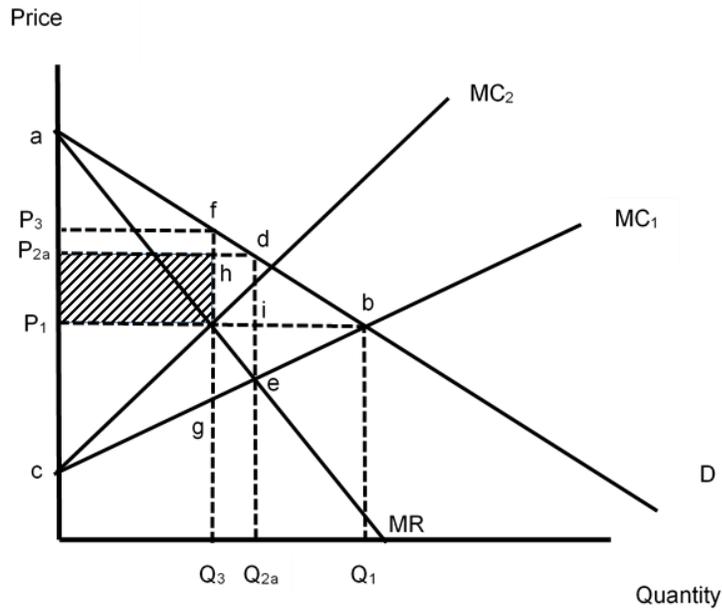
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<sup>38</sup> The profit function of a meat packers that participates in the beef market and the cattle market can be written as  $\pi = P \cdot Q(H, x_1, \dots, x_n) - w \cdot H - \sum_{i=1}^n w_i x_i$  where  $\pi$  is profit,  $p$  is the price of beef,  $Q(H, x_1, \dots, x_n)$  is the production function,  $H$  is the heads of cattle purchased, the  $x_i$  are other inputs,  $w$  is the price per head of cattle and the  $w_i$  are input prices. In order to maximize its profit, the meat packers will buy cattle up to the point where  $\partial\pi/\partial H = P \cdot (\partial Q/\partial H) - w = 0$ . The first term on the right-hand side is the value of the marginal product of the cattle, which is the derived demand for cattle. If the meat packers collude in the beef market, the cartel profit function will be  $\pi = P(Q) \cdot Q - C(Q)$  and they will operate where  $d\pi/dQ = P(Q) + Q \cdot (dP/dQ) - dC/dQ = 0$  which is the familiar condition  $MR = MC$ .

<sup>39</sup> This is the First Theorem of Welfare Economics; ANDREU MAS-COLELL, MICHAEL D. WHINSTON, & JERRY R. GREEN, *MICROECONOMIC THEORY* 549-50 (1995). This is the economic rationale for an antitrust policy that seeks to protect and promote competition in the economy. Courts often place a higher emphasis on losses in consumer welfare over losses in social welfare.

<sup>40</sup> We are considering a short-run model in which the number of firms is fixed. Additionally, we assume that this is an increasing cost industry. We assume that the price of cattle rises with increasing quantity which results in a positively sloped marginal cost curve ( $MC_1$ ).

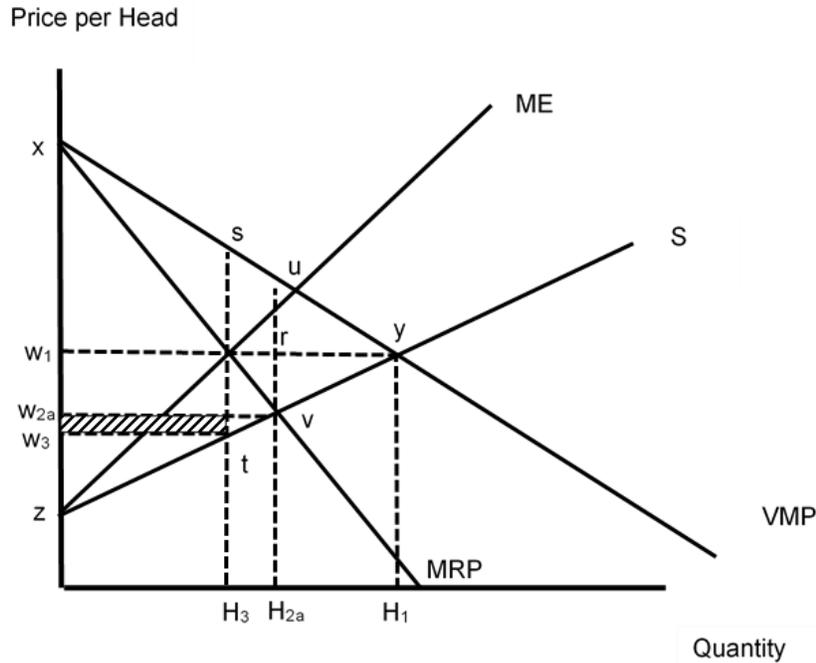
<sup>41</sup> In the short-run, this surplus is equal to the meat packers' profits and cattle rancher rents.



**Figure 1**  
**Results of Sequential Collusion I in the Output Market**

Competitive equilibrium in the cattle market is found where the derived demand for cattle (VMP) equals the supply (S). The competitive price and quantity are shown as  $w_1$  and  $H_1$ , respectively, in Figure 2.

In competitive equilibrium, the meat packers enjoy buyer surplus equal to area  $xyw_1$  in the input market, while the cattle ranchers' surplus is equal to area  $w_1yz$ . Total surplus in the input market is the sum of the buyer surplus and the cattle ranchers' surplus, which is area  $xyz$ .



**Figure 2**  
**Results of Sequential Collusion I in the Input Market**

*B. Period One: Collusion in the Output Market*

In period one, the meat packers agree to collude in the output market while continuing to compete in all of the input markets.<sup>42</sup> To maximize cartel profits, the meat packers will restrict their collective output from  $Q_1$  to  $Q_{2a}$ <sup>43</sup> where marginal revenue (MR) is equal to the marginal cost ( $MC_1$ ). This output restriction will result in a price increase from  $P_1$  to  $P_{2a}$  as shown in Figure 1. The consequences for retailer welfare and social welfare are familiar.

Retailer welfare declines from area  $abP_1$  to area  $adP_{2a}$ , while meat packer profit grows by the difference between area  $P_{2a}dec$  and area  $P_1bc$ . The welfare gain to the colluding meat packers is smaller than the loss to

<sup>42</sup> When the meat packers collude in the beef market, but compete in the cattle market, the profit function can be written as  $\pi = P(Q) * Q(H, x_1, \dots, x_n) - w * H - \sum_{i=1}^n w_i x_i$  and they buy the quantity of cattle where  $\partial\pi/\partial H = [P(Q) + Q \cdot (dP/dQ)] \cdot (\partial Q/\partial H) - w = 0$ . The first term is the marginal revenue product MRP of the cattle. This condition can be rearranged to  $MRP = w$  or  $MR = MC$ .

<sup>43</sup> The intermediate steps are different depending on the sequence of collusion. Thus, for clarification, we use 2a for the monopoly to monopsony sequence (Sequential Collusion I) and 2b for the monopsony to monopoly sequence (Sequential Collusion II).

the retailers, which creates a deadweight loss to society.<sup>44</sup> As a result, social welfare falls by area *dbe*.

Based on these figures, it is clear that the retailers have suffered antitrust injury, since their injury flows from the anticompetitive consequences of a *per se* violation of the antitrust laws.<sup>45</sup> At the competitive price of  $P_1$ , retailers purchased some  $Q_1$  units of beef. At the collusive price of  $P_{2a}$ , all retailers suffered antitrust injury because they either purchased at the collusive price of  $P_{2a}$  or were priced out of the market.<sup>46</sup> Only those retailers who continued to buy beef products at the inflated price, however, will have standing to sue for private damages since they are favored classes.<sup>47</sup> For the retailers depicted in Figure 1, the cognizable antitrust damages for period one will be equal to the total overcharges, i.e.,  $\Delta = (P_{2a} - P_1)Q_{2a}$ , which would be trebled pursuant to Section 4.

Retailers will not be able to recover damages for the beef products they did not buy due to high prices because of practical problems of proof. First, it would be difficult for an individual retailer to prove that it would have purchased more beef products if the prices had been lower. Second, even if the retailer could argue persuasively that it would have purchased beef products at lower prices, the problem of estimating the difference between its willingness to pay and the competitive price still exists. The injury suffered by those priced out of the market is equal to the difference between the demand curve and the competitive price between points *d* and *b*, i.e., *dbi*. As shown in Figure 1, the injury of each retailer who was priced out of the market depends on the retailer's location on the demand curve. No retailer will be able to prove where it is on that segment of the demand curve.

In order to make the higher price stick, the meat packers will reduce output from  $Q_1$  to  $Q_{2a}$ . As a result of the decline in demand for beef, fewer cattle will be processed. Consequently, the heads of cattle purchased will decline as a result of collusion in the output market.<sup>48</sup> This is shown in

<sup>44</sup> This loss flows from the collusive misallocation of resources: too few beef products are produced since their marginal value exceeds their marginal cost at the collusive output.

<sup>45</sup> When a business practice is invariably anticompetitive, it is deemed to be *per se* unlawful. Price fixing is the quintessential *per se* violation of the Sherman Act. *See United States v. Socony-Vacuum Oil Co.*, 310 U.S. 150 (1940).

<sup>46</sup> Those who were priced out of the market experienced welfare losses due to a *per se* violation of the Sherman Act. We contend that they have suffered antitrust injury and are denied standing on other grounds.

<sup>47</sup> Hovenkamp, *supra* note 19, at ¶16.4b.

<sup>48</sup> When an output market is monopolized, the quantity is reduced below the competitive level. As a result, fewer inputs are employed, which suggests that input suppliers may be injured. Partial equilibrium analysis usually assumes away this concern. When input markets are perfectly competitive, inputs that are released due to monopolistic restrictions in the output market are absorbed by other employers. In the present paper, we deviate from this assumption.

Figure 2. The derived demand for cattle is no longer VMP following collusion in the output market. Instead, the derived demand for cattle is the marginal revenue product curve, which is labeled MRP. MRP is equal to the increase in output that a small increase in cattle purchased makes possible multiplied by the increase in total revenue generated by that increase in output.<sup>49</sup> Setting MRP and S equal reveals that the profit maximizing quantity falls from  $H_1$  to  $H_{2a}$  and the price falls from  $w_1$  to  $w_{2a}$ . The surplus earned by the cattle ranchers falls from  $w_1yz$  to  $w_{2a}vz$ . Since the loss of income was caused by an antitrust violation, one may argue that this is an antitrust injury. Unfortunately for the cattle ranchers, however, antitrust injury is a necessary, but not sufficient condition for standing. Ordinarily, standing is reserved for competitors and/or consumers in the market in which the antitrust violation occurred. As a result, the cheated cattle ranchers are out of luck.

### *C. Period Two: Collusion in the Input Market*

Not satisfied with the illicit profits generated by collusion in the output market, the meat packers decide to collude in the cattle market as well. Collusion in the cattle market leads the meat packers to buy heads of cattle up to the point where the marginal value of the cattle (MRP) is just equal to the marginal increase in total expenditures on cattle (ME). Assuming that the supply of cattle is positively sloped,<sup>50,51</sup> the increase in the total expenditure on cattle purchased, which is termed the marginal expenditure (ME), is equal to the price paid for an additional head plus the increase in prices paid for the original complement of cattle.

For example, suppose that the positively sloped supply of cattle is:

$$w = 100 + 2H$$

Where  $w$  is the wage and  $H$  is the heads of cattle purchased. At  $H=50$ , the price will be \$200.00 per head and the total expenditure on cattle,

<sup>49</sup> Total revenue is price times quantity which is a function of the inputs employed:  $TR = P(Q) * Q(H_1, x_1, \dots, x_n)$ . The marginal revenue product of the cattle is the change in total revenue due to the increase in output made possible by increased quantity of cattle purchased.  $MRP = \partial TR / \partial H = [P(Q) + Q(dP/dQ)] \cdot (dQ/dH)$ , i.e.,  $MRP = MR \cdot MP$ .

<sup>50</sup> The cattle supply will be positively sloped when the reservation wage, which measures the willingness of cattle ranchers to sell cattle at that price, varies across individuals. When supply is positively sloped, the wage is a function of the heads of cattle sold,  $w = w(H)$ . Total expenditure on cattle is  $w(H)H$ . The marginal expenditure on cattle when purchases expand by a small amount is  $dw(H) \cdot H/dH = w(H) + H(dw/dH)$ .

<sup>51</sup> If the supply of cattle were perfectly elastic, collusion in the beef market would reduce the quantity of cattle purchased, but not the price paid. The cattle ranchers who continue to sell their cattle suffer no injury. Arguably, those cattle ranchers who do not sell the competitive level of cattle are not injured because their reservation price is precisely equal to the market price. In other words, they are indifferent between selling a cow at the market price and not raising the cow. In a broader context, Jonathan Jacobson & Gary Dorman, *Joint Purchasing, Monopsony and Antitrust*, 36 ANTITRUST BULL. 1 (1991), made this point.

which is  $w \cdot H$ , will be \$10,000.00. If the meat packer expands its quantity purchased to 51 heads of cattle, the price will rise to:

$$w = 100 + 2(51) = \$202.00.$$

The total expenditure on 51 heads of cattle is  $(\$202.00)(51) = \$10,302.00$ . The marginal expenditure, therefore, is not the new price of \$202.00, but \$302.00, because it also includes the cost of increasing the price for the rest of the cattle.

The profit-maximizing employment level is found where MRP is equal to ME of cattle. The price that corresponds to this quantity level is found on the supply curve as shown in Figure 2. The derived demand for cattle is MRP due to collusion in the output market. Once the cartel extends its collusive efforts to the cattle market, the cartel will maximize its profits by purchasing  $H_3$  heads of cattle where the marginal expenditure, ME, equals the marginal revenue product (MRP). The resulting price will be  $w_3$ .

In period two, the cattle ranchers have suffered antitrust injury due to the fall in price and quantity of their cattle purchased. They also have antitrust standing since they are suppliers in the affected market. Under Section 4, the cattle ranchers who sold cattle at anticompetitive prices will be able to sue for antitrust damages. Specifically, the damages ( $\Delta$ ) would be:

$$\Delta = (w_{2a} - w_3)L_3,$$

which would be trebled by the court.

In the cattle market, welfare declines from area  $xuvz$ , which results from collusion in the output market, to area  $xstz$ , when both collusion in the input and output markets exist. The surplus enjoyed by the cattle ranchers falls from the triangular area  $w_{2a}vz$  to area  $w_3tz$ . The cattle ranchers have clearly suffered antitrust injury as shown by their loss of surplus that resulted from a *per se* violation of the Sherman Act and their antitrust damages are equal to the underpayment of the cattle that have been sold at anticompetitive prices.

For meat packers without any monopsony power, the profit-maximizing quantity of cattle purchased is found where the marginal revenue product of the cattle is equal to their price. Since the MRP is marginal revenue (MR) times the cattle marginal product (MP), it can be written as  $MR \cdot MP = w$  and rearranged as  $MR = w/MP$ . The right-hand side of the equation is the meat packers' marginal cost, i.e., the added expenditure on cattle necessary to expand output by a small amount. This is shown in Figure 1 as  $MC_1$ .

When the meat packers collude in the cattle market, the profit-maximizing quantity is found where the marginal revenue product is equal to the marginal expenditure:  $MRP = MR \cdot MP = w + H(dw/dH)$ , which can be rearranged to  $MR = (w + H(dw/dH))/MP$ . Again, the

right-hand side of the equation is the marginal cost, but now in the presence of monopsony power. It is obvious that  $MC_2 > MC_1$  for all output levels since  $w + H(dw/dH) \geq w$  for all output levels. This marginal cost is shown as  $MC_2$  in Figure 1.

In Figure 1, we have added the marginal cost curve ( $MC_2$ ) that reflects the presence of monopsony power. The new profit-maximizing output falls to  $Q_3$ , which causes the price to rise to  $P_3$ . Interestingly, the cognizable damages suffered by the retailers now falls from  $(P_{2a} - P_1)Q_{2a}$  to  $(P_{2a} - P_1)Q_3$  because the rise in price from  $P_{2a}$  to  $P_3$  is an incidental byproduct of the collusion in the cattle market. The difference in cognizable damages, i.e.,  $(P_{2a} - P_1)(Q_{2a} - Q_3)$  becomes deadweight loss which is not cognizable. The retailers are neither consumers nor competitors in that market and thus are not one of the favored classes.

#### D. Summary

When the meat packers colluded in the beef market, they imposed welfare losses on both retailers and cattle ranchers. Given the limitations on antitrust standing, only the retailers were eligible to recover the overcharge damages. During period one, the cognizable antitrust damages were equal to the sum of the overcharges across all cartel members:  $\Delta = (P_{2a} - P_1)Q_{2a}$ . Since cattle ranchers are not in the relevant market, they do not have standing to sue for the damages they sustained.<sup>52</sup> The collusion also shifts their but for price from  $w_1$  to  $w_{2a}$ .

In period two, the cartel has added to its profits by colluding in the cattle market. Now, the cattle ranchers have standing to sue for the underpayment, which would seem to be the difference between  $w_{2a}$  and  $w_3$  rather than  $w_1$  and  $w_3$ . In general, the damages would be  $\Delta = (w_{bf} - w_a)H_a$  where  $w_{bf}$  is the but for wage,  $w_a$  is the actual wage, and  $H_a$  is the actual heads of cattle sold. Additionally, the price rose to  $P_3$  due to collusion in the cattle market. The retailers would not appear to have standing to sue for this further price increase. It should be noted that their damages shrink from  $\Delta = (P_{2a} - P_1)Q_{2a}$  to  $\Delta = (P_{2a} - P_1)Q_3$ .

With competition, retailer surplus was the triangular area  $abP_1$ . In period one, the retailer surplus was reduced to the area  $adP_{2a}$  due to collusion in the output market. In period two, retailer surplus fell even further to the triangular area  $afP_3$  due to collusion in the cattle market. As for the cattle ranchers, their surplus was area  $w_1yz$  when competition prevailed. During period one, the cattle ranchers suffered a reduction in their surplus to  $w_2vz$  due to collusion in the output market. In period two,

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<sup>52</sup> If cattle ranchers bought beef products, they could sue for those damages. However, they would not be able to sue for the damages due to depressed prices of cattle.

the cattle ranchers experienced a further reduction to area  $w_3tz$  due to collusion in the cattle market.

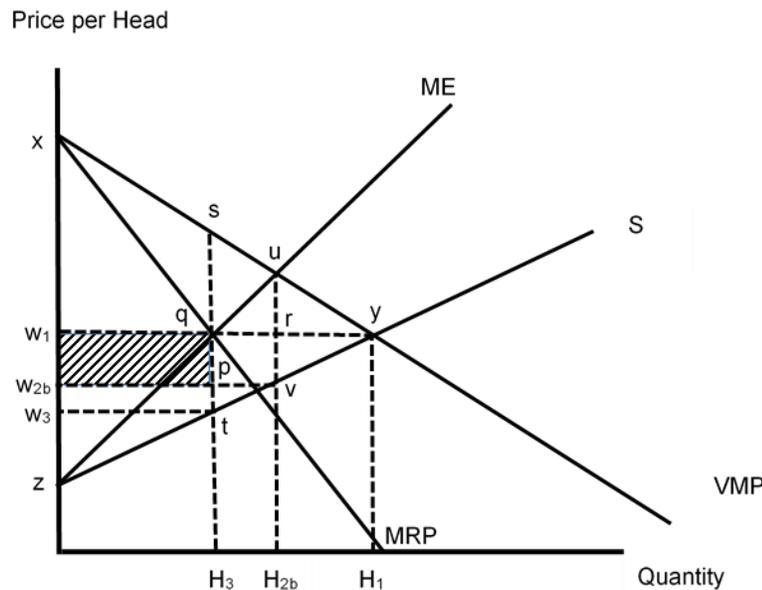
The total injury to retailers over the two periods of collusion is  $\Delta = (P_3 - P_1)Q_3$ . Not all of their damages are compensable, however, since some of these damages were realized during collusion in the input market. Retailers would only have standing to sue for  $\Delta = (P_{2a} - P_1)Q_3$ . Cattle ranchers face a similar reduction in compensable damages. Their damages are  $\Delta = (w_1 - w_3)H_3$ , but they do not have standing to sue for the entire amount of damages. Thus, their compensable damages are reduced to  $\Delta = (w_{2a} - w_3)H_3$ .

Meanwhile, meat packers retain ill-gotten gains of  $(P_3 - P_{2a})Q_3$  from retailers and  $(w_1 - w_{2a})H_3$  from the cattle ranchers because of the antitrust rule that standing is confined to those who participate in the affected market. This appears to have perverse results and may increase incentives to collude.

#### IV. SEQUENTIAL COLLUSION II

In this Part, we begin again with competition in both the cattle market and the beef market. This time, however, the collusive sequence is reversed. In period one, we introduce collusion in the cattle market and analyze its effects on cattle prices, heads of cattle, beef prices and output, and social welfare. Subsequently in period two, the meat packers will collude in the beef market. Again, we analyze the effects on output, price, quantity of cattle, and social welfare.

Competition in the cattle market results in  $H_1$  heads of cattle sold at a price of  $w_1$  as shown in Figure 3. This outcome results from the equality of VMP, which is the meat packer demand for heads of cattle, and  $S$ , which is the supply of cattle. The values of  $H_1$  and  $w_1$  are the same as those in Figure 2. Similarly, competition in the output market leads to the quantity,  $Q_1$ , being produced at a price of  $P_1$  as shown in Figure 4.



**Figure 3**  
**Results of Sequential Collusion II in the Input Market**

*A. Period one: Collusion in the Input Market*

The meat packers agree to collude in the cattle market.<sup>53</sup> In order to maximize profits, they will buy cattle up to where their marginal expenditure (ME) is equal to the meat packers’ derived demand (VMP).<sup>54</sup> Thus, as Figure 3 shows, the quantity of cattle bought is reduced from  $H_1$  to  $H_{2b}$ , where ME equals VMP. The wages are determined by the positively sloped supply curve, which represents the cattle ranchers’ reservation prices of selling cattle. Since fewer heads of cattle are being bought, the prices will be reduced from  $w_1$  to  $w_{2b}$ .

The collusive reduction in the heads of cattle bought has two effects. First, it creates a deadweight welfare loss due to a misallocation of resources. Second, it redistributes surplus from the cattle ranchers to the colluding meat packers. This reduction in the heads of cattle bought

<sup>53</sup> If the meat packers compete in the beef market, but collude in the cattle market, the cartel profit function is  $\pi = P \cdot Q(H_1, x_1, \dots, x_n) - w(H) \cdot H - \sum_{i=1}^n w_i x_i$  and heads of cattle will be purchased until  $\partial\pi/\partial H = P \cdot (\partial Q/\partial H) - [w + H \cdot (dw/dH)] = 0$ . The first term of the second equation is the value of the marginal product, VMP, and the second term is the marginal expenditure, ME. Thus, profit maximization results in  $VMP = ME$ .

<sup>54</sup> The VMP curve is derived from the retailer demand for beef.

creates allocative inefficiency because the value of the marginal product, i.e., the dollar value of the increased output produced by a small increase in employment is greater than the cost of producing that output over the  $H_1 - H_{2b}$  interval. Hence, social welfare decreases because the benefit to society that does not materialize due to the reduced beef products that should have been created exceeds the cost of producing it. This decrease in social welfare is represented by the triangular area,  $uyv$ .

Second, some of the remaining welfare is reallocated from the cattle ranchers to the meat packers in the form of lower prices for cattle. Both the loss and reallocation cause cattle rancher welfare to fall from the area,  $w_1yz$ , to the area,  $w_{2b}vz$ . The cartel, however, has an increase in surplus of the difference between  $xuvw_{2b}$  and  $xyw_1$ . They will lose some surplus due to the deadweight loss, which for them represents the loss in output and consequently, revenue, because they are processing fewer cattle. The increase in surplus, however, represented by  $w_1rvw_{2b}$ , more than offsets the loss.<sup>55</sup> The buyer cartel, therefore, has an incentive to collude, since its surplus, and therefore, its members' profits, will increase.

Those cattle ranchers who sold cattle at the depressed prices would have standing to sue for their injury since it stems from a *per se* violation of the antitrust laws.<sup>56</sup> The damages they could claim would be the rectangular area,  $w_1rvw_{2b}$ , which is equal to the reallocation of cattle rancher surplus to meat packers in the form of depressed prices. Although the cattle ranchers have different reservation prices, they will all be compensated with the same price per cattle.<sup>57</sup> Thus, a decrease in the equilibrium price per head will cause a decrease in revenue for all cattle ranchers.

Cattle ranchers will only have standing to sue for damages under Section 4 for those cattle that they have sold at the depressed prices. The extent of their injury is the difference between the competitive price and the collusive price. Thus, the damages will be equal to  $\Delta = (w_1 - w_{2b})H_{2b}$ . The cattle that were not sold due to depressed prices also represent antitrust injury to the cattle ranchers. The cattle ranchers, however, will not have standing to sue for this injury for practical reasons. Most of the cattle ranchers will be unable to prove the fact of their injury, nor would they be able to prove the magnitude of their injury. Thus, cattle ranchers only have standing to sue for the rectangular area  $\Delta = (w_1 - w_{2b})H_{2b}$ .

At this point, the collusion is confined to the cattle market, so only

<sup>55</sup> If this loss was not offset, the meat packers would have no incentive to collude.

<sup>56</sup> This is consistent with the Supreme Court's holdings in *Mandeville Island Farms v. Am. Crystal Sugar Co.*, 334 U.S. 219 (1948), and *Brunswick Co. v. Pueblo Bowl-O-Mat*, 429 U.S. 477 (1977).

<sup>57</sup> For clarity of exposition, we ignore the fact that heads of cattle are sold at auction for a wide range of prices.

cattle ranchers would have standing. There is a substantial array of complementary inputs whose employment would be adversely affected. Some of these input suppliers include owners of breeding cows, ranch hands, and suppliers of feed, packaging, and other inputs, among others. Even though those input suppliers may be injured, they do not participate in the cattle market and, therefore, do not ordinarily have antitrust standing under Section 4.

Monopsonistic behavior in the cattle market also negatively impacts the market for beef products, i.e., the output market. Since fewer heads of cattle are being bought, meat packers process less beef. This reduction will lead to an increase in the price of beef products. Figure 4 illustrates this result. Collusive monopsony in the cattle market causes the marginal cost to rotate from  $MC_1$  to  $MC_2$ .<sup>58</sup> The demand for beef products,  $D$ , and  $MC_2$  are equal at an output of  $Q_{2b}$  and a price of  $P_{2b}$ .<sup>59</sup>

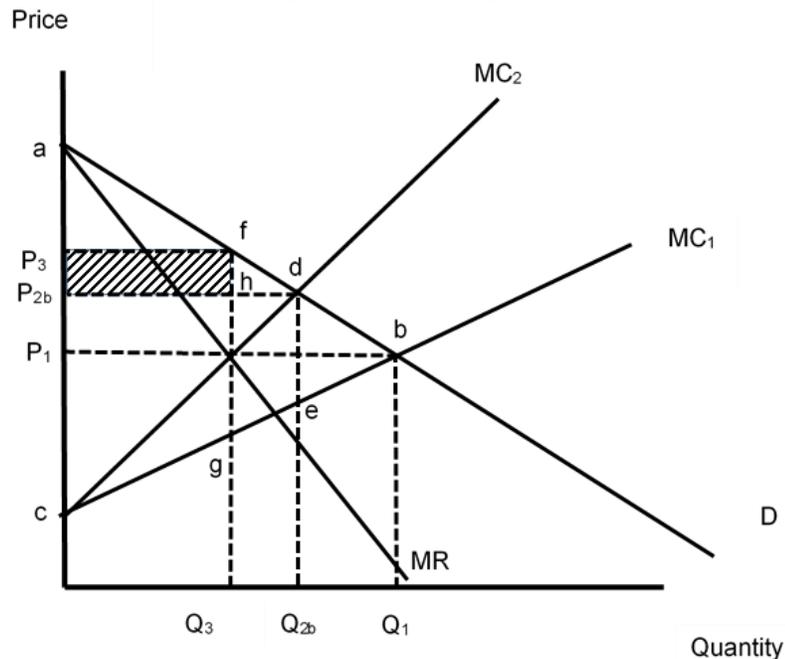


Figure 4

Results of Sequential Collusion II in the Output Market

<sup>58</sup> See Part III for an explanation of the reason behind this rotation.

<sup>59</sup> Readers will recall that  $VMP = P \cdot MP$ . Thus, when the price changes to  $P_{2b}$ , the VMP curve will shift to the right since  $P_{2b}$  is greater than  $P_1$ . This sparks a feedback loop which causes the demand for cattle to rise increasing the price and quantity bought. Then the increase in quantity will cause prices to fall in the output market which causes a leftward shift in the VMP curve. The final equilibrium leads to a reduction

For the retailers, the results of collusion in the cattle market are an increase in price from  $P_1$  to  $P_{2b}$  and a decrease in beef products offered from  $Q_1$  to  $Q_{2b}$ . For the units of beef that they bought, those retailers are overcharged by  $P_{2b} - P_1$  per unit. Since these overcharges are due to collusion in the cattle market rather than the beef market, the retailers will not have standing to sue for their injuries. These losses will be deemed coincidental. Since the retailers are neither foreclosed employers nor underpaid input suppliers, they lack standing.

Similar to the input market, the effects of monopsony in the output market create a deadweight loss. This deadweight loss, represented by  $dbe$  in Figure 4, is equivalent to the deadweight loss in the input market and should not be double counted.<sup>60</sup> In both sequences, the deadweight loss represents the loss to society of a decrease in output since the marginal social benefit is greater than the marginal social cost at each of the points between  $Q_1$  and  $Q_{2b}$ . Retailer surplus falls from  $abP_1$  to  $adP_{2b}$ . This loss in retailer surplus captures both the retailers who were priced out of the market, (i.e., those who could not afford to pay for beef products or bought less beef products) which is part of the deadweight loss, and those retailers who had to pay a higher price for beef products, which is equivalent to the increase in meat packer surplus. These losses are not compensable under Section 4, however, because the retailers are neither competitors nor suppliers in the cattle market.

### *B. Period two: Collusion in the Output Market*

Subsequently, suppose the meat packers in the area decide to collude in the output market (i.e., the market for beef products). In order to maximize the meat packer cartel's profit, the production of beef products will be reduced to the point where marginal revenue,  $MR$ , equals the marginal cost, which is  $MC_2$  after period one. As shown in Figure 4, this results in an output of  $Q_3$ , which is the same as the final output in Figure 1. The price that corresponds to  $Q_3$  is  $P_3$ , which is also the same as  $P_3$  in Figure 1.

In Figure 4, the social welfare loss increases from the triangular area  $dbe$  in the competitive equilibrium to  $fbg$  following the reduction in output from  $Q_1$  to  $Q_3$ . The price of beef products rises, and retailers purchase less of them. This leads to a decrease in retailer welfare. In contrast, producer surplus increases because the meat packers are

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in the price and quantity of cattle.

<sup>60</sup> In other words, the area,  $uyv$  in Figure 3 is equal to area,  $dbe$  in Figure 4. For a brief explanation, see Roger D. Blair & Richard E. Romano, *Collusive Monopsony in Theory and Practice: The NCAA*, 42 ANTITRUST BULL., 681 (1997).

overcharging retailers which increases their margins. Their increase in surplus is equal to  $\Delta = (P_3 - P_{2b})Q_3$  which is equivalent to the injuries to retailers due to higher prices.<sup>61</sup>

The retailers will now have standing to sue for the damages caused by collusion in the beef market. In period one, the collusion in the cattle market caused the price to rise to  $P_{2b}$  from  $P_1$ . For purposes of damages calculations,  $P_{2b}$  is the but for price. As a result, the cognizable antitrust damages are  $\Delta = (P_3 - P_{2b})Q_3$ . The retailers are overcharged by the difference between  $P_3$  and  $P_1$ ; but the part of that that is due to monopsony in the cattle market,  $P_{2b} - P_1$ , is not cognizable.

The monopolistic behavior also has a negative impact on the cattle market. When the meat packers were colluding only in the cattle market, they bought heads of cattle where the marginal expenditure (ME) was equal to the derived demand curve (VMP).<sup>62</sup> Once the meat packers began colluding in the beef market, however, the derived demand changed to the marginal revenue product (MRP). Consequently, the meat packers maximized their profits by buying the quantity of cattle where ME equals the MRP curve (Figure 3). Thus, heads of cattle purchased drop to  $H_3$ . This reduction leads to a further reduction in the price per head from  $w_{2b}$  to  $w_3$  (Figure 3). The loss in social welfare is the mirror image of the loss in the output market and should not be double counted. Additionally, cattle rancher surplus is reduced due to the lower prices resulting from the subsequent reduction in quantity purchased due to monopoly power.

The cattle ranchers whose margins were further depressed would not have standing to sue for their enhanced injury. In fact, the compensable damages fall from  $(w_1 - w_{2b})H_{2b}$  to  $(w_1 - w_{2b})H_3$  even though the loss in cattle rancher surplus has grown. The part of the damages that is due to collusion in the beef market is not cognizable because the cattle ranchers are neither rival suppliers nor consumers of beef. Notice that these damages exclude  $(w_1 - w_{2b})(H_{2b} - H_3)$ , which the cattle ranchers would have claimed had there been only monopsony. Further collusion, therefore, leads to a reduction in compensable damages and creates greater incentives for firms to collude in both markets.

### C. Summary

In summary, collusion among meat packers in the cattle market and then in the beef market leads to a reduction in price per head, heads of cattle bought, and quantity of beef produced and an increase in price for retailers. In period one, collusion in the input market reduces the price and

<sup>61</sup> The meat packers will lose hdeg when they collude, since this area becomes part of the deadweight loss.

<sup>62</sup> See *supra* note 57 for a discussion on the feedback loop caused by the change in price from  $P_{2b}$  to  $P_3$ .

quantity of heads of cattle to  $w_{2b}$  and  $H_{2b}$ , respectively. Since they are directly injured by the illegal conduct, they can claim  $\Delta = (w_1 - w_{2b})H_{2b}$ . Retailers are also injured by this conduct but do not have standing to sue because they are not participants in the relevant market. This changes their but for price from  $P_1$  to  $P_{2b}$ . Social welfare in the output market also decreases in this period from  $xyz$  to  $xuvz$ , leading to a deadweight loss of  $uyv$ . The same social welfare loss is also depicted in Figure 4 in the output market.

In period two, the meat packers collude in the output market by decreasing the quantity of beef products to  $Q_3$ . This increases the price to retailers to  $P_3$ . Retailers can sue for  $\Delta = (P_3 - P_{2b})Q_3$ , since  $P_{2b}$  is the but for price. Cattle ranchers are also injured since the reduction in quantity necessitates a reduction in heads of cattle bought to  $H_3$ . They, however, do not have standing to sue for this injury, which is  $(w_{2b} - w_3)H_3$ . Welfare further declines to  $ustz$  in Figure 3 increasing the net social cost of collusion to  $syt$ . This calculation does not include the resources wasted in organizing and monitoring the cartel operations. Similar welfare losses are depicted in Figure 4.

Even though cattle ranchers and retailers have suffered welfare losses of  $\Delta = (w_1 - w_3)H_3$  and  $\Delta = (P_3 - P_1)Q_3$ , respectively, the losses are not fully compensable. Those losses that are not cognizable, i.e.,  $(P_{2b} - P_1)Q_3$  and  $(w_{2b} - w_3)H_3$ , become ill-gotten gains for the meat packers. By colluding in both markets, the meat packers can retain some of their ill-gotten gains which in turn reduces the deterrent effect of the antitrust laws.

#### V. DOES THE COLLUSIVE SEQUENCE MATTER?

As our analysis in Parts III and IV shows, the collusive sequence does not matter for the final price and quantity of beef products provided to the retailers or for the final price per head and quantity of cattle bought. In both sequences, the meat packers will produce  $Q_3$  units of beef products at a price  $P_3$  and will buy  $H_3$  heads of cattle at a price of  $w_3$ . Consequently, the sequence does not matter for the magnitude of the social welfare loss. Figures 1 and 4 show that the reduction in retailer surplus is the difference between areas  $abP_1$  and  $afP_3$ . Figures 2 and 3 reveal that the reduction in the cattle rancher surplus is the difference between areas  $w_1yz$  and  $w_3tz$ . In the end, both collusive sequences lead to the same injury. These losses are  $\Delta = (P_3 - P_1)Q_3$  in the output market and  $\Delta = (w_1 - w_3)H_3$  in the input market. Although it seems unjust, neither the retailers nor the cattle ranchers have standing to sue for the full amount of their losses, because they are not always the injured party in the relevant market.

When it comes to the measure of the magnitude of their damages,

however, the sequence does indeed matter. Cognizable antitrust damages for the retailers and the cattle ranchers differ between sequences. This difference arises because the but for price and the but for wage change depending on the sequence under consideration. In other words, the values of  $P_{2a}$  and  $P_{2b}$  as well as the values of  $w_{2a}$  and  $w_{2b}$  are different. Only in the most fortuitous of circumstances would  $P_{2a}$  equal  $P_{2b}$  and  $w_{2a}$  equal  $w_{2b}$ .<sup>63</sup>

This result seems anomalous, but it is due to standing rules. In sequence 1, the but for price for the retailers is  $P_1$ , the competitive price, and is determined by the equality of the demand and  $MC_1$  curves (Figure 1). In sequence 2, however, the initial introduction of monopsony changes the relevant curves in the output market so that the but for price,  $P_{2b}$ , is determined by the equality of the demand curve and the new  $MC_2$  curve. Since  $MC_2$  is always above  $MC_1$ , this necessarily results in a reduction in quantity and, hence, an increase in price such that  $P_{2b} > P_1$ . The difference in but for prices leads to cognizable damages for the retailers of  $(P_{2a} - P_1)Q_3$  under sequence 1, but  $(P_3 - P_{2b})Q_3$  under sequence 2.

A similar consideration holds for the cattle ranchers. In sequence 2, the but for price per head,  $w_1$ , is determined by the competitive price, i.e., where the VMP and supply curves meet (Figure 3). Sequence 1, however, shows that collusion in the output market changes the relevant curves that the monopsonist uses to determine the profit-maximizing reduction in heads of cattle bought. For this sequence, the but for wage,  $w_{2a}$ , is determined by the equality of the MRP, which is derived from the marginal revenue curve in Figure 1 and the supply curve. Since MRP is always below the VMP curve,  $w_{2a}$  will always be less than  $w_1$ . Accordingly, the cognizable damages are equal to  $(w_1 - w_{2b})H_3$  in sequence 2, but  $(w_{2a} - w_3)H_3$  in sequence 1.

In either sequence, the colluding meat packers will retain some of their ill-gotten gains. Precisely how much will depend on the specific supply and demand conditions in the beef and cattle markets. As if this is not confusing enough, the situation is worse if the meat packers collude in both markets simultaneously, as is shown in the next Part.

The analysis of sequential collusion reveals some disturbing results. After period two, we have collusion among the meat packers in two markets – the market for beef products and the market for heads of cattle. In both sequences, the price that retailers pay rises from  $P_1$  to  $P_3$  and the quantity of beef that they consume falls from  $Q_1$  to  $Q_3$ . In sequence 1,

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<sup>63</sup> If these values were the same, the  $MC_2$  curve in Figures 1 and 4 would have to cross the demand curve at the same quantity level as the point where  $MC_1$  and MR cross. This same logic also applies to the input market represented in Figures 2 and 3.  $w_{2a}$  and  $w_{2b}$  will only be the same if the heads of cattle bought where ME meets the VMP curve ( $H_{2b}$ ) is the same as the heads of cattle bought where S meets the MRP curve ( $H_{2a}$ ). These equalities are not likely.

only part of the price increase is due to collusion in the beef market,  $P_{2a} - P_1$  (Figure 1) and, therefore, the retailer's compensable damages would be limited to  $(P_{2a} - P_1)Q_3$ . The injury caused by collusion in the cattle market, which is equal to  $(P_3 - P_{2a})Q_3$ , is retained by the meat packers as ill-gotten gains since the retailers do not have standing to sue. Similarly in sequence 2, only part of the price increase is due to collusion in the beef market,  $P_3 - P_{2b}$  (Figure 4), and, therefore, the retailer's compensable damages would be limited to  $(P_3 - P_{2b})Q_3$ . The injury caused by collusion in the cattle market, which is equal to  $(P_{2b} - P_1)Q_3$ , is retained by the meat packers as ill-gotten gains since the retailers do not have standing to sue. Those retailers on the demand curve between  $Q_1 - Q_3$ , who were priced out of the market or bought less beef are out of luck.

In both sequences, we see that prices per head fell from  $w_1$  to  $w_3$  and heads of cattle bought fell from  $H_1$  to  $H_3$ . In sequence 1, depicted in Figure 2, if their suit is successful, the cattle ranchers will recover  $(w_{2a} - w_3)H_3$  in damages. The reduction in price per head from  $w_1$  to  $w_{2a}$  is attributable to collusion in the beef market and, therefore, is not compensable. As a result, the meat packers will be able to retain  $(w_1 - w_{2a})H_3$  as ill-gotten gains. Similarly, Figure 3 shows that for sequence 2, cattle ranchers will recover  $(w_1 - w_{2b})H_3$ , if their suit is successful. The reduction in price per head from  $w_{2b}$  to  $w_3$  is attributable to collusion in the beef market and, therefore, is not compensable. As a result, the meat packers will be able to retain  $(w_{2b} - w_3)H_3$  as ill-gotten gains. The cattle ranchers who did not sell the cattle between  $H_1 - H_3$  due to the depressed prices are out of luck since they do not have standing.

## VI. SIMULTANEOUS COLLUSION

So far, we have analyzed sequential collusion among meat packers in the beef market and the cattle market. We have also seen that the cognizable damages are not the same from one sequence to the other. This raises another question: what happens if collusion is simultaneous in the two markets? The brief answer is that the equilibrium price and quantity in the beef market and price per head and cattle bought are the same as those resulting from sequential collusion. The retailers' cognizable damages and those of the cattle ranchers, however, will be complicated to isolate.

Suppose that the meat packers in the local market form a cartel that fixes prices in the beef market and price per head in the cattle market. The cartel will restrict output and buy fewer heads of cattle in order to

maximize cartel profits.<sup>64</sup>

Prior to the cartel formation, the meat packers operated where the demand for beef ( $D$ ) was equal to supply ( $MC_1$ ). As shown in Figure 5, the competitive price was  $P_1$  and the corresponding quantity was  $Q_1$ . In order to maximize cartel profits, the meat packers will produce where the marginal revenue ( $MR$ ) equals the marginal cost ( $MC_2$ ), which is the supply of cattle that has been affected by the exercise of monopsony power. The cartel solution is  $P_3$  and  $Q_3$ . The monopoly overcharge appears to be  $P_3 - P_1$ . The retailers appear to be entitled to recover antitrust damages of  $(P_3 - P_1)Q_3$ . Arguably, however, this sum overstates their cognizable damages because part of this is due to output restrictions induced by collusion in the cattle market, for which they would not have standing.

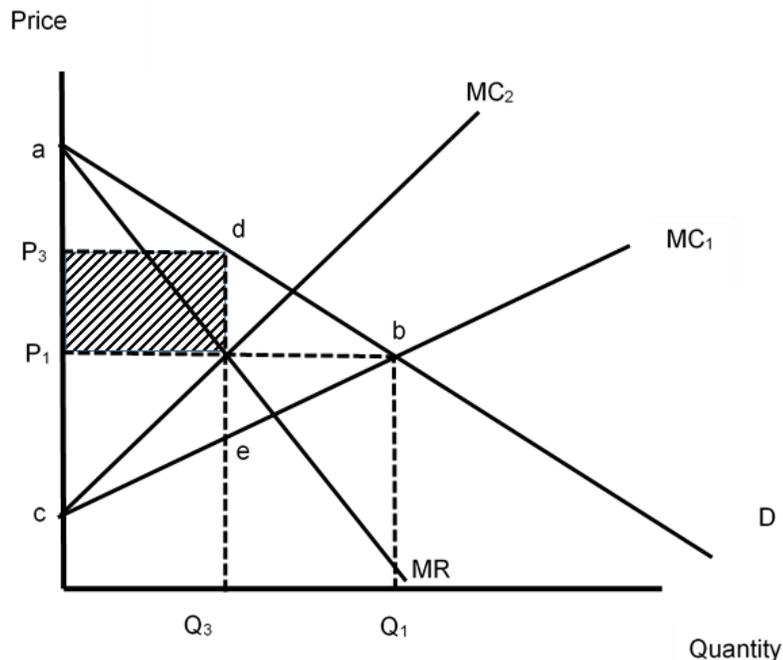


Figure 5

Results of Simultaneous Collusion in the Output Market

<sup>64</sup> With collusion in both the beef market and the cattle market, the cartel's profit function will be  $\pi = P(Q) \cdot Q(H, x_1 \dots x_n) - w(H) \cdot H - \sum_{i=1}^n w_i x_i$ . Collusion in the beef market is captured in the revenue term,  $P(Q) \cdot Q$ , while collusion in the cattle market is captured in the expenditure term,  $w(H) \cdot H$ . The solution to the maximization problem involves buying  $H_3$  heads of cattle at a price of  $w_3$  and selling  $Q_3$  units of beef at a price of  $P_3$ .

Under competitive conditions, the quantity of cattle bought and the price per head were determined by the demand, i.e., the value of the marginal product (VMP) curve, and supply (S). The pre-cartel input quantity of cattle was  $H_1$  in Figure 6 and the corresponding price was  $w_1$ . In order to maximize cartel profit, the cartel will buy heads of cattle where the marginal revenue product (MRP) is equal to the marginal expenditure (ME). This is shown in Figure 6. The cartel solution is  $w_3$  and  $H_3$ , which suggests antitrust damages of  $(w_1 - w_3)H_3$ . As with the apparent damages in the output market, this measure of antitrust damages arguably overstates their magnitude because part of the reduction in the price and quantity is due to collusion in the output market.

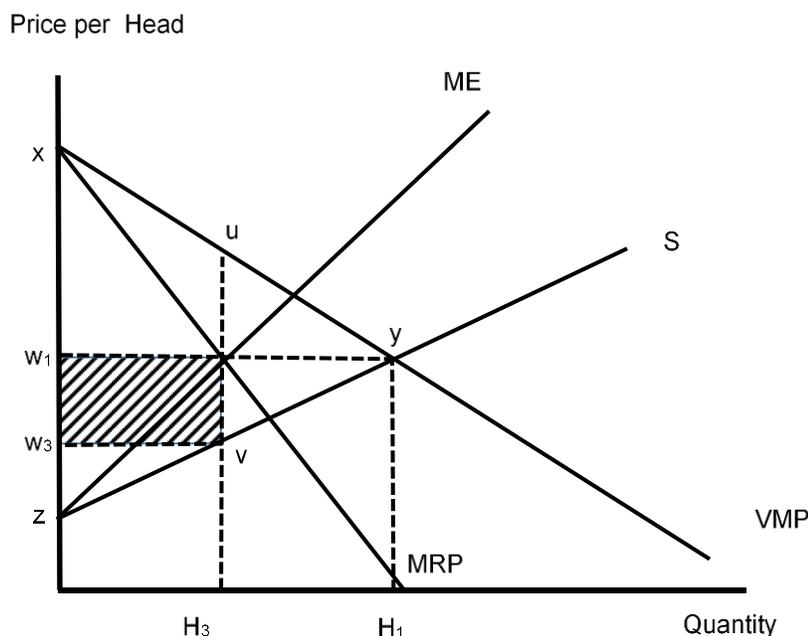


Figure 6

Results of Simultaneous Collusion in the Input Market

There are additional complications and interesting policy questions when the meat packer cartel colludes simultaneously in both the beef and cattle markets. The end results will be the same for price and output and for input prices and quantity. The impact on the welfare losses will also be the same as it was for sequential collusion. Issues of standing and damages, however, become cloudy.

Plaintiffs could certainly argue that the pre-conspiracy price and wage

were  $P_1$  and  $w_1$ , respectively, while the collusive price and wage are  $P_3$  and  $w_3$ . Consequently, the most reasonable measures of damages are  $(P_3 - P_1)Q_3$  and  $(w_1 - w_3)H_3$ . To the extent that these measures of cognizable antitrust damages are somewhat imprecise, this burden properly falls on the wrongdoer.<sup>65</sup> Additionally, there would be no duplication of damages.

If a court permits retailers to recover the full overcharges and permits the cattle ranchers to recover their full underpayment, there will be no ill-gotten gains. There will, of course, be the same welfare losses because the economic results are the same.

Defendants may argue that the retailers are only entitled to recover part of the apparent overcharge and the cattle ranchers are only entitled to recover part of the apparent underpayment. But the defendants would have to argue that the apparent damages overstate the cognizable damages by confessing that they had colluded in the beef and cattle markets. This is obviously not an attractive argument. To find the correct compensable damages would be no small feat. As we saw in the preceding Part, the compensable damages are not unique since they depend on the collusive sequence. Estimating cognizable damages under either sequence would be extremely bothersome. If it could be done, defendants might suggest averaging the two estimates. Other than simple convenience, however, there is no principled basis for using the average.

## VII. PROBLEMS IN LITIGATION

Collusion in both the output market and one of the input markets raises a number of complicated issues. Some of them are procedural and some of them are economic.<sup>66</sup> The implications of this Article's analysis raises a number of complicated civil procedure issues. This Article discusses some of the issues that may arise, but does not presume to resolve the questions that they pose.

First, consider the case of sequential collusion. This would seem to involve two separate offenses under Section 1 of the Sherman Act ("Section 1") and, therefore, two separate antitrust cases that involve the same defendants. Private plaintiffs would have to file separate suits because the interests of consumers and input suppliers are not completely aligned. Rulings in one case may conflict with rulings in the other case. In addition, the compensable damages differ depending upon the

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<sup>65</sup> Areeda, *supra* note 20, at ¶390. The plaintiff is entitled to draw a just and reasonable inference. The burden of any imprecision correctly falls on those whose conduct creates the need for the inference in the first place. Note, however, that a stab in the dark is not a just and reasonable inference.

<sup>66</sup> For the most part, the issues that we raise here are legal rather than economic matters. Consequently, we raise these questions but do not attempt to answer them.

sequence. Moreover, with no change in demand or costs, the compensable damages change during the period of collusion. In principle, those complications can be sorted out, but in practice the issues will be hotly disputed. The estimation of damages for both consumers and input suppliers must control for changes in the determinants of demand and costs.

Second, consider the analysis of simultaneous collusion. Is this a single Section 1 violation or two? If it is a single violation, defining a class would be problematic since it is at least questionable whether “proof for one is proof for all.” If it is two violations, the measure of damages will be complicated by the fact that the overcharge in the output market is due in part to collusion in the input market and vice versa. Arguably, both the overcharges experienced by the consumers and the underpayments suffered by the input suppliers are overstated due to existing standing rules. Isolating the proper measure of damages will be extremely complicated.

Settlements are the norm in antitrust cases. With either sequential or simultaneous collusion, there would seem to be two classes. The presence of two class actions will complicate settlements because the defendants cannot require certain accommodations from the plaintiffs. For example, if one class is prepared to treat some evidence as confidential, that will not prevent discovery in another case. In the end, the courts decide how to interpret the laws.

#### VIII. CONCLUSION

This Article examined the economic consequences of collusion in both the output market and one of the input markets by a single cartel. In doing so, it has uncovered several interesting, albeit disturbing, results. First, when the cartel engages in collusion in the output market first and colludes in the input market second, the cognizable antitrust damages differ from the situation where collusion occurs in the input market first and then in the output market. Second, the extant standing rules permit the cartel to retain some of its ill-gotten gains generated in both the output market and the input market. Our analysis of sequential and simultaneous collusion reveals that the current antitrust standing rules permit the wrongdoers to retain some of their ill-gotten gains. Put differently, the standing rules deny compensation to some parties that suffered antitrust injury. This is troubling because there is no easy remedy.

If input suppliers were granted standing under Section 4 of the Clayton Act, a single violation of Section 1 of the Sherman Act could result in a tidal wave of private damage actions. For example, suppose that the automobile manufacturers engaged in a price-fixing conspiracy. In

addition to claims by the dealers, there could be claims by all of the parts suppliers. It would not seem feasible to consolidate those claims into one big class action since there would be inevitable conflicts within the class.

Third, when the collusion occurs in both markets simultaneously, the proper measures of damages for consumers and input suppliers cannot be determined unambiguously. This outcome stems from the fact that collusion in the output market impacts the input market and collusion in the input market has an impact in the output market.

In summary, this Article has shown that with current standing rules, collusion in both the output market and one input market leads to ill-gotten gains to the meat packers. This weakens both the remedial and the deterrent effects of Section 4 of the Clayton Act.