

COLLUSIVE BIDDING IN HOSTILE TAKEOVERS

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Bidders in hostile takeovers have colluded in five separate instances. It is found that these collusive agreements did not affect the target's price significantly. A model is developed to explain this observation. A welfare analysis indicates that a positive probability of cartel formation can be socially beneficial and may or may not be beneficial to the target's shareholders, depending on the process generating takeover attempts. This sheds light on the existing policy debate concerning regulations of collusive agreements. An analysis of the existing case law is provided, which indicates that such collusive arrangements are legal at present.

1. INTRODUCTION

On exactly five occasions in the 1980s, bidders competing for a corporate takeover formed a cartel, stopped the bidding process, and acquired the target. In four of the instances, one bidder paid the other

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an amount ranging from \$7,500,000 to \$60,000,000 to quit bidding. In the fifth, the cartel agreed on a split of the target between the two bidders. The formation of these cartels raises several legal and economic questions: Are these cartels legal under the 1890 Sherman Act,¹ which forbids "every contract, combination . . . or conspiracy, in restraint of trade or commerce, among the several states," and legal under other laws governing competition or trade in securities? Empirically, what was the effect of the collusive agreement on shareholders of the target and on the bidding firms? How can we account for these observed effects in an economic model? What does the model say about the appropriate public policy toward such collusive agreements?

The answers to these questions are surprising. Cartels have successfully defended themselves in the three instances that have been litigated. Thus, these cartels currently appear to be legal. This is peculiar for two reasons. First, it seems to require somewhat tortuous reasoning to prevent the sale of corporations from falling under the Sherman or Clayton Act. Second, given that this form of conspiracy is legal, why did it occur only five times in the thousands of mergers that transpired in the 1980s? A partial explanation for the infrequency of cartel formation may be found in our empirical analysis. Empirically, we find that the cartels have a negligible effect on the target's share price, indicating that the cartel is not successful in substantially reducing the price it pays for the target. Specifically, we find that the competition to take over the target runs the share price up by 30–90%, and the cartel succeeds in suppressing this price by less than 5%. We present two kinds of evidence. First, graphs of the stock prices tell the story quite convincingly. Standard event study methodology used in financial analysis confirms the conclusion.

This empirical finding is startling, because it raises the question of why the cartel forms in the first place, if it can't reduce the price paid for the target. Moreover, it creates a modeling problem: Why can't the cartel lower the target's price? Obviously the cartel must lower the price by a positive amount, for otherwise a rational bidder would be unwilling to pay \$60,000,000 to forestall the bidding. To be consistent with our empirical finding, however, the cartel must not lower the price very much. We adapt a model of Fishman (1988), allowing for market price adjustments (which are absent from his model) and cartel formation, to account for the observations. The basic driving force of the model is that the entering bid of the second bidder is sufficiently high that the rational market expectation of further price

1. 15 U.S.C. Section 1 (1982).

increases from bidding is small, so that the cartel, which lowers the price to the last bid made, has a small effect.

We actually will offer two models, which differ only by the process that initiates the takeover attempt. In the first model, this process is exogenous. In the second, which is otherwise similar, we endogenize the initiation of the takeover attempt, by having firms search for undervalued targets. In both cases, a positive probability of cartel formation may be socially optimal. However, an existing shareholder would like cartels to be illegal in the first case, but not in the second. As the Securities and Exchange Commission, which is the likely regulator of these bidding cartels should any regulations be written, has as its mandate the protection of existing shareholders, the question of whether cartels should be permitted is not resolved unambiguously.

We present our findings in the following way: In Section 2, we briefly describe the five takeovers that resulted in cartels. A more detailed discussion is provided in Appendix A. We then present our empirical analysis of the effects of the cartels in Section 3. In Section 4, we develop and analyze two closely related models. We turn to the legal issues, including the legality of the cartels, the possible future regulation of these cartels, and legal issues related to the theoretical assumptions we make, in Section 5. Our findings are summarized in Section 6.

2. FIVE HOSTILE TAKEOVERS

In this section, we provide brief reviews of the five hostile takeover contests in which rival bidders agreed to cooperate in their efforts to acquire a target firm. The details of the takeover contests are presented in Appendix A.

The first takeover contest occurred in 1982 between JMSL Acquiring Corp., owned by investors Irwin Jacobs and Paul Kalmanovitz, and G. Heileman Brewing Co. for control of Pabst Brewing Co. Of the five takeovers, this one least corresponds to collusive bidding. Although JMSL agreed to support Heileman's bid of \$29 per share after the two firms had engaged in a vigorous takeover contest and Heileman paid JMSL \$7.5 million (or \$2 per share), the agreement did not stop the bidding. Mr. Kalmanovitz argued he had been frozen out of the deal and soon began his own takeover attempt for Pabst. In the end, Heileman won control of Pabst, but at the higher price of \$32 per share. The agreement between JMSL and Heileman to stop bidding for Pabst was, therefore, less than fully successful.

The next instance of cooperative bidding in a takeover was the 1986 contest between investor Asher Edelman and the incumbent

management of Fruehauf Corporation for control of Fruehauf. After an extended takeover contest with the management buyout group and its backers at Merrill Lynch, Mr. Edelman agreed to drop out of the bidding when Merrill Lynch agreed to pay him \$21 million (\$1.20 per share) and to pay cash for his two million shares, as opposed to the combination of cash and securities offered to other shareholders.

In January 1988, Black & Decker Corp. made an unsolicited offer for American Standard. After countering with its own debt and recapitalization plan, American Standard agreed to be acquired by Kelso & Co., a closely held investment banking firm. Soon after, Kelso and Black & Decker announced a truce in their bidding. Black & Decker agreed to drop out of the bidding, and Kelso agreed to pay \$25 million (\$0.78 per share) to Black & Decker. Black & Decker noted that their expenses had been less than \$25 million.

Also in January 1988, Campeau Corporation initiated an unsolicited takeover of Federated Department Stores. In February, Macy's entered the bidding, and the two firms proceeded to increase their bids several times. In March, Federated's board announced a final round of bidding. In response, Campeau bid \$74 per share, and Macy's bid \$73.88 per share. After Federated's board informed Macy's that Campeau's bid was higher, Macy's increased its bid to \$75.51 per share. Federated's board then gave Campeau the chance to increase its bid. Rather than increase its bid, however, Campeau met with Macy's, and the two firms agreed to stop their bidding. Macy's agreed to drop out of the bidding under a plan in which Campeau acquired Federated for \$73.50 per share, then sold two Federated divisions to Macy's and paid Macy's bidding costs of approximately \$60 million (\$1 per share).

In the last such takeover, J. P. Stevens put itself into play in early 1988 with a management buyout offer. In March, West Point-Pepperell made an unsolicited offer of \$56 per share, and the management group raised its offer to \$55 per share. Two weeks later, J. P. Stevens agreed to an offer of \$61.50 per share from Odyssey Partners, but West Point-Pepperell raised its offer to \$62.50 per share. After several more increases in the bidding, West Point-Pepperell and its partner NTC Group, Inc., reached an agreement with Odyssey. West Point-Pepperell and Odyssey agreed to stop bidding under a plan in which West Point-Pepperell purchased J. P. Stevens for \$1.2 billion (\$68.50 per share) and then sold several divisions to Odyssey for \$530 million and one-half of Stevens' towel business and 20% of Stevens' sheet business to NTC.

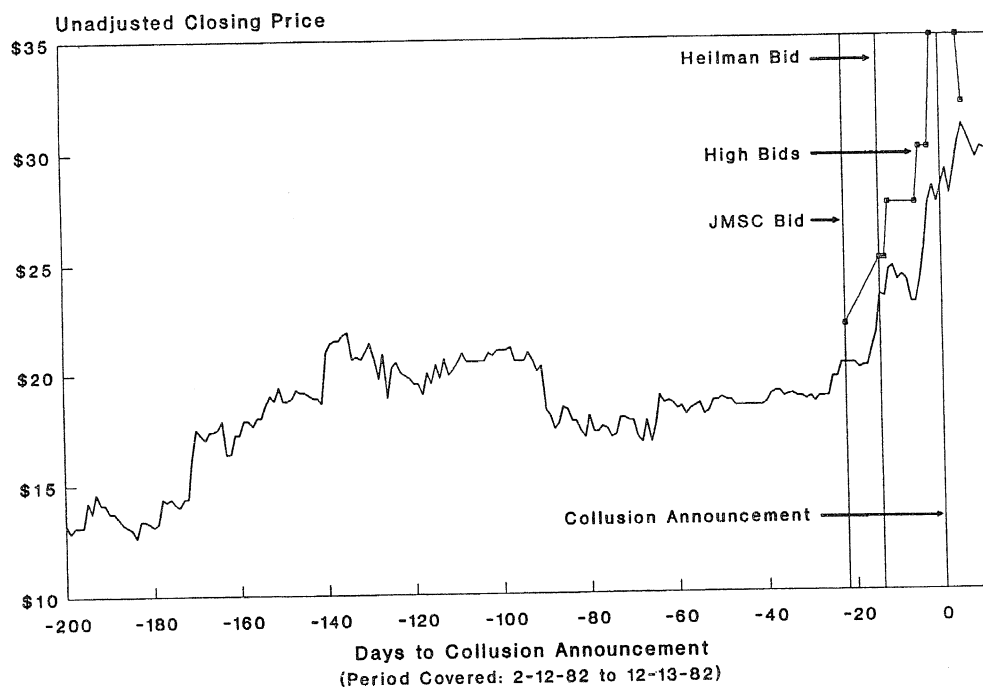
3. THE CARTEL'S EFFECT ON THE TARGET PRICE

We offer two methods of assessing the effect of the cartel on the target's share price. In the first, we examine the unadjusted prices of the target, relative to the date of the cartel announcement. In the second, we employ standard event study methodology, deflating the price changes by the market returns as measured by the S&P 500 Index.

Figures 1-5 present the unadjusted closing prices of the targets for a 200-day span. In all cases, date 0, indicated by the vertical line furthest to the right, refers to the announcement in the *Wall Street Journal* that the cartel had formed, so that bidding had stopped. In these figures, the entry of the first and second bidders are indicated by vertical lines. The horizontal line segments in the graph indicate the best bid outstanding by the bidders.

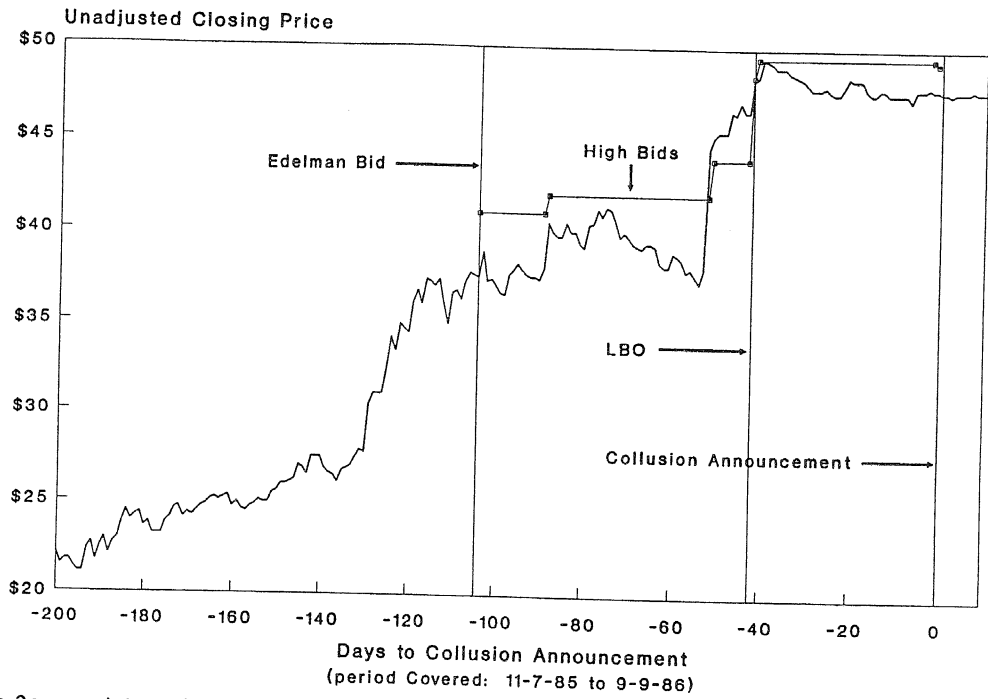
Three hypotheses are suggested by these data. First, the takeover attempts dramatically raise the stock price of the target. Moreover, the price tends to rise on the entry of both the original bidder and the second bidder. Third, the price falls little, if at all, on the announcement of the cartel's existence.

In addition to the graphs of prices, we employ standard event



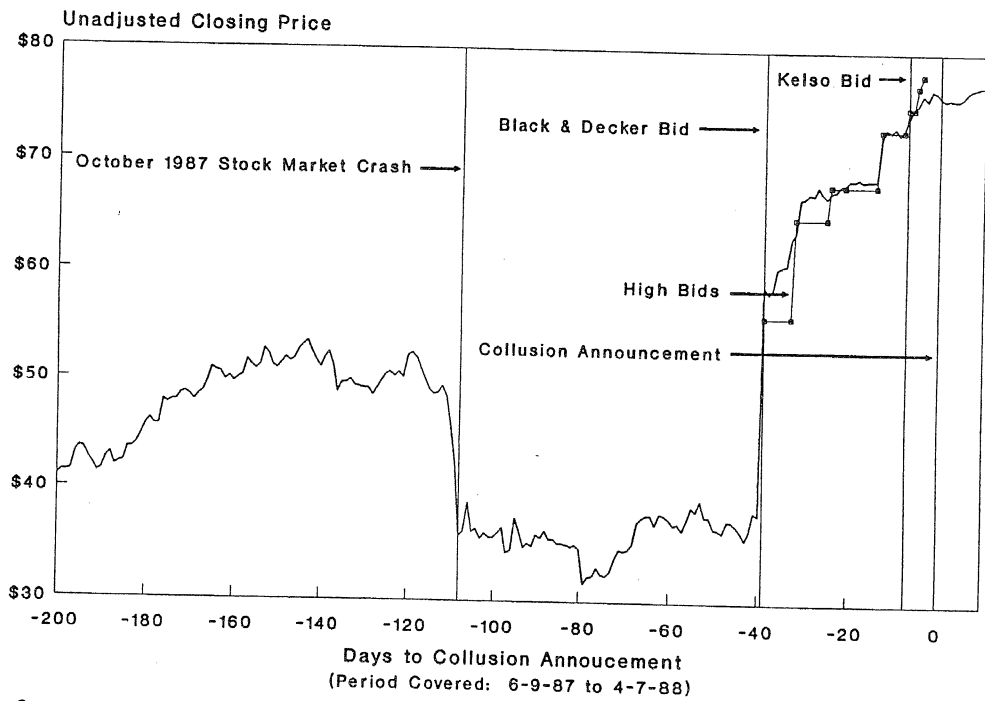
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FIGURE 1. PABST BREWING COMPANY



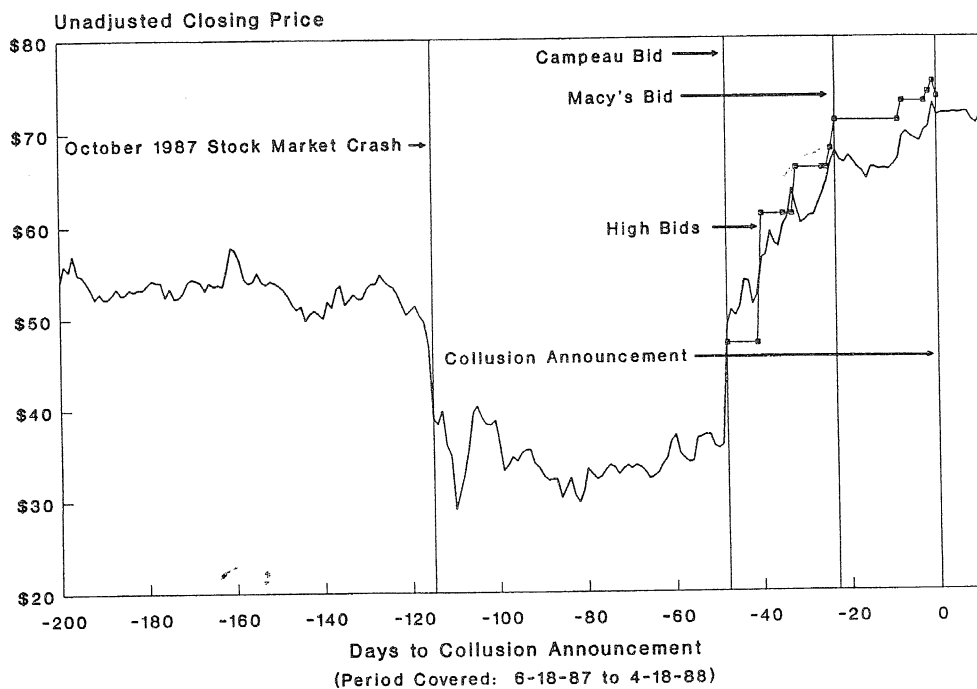
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FIGURE 2. FRUEHAUF CORPORATION



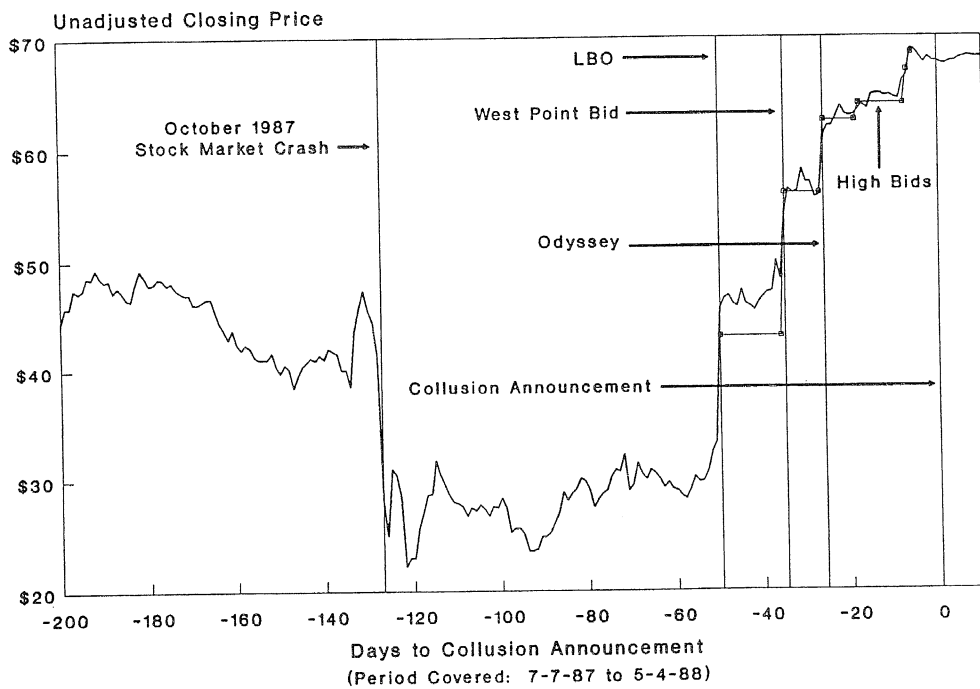
Data Source: Interactive Data.

FIGURE 3. AMERICAN STANDARD



Data Source: Interactive Data.

FIGURE 4. FEDERATED DEPARTMENT STORES



Data Source: Interactive Data.

FIGURE 5. J. P. STEVENS

TABLE I.
AVERAGE DAILY ABNORMAL RETURN TO THE TARGET FIRM
(ESTIMATED COEFFICIENTS AND PARENTHETICAL
***t* STATISTICS)**

Target Firm	Days Relative to Announcement that Bidders are Cooperating (Day 0)				
	-20-10	-10-5	-3-3	-1-1	0
Target portfolio	0.0009 (0.28)	0.002 (0.39)	0.0001 (0.02)	-0.003 (0.26)	0.002 (0.10)
Pabst	0.01 (1.49)	0.01 (1.55)	0.02 (1.43)	0.01 (0.42)	0.02 (0.76)
Fruehauf	-0.003 (0.74)	-0.002 (0.33)	-0.01 (0.78)	-0.01 (0.58)	0.0002 (0.01)
American Standard	-0.0003 (0.03)	0.0004 (0.04)	-0.00002 (0.00)	-0.003 (0.12)	-0.01 (0.24)
Federated	0.001 (0.11)	0.003 (0.33)	-0.001 (0.09)	0.004 (0.19)	-0.01 (0.29)
J. P. Stevens	-0.0004 (0.06)	-0.003 (0.28)	-0.01 (0.43)	-0.002 (0.09)	0.01 (0.12)

study methodology to estimate the effect of the cooperative bidding on the returns of the target firms. We examine both the abnormal returns of the equal-weighted portfolio of target firms and the individual abnormal returns of the targets. The market model is estimated over the period 200 to 21 trading days prior to the publication in the *Wall Street Journal* or the *New York Times* of the intention of the bidders to cooperate. We use the S&P 500 to measure the market return.² The average daily abnormal returns are calculated for five different event windows (see Table I).

The empirical results show that the returns to the target firms do not decrease significantly in response to the news that the bidders will cooperate. The cumulative abnormal returns for the equal-weighted portfolio of the five targets is shown in Figure 6. In the week prior to the announcement of the cooperative bidding, the cumulative average abnormal returns increase from 0.1% to 5.4%. However, the

2. The (OLS) estimated market model equals (*t* statistics in parentheses):

$$r_t = 0.003 + 0.81r_m + \epsilon \quad R^2 = 0.17$$

(2.5) (5.6)

where

r_t = the daily continuously compounded return of the equal weighted portfolio of the five target firms,

r_m = the daily continuously compounded return of the S&P 500 Index,

ϵ = the daily random error, assumed to be independent of r_m , serially uncorrelated, and normally distributed.

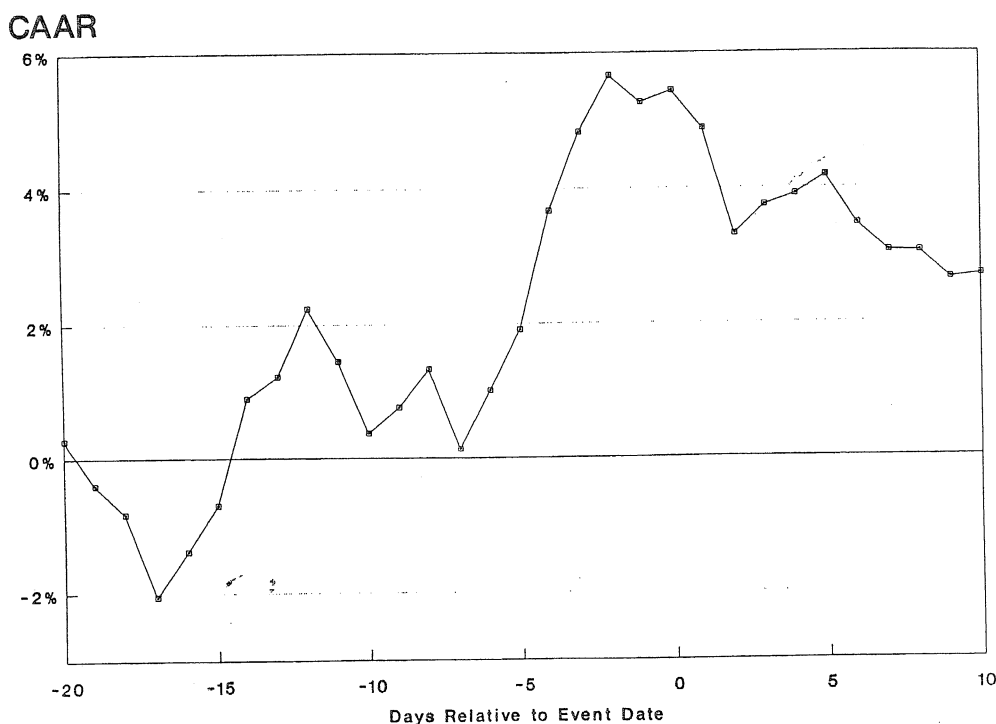


FIGURE 6. CUMULATIVE ABNORMAL RETURNS FOR THE EQUALLY WEIGHTED PORTFOLIO OF THE FIVE TARGET COMPANIES

cumulative returns also show that the capital market does not react negatively (in a statistically significant manner) to the announcement that the rival bidders intend to stop bidding against each other.

Three of the bidders (Heileman, Black & Decker, and West Point Pepperell) are publicly traded firms. We examined their share prices around the date of the cartel formation, and found no significant excess returns. Indeed, two of the firms had negative abnormal returns around the announcement of the cartel. This provides further evidence that the cartel failed to have a significant impact on the target price. Had the cartel been effective, then the market should have increased the share value of the bidders by the unexpected savings. In the next section, we provide a theoretical rationale for this empirical finding.

4. THE MODEL

Fishman (1988) presents a model in which two possible bidders make price offers. Because of entry costs, the initial bidder uses his bid to

signal that he has a high value for the target, which has a deterrent effect on entry, in a manner analogous to the pooling equilibrium in the Milgrom-Roberts limit pricing model. Fishman's model captures part of the effect that we are after: The initial entrant makes a high, preemptive bid. This tends to lower the amount that the auction can drive up prices, at least relative to the case where no preemptive bid is made and, therefore, reduce the effect that a cartel could have.

Our model expands upon Fishman's model by accounting for the reaction of the market. When the initial bidder submits his bid, the market knows that there is a positive probability that another firm will enter the bidding, driving up prices. Thus, the market rationally bids the price up beyond the initial bid, to account for the positive probability that the final market price will be higher than the first bid. A second entrant, if one arrives, submits a bid at least as high as the current market price. Should a cartel form, the target sells for this second bid. If no cartel forms, the auction between the two bidders determines the final price.

Following Fishman, we will consider two potential bidders, 1 and 2, for a target. Bidder i knows his own value x_i for the target, generated independently from a common distribution function F , with density f . We assume that the target is an asset, which has a value in its current use normalized to zero. Thus, in the absence of another use for the asset, the firm's stock price would be uniformly zero.³ Firms 1 and 2 have alternative uses for the asset, with values at least as great as the current use value. At a time t , firm 1 realizes the value x_1 and chooses to bid. As in Fishman, this bid alerts firm 2 to the possibility of using the target asset differently. Unlike Fishman, however, we assume that firm 2 learns its value costlessly.⁴ The current shareholders in the target, or arbitrageurs, knowing the process that generates a takeover, bid the price of the target up to the expected present value of the firm at the time of takeover.

We assume that all individuals are risk neutral and use a discount rate r . The timing of the game is as follows.

0. A market price m_0 prevails for the target.
1. Firm 1 learns its value x_1 at a time t determined by a Poisson arrival rate λ . Firm 1 chooses to either leave or make an offer $p_1 \geq m_0$.

3. It would be straightforward to permit a positive price following a random walk for this asset and, thus, bring the model more into accord with stock price data. This is abstracted away for clarity.

4. A cost of learning a value, along with a cost of submitting a tender offer, can be embedded in the model without qualitative change, at least for small costs, but at a great increase in complexity of the equations. The preemptive bidding that Fishman finds will also occur in this case.

Subsequent events are assumed to occur without discounting. If firm 1 fails to make an offer, the Poisson process starts over.

2. The market price adjusts to m_1 .
3. Firm 2 observes his value x_2 and decides whether to submit a bid, and if so, chooses bid $p_2 \geq m_1$.
4. If firm 2 doesn't bid, firm 1 buys the target at price p_1 . If firm 2 does bid, then nature creates a cartel with probability α . If nature creates a cartel, the highest value firm buys the target at price p_2 and pays the other firm half the amount $\min\{x_1, x_2\} - p_2$ that the cartel suppressed the price. If nature doesn't create a cartel, an auction ensues and the target sells to the highest bidder for a price equal to $\min\{x_1, x_2\}$. This ends the game.

Before proceeding with the analysis of the game, it is worth remarking on several aspects of the structure of the game. First, there is an informational externality, in that firm 1's bid "wakes up" firm 2, that is, alerts firm 2 to the possibility of a takeover. This externality is typical of many preemptive bidding models.⁵

Second, we are implicitly assuming that there is a pool of potential bidders, each searching for a suitable target, and λ is the arrival rate of the next bidder. If one bidder fails to bid for the target, the process generating bidders starts over. However, once a takeover is successful, the process generating bidders ends; that is, no new bidders come along with an even higher use value for the target's asset. The interpretation of this structure is that, once a takeover is complete, the target is either taken private or absorbed into the bidder's operation in such a way that no future takeover is possible. Alternatively, the shadow value of future takeovers might be viewed as embedded in the bidder's valuation.

It is worth emphasizing that in this stylized model, we are concentrating on the strategic interaction between the two initial bidders only. This rules out other potentially interesting and relevant extensions. In one extension, one might allow for the entry of additional bidders following the entry of bidder two. The advantage of assuming two bidders is that it greatly simplifies our analysis of the behavior of firm two conditional on entry. We discuss further the likely effects of relaxing this assumption at the end of this section. In another extension, one might attribute a greater strategic role to the target. Indeed, a referee pointed out that in two of the cases we study, the initial bidder raised the bid substantially even before the entry of a rival bidder. This price rise might be attributed to interim information that

5. See, for example, Fishman (1988, 1989) and Bradley (1980).

the initial bidder acquired about the likelihood of a potential rival, but it could also be the outcome of some negotiation process between the target and the bidder. The assumption of a passive target is a common one in the hostile takeover literature primarily for reasons of tractability. In a sense, allotting strategic power to the target (or its management) is similar to introducing further bidders. We conjecture that the introduction either of further potential bidders or of a target with real bargaining power over and above the market price would both further dampen the price fall from a cartel by pushing up initial bid prices.

Third, the process generating cartel formation has been left unexplained. It would be more satisfactory to explicitly model the cartel formation process,⁶ but the present model can be defended. Whether the bidders cooperate or not might be determined by the bidders' personalities⁷ or their views on the likelihood of court challenges, either of which are reasonably modeled as acts of nature. Moreover, from a policy perspective, the question of whether to make these bidding cartels legal or not is a question of whether the welfare is higher with α equal to one or zero.

Fourth, to minimize the role that beliefs play in the analysis, we assume that, in splitting the gains from cartelization, firms 1 and 2 use their actual values, and not the values revealed in equilibrium by the bids. Beliefs still play a role in the formation of the market price m_1 , where the market forecasts the expected price based on the information revealed about firm 1 by firm 1's bid p_1 . We employ Kreps and Wilson's 1982 concept of sequential equilibrium to identify a separating equilibrium for firm 1. Firm 1 considers in choosing its bid the effect bids have on beliefs, which induce the new market price m_1 . In equilibrium, of course, the stockholders deduce the correct value of x_1 .

Finally, the weakest points in the model are that firms are required to submit bids at least as great as the market price, and, in the event of a cartel forming, they are not permitted to withdraw the existing bids and issue a new, lower bid. As an empirical matter, it is rare for bids to be made below the market price and for bidders to

6. See, for example, McAfee and McMillan (1992).

7. Mr. Kalmanovitz leaving the cartel for control of Pabst could be an example of this; see Appendix A.1.

withdraw bids and issue new lower bids. Moreover, there are strong legal constraints on the ability to withdraw bids.⁸

Note that, if firm 2 chooses to submit a bid, then it has a dominant strategy to submit the lowest bid possible, m_1 , to minimize the amount it pays for the target, and to maximize the gains from the cartel. Thus, $p_2 = m_1$. Firm 2 makes positive profits if and only if his value $x_2 \geq m_1$, so firm 2 enters with probability $1 - F(m_1)$.⁹

The market price, m_1 , must equal the expected selling price of the firm. Let y_1 denote the market beliefs about the value x_1 , as revealed by the initial bid of firm 1, p_1 . Then

$$m_1 = F(m_1)p_1 + (1 - F(m_1))[\alpha m_1 + (1 - \alpha)E\{\min\{y_1, x_2\} \mid x_2 \geq m_1\}]. \quad (1)$$

Equation 1 reflects the following logic: With probability $F(m_1)$, a shareholder is paid p_1 , because firm 2 doesn't enter. If firm 2 enters, he bids $p_2 = m_1$. If a cartel forms, bidders earn this amount, and otherwise they obtain the lower of the two values, conditioned on $x_2 \geq m_1$, from the bidding in the auction.

LEMMA 1: *There is a unique value m_1 satisfying (1). $m_1 \in (p_1, y_1)$.*

$$m_1 - \frac{1 - \alpha}{F(m_1)} \int_{m_1}^{y_1} 1 - F(z)_m dz = p_1 \quad (2)$$

Proofs are provided in Appendix B.

For a given market price m_0 prevailing in stage 0, firm 1 will submit an equilibrium bid denoted $p(x_1 \mid m_0)$. Firm 1 has the ability to fool the market into holding an incorrect belief about x_1 . If firm 1

8. Regulation 14E of the Securities Exchange Act provides that in order to prevent fraudulent, deceptive or manipulative practices, any person who makes a tender offer must (a) hold the offer open for at least 20 business days from the date it is published or sent to the security holders and that (b) if there is any increase or decrease in the percentage of the class of securities being sought or the consideration offered, the offer must remain open for at least ten additional business days.

However, section 14(d)(5) of the Act permits persons who have tendered their shares in such a tender offer to withdraw within the first 7 days after the tender offer or more than 60 days afterward but not to the extent that the bidder has actually purchased the securities.

Section 14(d)(7) provides that those who tender their shares before an increase in the offering price must receive the same price as those who tendered after the increase is announced. No comparable provision with a later decrease exists. This makes possible "front-end-loaded" offers, whereby bidders pay a premium price for initial purchases, gain control of the company, then lower their acquisition price for any remaining purchases.

9. We assume that firms choose not to enter if expected profits are zero. Any small cost of bidding would ensure that this occurs, although complicating the analysis substantially.

submits a price $p_1 = p(y_1 | m_0)$ in stage 1, the market price will adjust to m_1 according to Equation 2. Thus we can use Equation 2 to define the reaction of the market to the belief y_1 . Given that firm 1 has value x_1 and submits a bid p_1 that induces beliefs y_1 about firm 1's value and a market price of m_1 , firm 1 earns

$$\begin{aligned} \pi &= (x_1 - p_1)F(m_1) + \int_{m_1}^{x_1} [x_1 - \alpha(\frac{1}{2}x_2 + \frac{1}{2}m_1) - (1 - \alpha)x_2] \\ &\quad \times f(x_2) dx_2 + \frac{\alpha}{2}(x_1 - m_1)(1 - F(x_1)) \\ &= \frac{\alpha}{2}(x_1 - m_1) + (1 - \alpha) \int_{m_1}^{y_1} 1 - F(z) dz + \left(1 - \frac{\alpha}{2}\right) \int_{m_1}^{x_1} F(z) dz. \end{aligned} \quad (3)$$

The expected profits of firm 1 reflect the three possible outcomes to the game. First, firm 1 purchases the target at a price equal to p_1 , if firm 2 doesn't enter, with probability $F(m_1)$. Second, if firm 2 enters with a value lower than x_1 , firm 1 purchases the target, either at a price of m_1 if a cartel forms, and in this case pays firm 2 half the cartel savings $x_2 - m_1$, or pays x_2 if no cartel forms. Finally, firm 1 might not obtain the target, but gets a half share of the cartel savings $x_1 - m_1$. Although firm 1's choice variable is actually p_1 , it is useful to eliminate p_1 from the profit expression, using the market reaction (2). It must be the case in a separating equilibrium that firm 1 maximizes (3) by choosing $y_1 = x_1$; that is, the market is not fooled in equilibrium. This leads to:

LEMMA 2: *Given the equilibrium choice of p_1 in a separating equilibrium, the market price m_1 , viewed as a function of firm 1's value x_1 , is given by the ordinary differential equation:*

$$m_1(m_0) = m_0; \quad (4)$$

and

$$m_1'(x) = \frac{(1 - \alpha)(1 - F(x))}{1 - \frac{1}{2}\alpha(1 - F(m_1(x)))}. \quad (5)$$

Note that $m_1'(x) \in (0, 1)$. Our final result concerns the initial market price m_0 . The initial market price is the present value of holding the stock:

$$m_0 = \int_0^{\infty} e^{-rt} \lambda e^{-\lambda t} [m_0 F(m_0) + (1 - F(m_0)) E\{m_1(x) | x \geq m_0\}] dt,$$

or

$$m_0 = \frac{\lambda}{r} \int_{m_0}^{\infty} m_1'(x)(1 - F(x)) dx. \quad (6)$$

Suppose a social planner could set a price p for the target, so that firm 1 enters only if $x_1 \geq p$. The social surplus is

$$W(p) = \int_0^{\infty} \lambda e^{-\lambda t} e^{-rt} [W(p)F(p) + (1 - F(p))E_{\max}\{x_1, x_2 \mid x_1 \geq p\}] dt,$$

which yields

$$W(p) = \frac{\lambda \int_p^{\infty} \left(x + \int_x^{\infty} 1 - F(y) dy \right) f(x) dx}{r + \lambda(1 - F(p))}. \quad (7)$$

Straightforward computations yield:

THEOREM 1: *Suppose λ is exogenous. The target's price m_0 is maximized when $\alpha = 0$. Social Welfare is maximized at a price p^* satisfying:*

$$p^* + \int_{p^*}^{\infty} 1 - F(x) dx - \frac{\lambda}{r} \int_{p^*}^{\infty} F(x)(1 - F(x)) dx = 0. \quad (8)$$

Equation 8 has a unique solution. When α is the only policy instrument, if $\lambda \leq r$, social surplus is maximized at $\alpha = 1$. If λ is sufficiently large, social welfare is maximized at $\alpha = 0$.

The intuition for theorem 1 is straightforward. A higher probability of collusion can increase social welfare by increasing the likelihood of entry. However, shareholders in the target don't like collusion because it increases entry by lowering the target price. Some collusion may be optimal from the social perspective because of the informational externality built into the model. Firm 2 expects to earn rents, which are counted in the social surplus but ignored by firm 1 in his entry decision. By sharing the rents with firm 2, this internalizes part of the externality. The second external effect, which is that firm 1's entry prevents a possibly better bidder from coming along, works to make firm 1 enter too often, which is why no collusion may be optimal.

Remark: The condition $\lambda \leq r$ is equivalent to the statement that the expected amount of discounting that transpires before the arrival of firm 1 is at least $\frac{1}{2}$.

In other preemptive takeover models such as Fishman (1988),

the fact that an initial offer is only semi-revealing implies the possibility that the first firm may still acquire the target following the entry of a second firm. Observe that in our model, the first bidder's value is fully revealed by an initial bid. Thus, a rival bidder knows whether it will obtain the target before bidding. Nevertheless, it remains possible for an outcome to occur in which a second bidder enters and fails to obtain the target. The reason is that the potential of extracting surplus through the cartel formation provides an incentive to enter even if the target will ultimately be won by the first bidder.¹⁰ In the uniform example constructed at the end of this section, as one would expect, this probability falls with α .

Suppose there is a large pool of potential bidders, who experience a search cost linear in λ . If these bidders earn zero profits *ex ante*, then the expected profits conditional on arrival must be constant and equal to the cost, γ , of arrival rates. Abusing notation in eq. (3) to write $\pi(x_1)$ as the expected profits given value x_1 , the expected profits conditional on arrival are

$$\gamma = E\pi \int_{m_0}^{\infty} \pi(x)f(x) dx = \int_{m_0}^{\infty} \left[\frac{\alpha}{2} + \left(1 - \frac{\alpha}{2}\right) F(x) \right] (1 - F(x)) dx.$$

With free entry of potential bidders, $E\pi$ will be constant. This leads to:

THEOREM 2: *With free entry of potential bidders, the share price m_0 is increasing in α .*

Remark: The assumptions underlying theorems 1 and 2 concern the market power of the bidder. The λ exogenous case concerns a bidder who is enjoying pure rents, that is, one who is not making a search decision at all but just happens to notice an opportunity. Theorem 2, in contrast, is the case where anyone could enter the bidder business and look for firms that could be improved by, say, replacing the management. In this case, bidders have no market power, and any attempt to transfer rents to the shareholders from the bidder results in fewer bidders coming along, which explains why the shareholders prefer $\alpha = 1$. This certainty of collusion minimizes the effect of the externality on firm 1.

How well does the model confront the empirical observations? We address this question in the special case where F is uniform on the unit interval, which allows for an explicit solution for m_1 . Because the data concerns the case of two bidders, we will condition the calcu-

10. We are grateful to a referee for making this observation.

lations on the event that both bidders actually enter, that is, on $x_1 \geq m_0$ and $x_2 \geq m_1(x_1)$. Once bidder 2 enters, the market price adjusts again, to a level $m_2(x_1)$. The postentry market price is given by:

$$\begin{aligned} m_2(x_1) &= \alpha m_1(x_1) + (1 - \alpha) E_{x_2} \{ \min\{x_1, x_2\} \mid x_2 \geq m_1(x_1) \} \\ &= \alpha m_1(x_1) + \frac{(1 - \alpha)(x_1 - \frac{1}{2}(x_1^2 + m_1(x_1)^2))}{1 - m_1(x_1)} \end{aligned}$$

In Figure 7, we illustrate the effect of the probability of collusion on the market price m_0 . Note that $1/\lambda$ is the expected time to arrival by the first bidder. We set $\lambda = \frac{1}{5}$, corresponding to 5 years to the entry of the first bidder on average. Note that the actual time to entry is $1/\lambda(1 - F(m_0))$, because not all arrivals have a sufficient value to bid. We used a real discount rate of 5% per annum. The figure gives the values of m_0 , $Em_1(x_1)$, and $Em_2(x_1)$, which are the price prevailing before entry of firm 1, the cartel price, and the price prevailing immediately prior to the announcement of the cartel as a function of the probability of a cartel forming, α .

The model succeeds at least qualitatively in making the fall in price on the announcement of a cartel significantly smaller than the price difference between the initial offering and the market price following the entry of the second bidder. It seems likely, if not formally modeled, that the possibility of entry by a third firm would increase

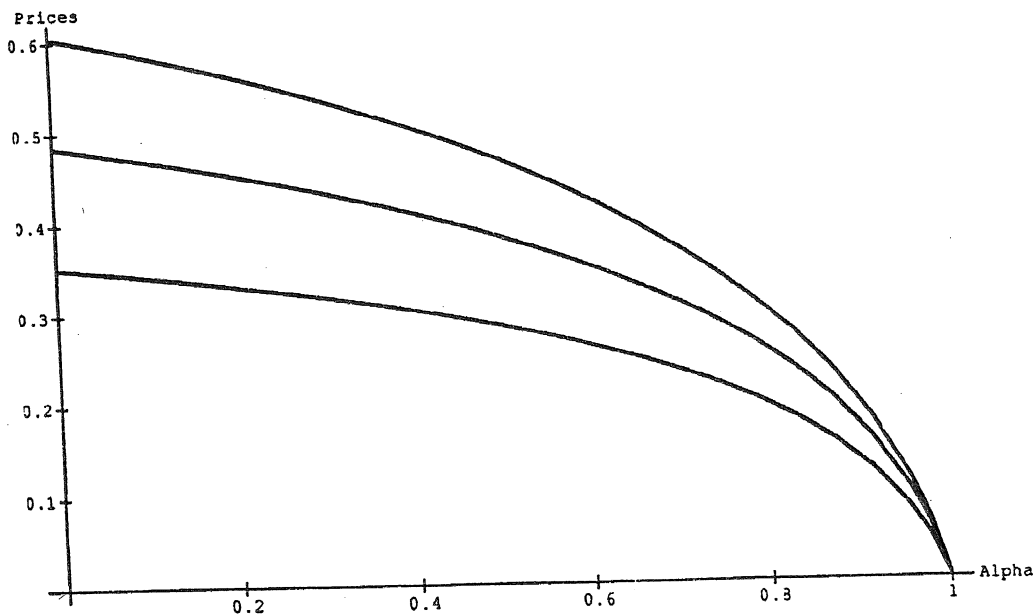


FIGURE 7. INITIAL, COLLUSIVE, AND PEAK MARKET PRICES

the bid of firm 2 above the market price, because firm 2 would also be bidding to deter potential entry of firm 3. Moreover, the price would fall less after the announcement of a cartel, because of the possibility of the third firm's entry. Thus, having a larger pool of potential entrants would diminish the effect of the cartel, both by making firm 2's bid higher, and reducing the fall of prices because of the threat of entry of the third firm after the cartel is announced. Such a model might confront the empirical observations quantitatively, instead of qualitatively.

The model also suggests some other qualitative effects in the data. In the event that a second firm does not arrive, the market price (previously high in anticipation of a potential rival bidder) should fall back to the initial bid. Similarly, if the process reaches a point at which it becomes clear that no cartel will form, we should expect a moderate rise in the market price. The testability of these predictions remain somewhat ambiguous without more precise information about the true timing of potential entry and the cartel formation process.

5. LEGAL ANALYSIS

Under current federal law, collusion between firms bidding for a takeover target is tacitly permitted.¹¹ Courts, when confronted with the issue, have concluded that antitrust laws do not apply to purchases of stock from a single corporation. In litigated cases,¹² the consensus has been that the Sherman Act was repealed by the Securities Act of 1933 and the Securities Exchange Act of 1934, and that shareholders whose shares have been thus affected may not, therefore, find a remedy under the antitrust laws. Instead, all shareholder remedies are the exclusive purview of securities regulations. However, these decisions acknowledge that while the SEC has the power to create a remedy for collusive bidding for takeover targets, they have not done so, other than to require disclosure.¹³ A target shareholder's sole "remedy," therefore, is to decline to sell his shares to a takeover bidder.

11. See Rock (1989).

12. *Finnegan v. Campeau Corp.*, 722 F. Supp. 1114 (S.D.N.Y. 1989), *aff'd* 915 F.2d 824 (2d Cir. 1990), *cert. denied* 111 U.S. 1624 (1991); *Kalmanovitz v. G. Heileman Brewing Co., Inc.*, 576 F. Supp. 922 (D. Del. 1983), 769 F.2d 152 (3d Cir. 1985); *Bucher v. Shumway*, 452 F. Supp. 1288 (S.D.N.Y. 1978), *aff'd*, 622 F.2d 572 (2d Cir.), *cert. denied* 449 U.S. 841 (1980); *Schaefer v. First National Bank*, 326 F.2d 1186 (N.D.Ill. 1970), *aff'd* 509 F.2d 1287 (7th Cir. 1975), *cert. denied*, 425 U.S. 943 (1976).

13. *Finnegan v. Campeau Corp.*, 915 F.2d 824, 830 (2d Cir. 1990), *cert. denied*, 111 U.S. 1624 (1991).

We have divided this section into three subsections. In the first, we consider court decisions concerning the antitrust laws. It is a peculiar fact that auctions for corporate shares are the only auctions for which courts do not find bid-rigging to be illegal. Instead, the courts consider the laws governing securities trading to be the applicable laws. We examine the role of the securities laws in the second subsection. The only constraint these laws impose on bidder cartels is that of disclosure. Finally, in the last subsection, we summarize the courts' views on bidder cartels.

5.1 APPLICATION OF ANTITRUST LAWS

This reticence by the courts to apply antitrust laws to corporate takeover transactions is not logically mandated. Antitrust laws would seem to apply to collusive bidding in the purchase of companies. Section 1 of the Sherman Act prohibits "(e)very contract, combination . . . or conspiracy, in restraint of trade or commerce, among the several states."¹⁴ Similarly, Section 7 of the Clayton Act¹⁵ prohibits the acquisition of one corporation by another where the effect to consumers would be to diminish competition.¹⁶ In that the purpose of collusive bidding is to restrict free market competition in the purchase of target companies, the antitrust laws would apparently apply. The Securities Exchange Act contains no exemptions from antitrust laws.¹⁷ Therefore, "(r)epeal is to be regarded as implied only if necessary to make the Securities Exchange Act work, and even then only to minimum extent necessary."¹⁸ Nevertheless, Justice Brandeis cautioned that a literal reading of the Sherman Act would outlaw the entire body of contract law, because the purpose of all contracts is to restrain trade.¹⁹ Courts have consequently applied the "rule of reason" to determine which conduct illegally impedes competition.²⁰ Thus while one court has held that the Sherman Act does not require competitive bidding,²¹ it does prohibit contracts or acts that unreasonably restrict competitive conditions.²²

14. 15 U.S.C. section 1 (1982).

15. 15 U.S.C. section 18.

16. *Brown Shoe Co. v. United States*, 370 U.S. 294 (1962).

17. *Silver v. New York Stock Exchange*, 373 U.S. 341, 357 (1963).

18. *Id.* at 357.

19. "But the legality of an agreement or regulation cannot be determined by so simple a test, as whether it restrains competition. Every agreement concerning trade, every regulation of trade, restrains. To bind, to restrain, is of their very essence." *Chicago Board of Trade v. United States*, 246 U.S. 231 (1918).

20. *National Society of Professional Engineers v. United States*, 435 U.S. 684, 688 (1978).

21. *Id.* at 695-96.

22. *Standard Oil Co. v. United States*, 221 U.S. 1, 58 (1910).

In applying these precepts, courts have readily found collusive bidding in non-securities-related industries to be illegal. Thus, courts have held "bid rigging" (an agreement among bidders at auction not to bid competitively) to be a *per se* violation of the Sherman Act at bankruptcy auctions.²³ Likewise, a court has held that a professional society's canon of ethics that prohibited competitive bidding violated the Sherman Act.²⁴ The U.S. Department of Justice routinely prosecutes bid rigging in industries as diverse as antiques,²⁵ dairy products,²⁶ electrical construction,²⁷ real estate,²⁸ school buses,²⁹ frozen flounder,³⁰ infant formula,³¹ and groceries.³²

But while antitrust laws apply indisputably to auction bid rigging cases, no such application has been made in cases that involve, arguably, the same type of conduct: collusive bidding for the purpose of shares of stock in a takeover target. What explains this difference? The Sherman Act's prohibition on restraints of trade involving "trade or commerce" was interpreted by the U.S. Supreme Court to mean "commercial competition in the marketing of goods or services."³³ Some courts have held that shares of stock are neither "goods" nor "services" and are therefore not encompassed in the Sherman Act

23. *United States v. Seville Industrial Machinery Corp.*, 696 F. Supp. 986 (D.N.J. (1988) (Agreement between bidders at bankruptcy auction not to competitively bid, but to hold a later auction and split the profits was a *per se* violation of the Sherman Act). See also *United States v. W. F. Brinkley & Sons Const. Co., Inc.*, 783 F. 2d 1157 (1986).

24. *National Society of Professional Engineers v. United States*, 435 U.S. 679 (1978).

25. *United States v. Kay & Gross, Inc.*, D.C.S.N.Y., Crim. No. 91-CR 411, 5/9/91 cited at 60 *Antitrust & Trade Regulation Report* 695 (5-16-91), *United States v. Bernard & S. Dean Levy, Inc.*, D.C.S.N.Y., Crim. No. 91 CR 544, cited at 61 *Antitrust and Trade Reporter* 47 (7-11-91).

26. *United States v. Stamper*, D.C. E. Va., Crim. No. 91-73N, 5-9-91 cited at 60 *Antitrust & Trade Regulation Report* 695 (5-16-91); *United States v. Power*, D.C. E.N.C., Crim. No. 91-51-01 CR7BR, cited at 61 *Antitrust and Trade Regulation Report* 401 (10-3-91); *United States v. Crowder*, D.C. E.N.C., Crim. No. 91-50-01 CR7BR cited at 61 *Antitrust and Trade Regulation Report* 401 (10-3-91).

27. *United States v. Leonard*, D.C. S. Calif., Crim. No. 91-00771B, 1-18-91, cited at 60 *Antitrust and Trade Regulation Report* 160 (1-31-91).

28. *District of Columbia v. Basilko*, D.C. D.C., No. 91-2518, cited at 61 *Antitrust and Trade Regulation Report* 516 (10-24-91).

29. *United States v. Vetter*, D.C. N.D., Crim. No. C3-91-82 cited at 61 *Antitrust and Trade Regulation Report* 400 (10-3-91).

30. *United States v. Tichon Seafood Corp.*, D.C. E.Pa., Crim. No. 91-00527, (cited at 61 *Antitrust and Trade Regulation Report* 400, 10-3-91).

31. *Texas v. Abbot Laboratories*, D.C. Tex., Travis County, No. 91-13079, cited at 61 *Antitrust and Trade Regulation Report* 369 (9-26-91).

32. *United States v. Sysco Food Services, Inc.*, D.C. S. Tex., Crim. No. H-91-112, cited at 61 *Antitrust and Trade Regulation Report* 81 (7-18-91).

33. *Apex Hosiery Co. v. Leader*, 310 U.S. 469, 495 (1940).

prohibitions.³⁴ Other courts have held that the actual sale of stock involves a "service" and that, therefore, anticompetitive behavior by stock brokerage firms in marketing shares is illegal under antitrust laws.³⁵

Several courts have voiced the conclusion that the securities laws have preempted antitrust laws as they apply to collusive bidding of target companies. This conclusion is based on the establishment of the Securities Act of 1933 and the Securities Exchange Act of 1934 as postdating that of the creation of the Sherman Act³⁶ in 1890 and the Clayton Act in 1914. Although both the 1933³⁷ and 1934³⁸ Acts preserve the "rights and remedies that may exist at law or in equity," the decisions thus far have held that no such rights extended to the purchase of companies. One court reasoned that because no decision prior to enactment of the securities acts had permitted antitrust prosecution of collusive takeovers, there were no such "rights or remedies" to be preserved by the 1933 and 1934 Acts.³⁹ "And of course a non-existent remedy cannot be saved by the Securities Acts provisions," noted the court.⁴⁰

Further justification for denying the application of antitrust laws to collusive corporate purchases is found in the principle that antitrust laws are inapplicable in cases where a more specialized remedy is

34. *Bucher v. Shumway*, 452 F.Supp. 1288, 1290 (1978); *Kalmanovitz v. G. Heileman Brewing Co., Inc.*, 769 F.2d 152, 156-57 (1985). But see *Finnegan v. Campeau Corp.*, 915 F.2d 824, 827-28 (2d Cir. 1990), *cert. denied* 111 U.S. 1624 (1991). ("That there are few antitrust cases involving sales of stock comports with our belief that such claims are properly brought under the securities and not antitrust laws; it does not establish that the antitrust laws are inapplicable because stock may not be categorized as a manufactured good.")

35. *Silver v. New York Stock Exchange*, 373 U.S. 341 (1963) (antitrust law applies where stock exchange arbitrarily deprived independent securities dealers of necessary telephone connections); *Gordon v. New York Stock Exchange*, 422 U.S. 659 (1975) (antitrust law applies to exchange and member-firm practice of fixing commission rates); *United States v. National Association of Securities Dealers, Inc.*, 422 U.S. 694 (1975) (antitrust law applies to agreement to restrict sale and distribution of mutual funds).

36. 15 U.S.C. section 1.

37. "Section 16. The rights and remedies provided by this title shall be in addition to any and all other rights and remedies that may exist at law or in equity."

38. "Section 28. (a) The rights and remedies provided by this title shall be in addition to any and all other rights and remedies that may exist at law or in equity. . . ."

39. *Shaefer v. First National Bank of Lincolnwood*, 326 F. Supp. 1186, 1191 (1970).

40. *Id.* at 1192.

available.⁴¹ More importantly, the remedies for violations of antitrust laws differ from those afforded securities violations, so that application of both laws would lead to incongruity about penalties to be imposed. Antitrust laws provide a treble-damage remedy,⁴² while securities laws violations do not.⁴³ The laws likewise contain different provisions for statutes of limitations,⁴⁴ and for attorneys fees.⁴⁵ "These differences are substantial," noted one court, "and would encourage investors to bring suit under the Sherman Act. Certainly Congress could not have intended that the damage restrictions contained in the carefully drawn prohibitions against market manipulation in the 1934 Act could be evaded and effectively nullified by the simple expedient of evoking the Sherman Act."⁴⁶ Accordingly the *Bucher* court rejected the argument that the securities laws are designed to regulate unlawful price fixing in the "fraudulent sense" from securities price fixing in the "anticompetitive sense."⁴⁷

5.2 APPLICATION OF SECURITIES LAWS

If the antitrust laws have been implicitly revoked by the securities acts, then the question remains: What remedy exists to shareholders victimized by the collusive bidding of potential purchasers? Beyond the SEC's requirement of disclosure, the answer is none.

In 1968 Congress enacted the William Act,⁴⁸ which amended the Securities Exchange Act of 1934 to "close a significant gap in investor protection under the Federal securities laws by requiring the disclosure of pertinent information to stockholders when persons seek to

41. "Where specific damage provisions are contained in regulatory statutes, it has been held that there may be no recovery of treble damages under the antitrust laws." *S.S.W., Inc. v. Air Transport Association of America*, 191 F.2d 658, 663 (D.C. Cir. 1951). See also *Terminal Warehouse Co. v. Penn. Ry. Co.*, 297 U.S. 500 (1936), (Shipper has no cause of action under antitrust law. Instead, any remedy was limited to the Interstate Commerce Act.). Similarly, antitrust laws inapplicable in case where plaintiff alleged a conspiracy to restrain trade of steamship lines. Instead, any recovery was limited to the Shipping Act of 1916. *United States Nav. Co. v. Cunard S.S. Co.*, 284 U.S. 474 (1932).

42. 15 U.S.C. section 15.

43. Section 28(a) of the 1934 Act.

44. Compare section 13 of the 1933 Act and sections 9(e) and 18(c) of the 1934 Act with 15 U.S.C. section 15b (Sherman Act).

45. Compare section 9(e) of the 1934 Act with 15 U.S.C. section 15 (Sherman Act).

46. *Schaefer v. First National Bank of Lincolnwood*, 326 F. Supp. 1186, 1192 (N.D.Ill. 1970), *aff'd* 509 F.2d 1287 (7th Cir. 1975), *cert. denied* 425 U.S. 943 (1976).

47. *Bucher v. Shumway*, 452 F.Supp. 1288, 1292 (1978).

48. 15 U.S.C. sections 78n (d)-(f).

obtain control of a corporation by a cash tender offer or through open market or privately negotiated purchases of securities."⁴⁹ The *Bucher* court reasoned that Congress tacitly permitted parties to join in making tender offers for the stock of target companies: "The offer normally consists of a bid by an individual or group to buy shares of a company—usually at a price above the current market price."⁵⁰ The *Finnegan* court rejected the argument that the Williams Act's reference to "groups" of individuals referred only to those who made agreements prior to bidding for stock of a target corporation, as opposed to rival bidders who joined to effectively halt the bidding. "[N]either the Williams Act nor the SEC regulations make a distinction between joint bids made by parties prior to entering a battle for control of the target and those made by parties who are rival bidders at the outset."⁵¹ "This court is unwilling," proclaimed Judge Tenney in *Bucher*, "to conclude that the Congress was so addled as to have carefully legislated regulatory procedures for an activity it elsewhere forbade in the exercise of its legislative power."⁵²

What controls exist within the Williams Act to preclude collusive bidding of takeover targets? Section 14(e) of the Act makes it unlawful "for any person to engage in any fraudulent, deceptive, or manipulative acts or practices, in connection with any tender offer."⁵³ Whether a private right of action exists to enforce Section 14(e) is unclear,⁵⁴ but even if so, a bidder may be immune from suit as long as he has made a full disclosure, despite his collusive dealings. The purpose of the Williams Act was to protect shareholders by ensuring that they have adequate information concerning offers before deciding whether to sell or retain their shares.⁵⁵ Once that disclosure has been made, there has been no "fraudulent, deceptive, or manipulative" conduct

49. 113 Cong. Rec. 854 (1967), quoted in *Piper v. Chris-Craft Industries, Inc.*, 430 U.S. 1, 26 (1977).

50. H.R. Rep. No. 1711, 90th Cong., 2d Sess., reprinted in *U.S. Code Cong. & Admin. News* at 2811 (1968).

51. *Finnegan v. Campeau Corp.*, 915 F.2d 824, 830 (2nd Cir. 1990).

52. *Bucher v. Shumway*, 452 F.Supp. 1288, 1293 (1978).

53. 15 U.S.C. section 78n(e) (1988).

54. See, for example, Tallman, Karen, A., "Private Causes of Action Under SEC Rule 14e-3," 51 *George Washington Law Review* 290 (1983).

55. *American Carriers, Inc., v. Baytree Investors, Inc.*, 685 F.Supp. 800 (D. Kan. 1988). See also *Bucher v. Shumway*, 452 F.Supp. 1288, 1294 (1978), "The sole purpose of the Williams Act is to provide information to the investor so that he may make a rational decision whether or not to tender all or part of his shares." (Citation omitted.)

under current interpretations of the Act,⁵⁶ despite the existence of collusion in that offer. What remains, then, is that the sole "remedy" for shareholders whose stock value may have been adversely affected by collusive bidding is to refuse to sell their shares. According to one lawyer with experience in takeover deals, in practice, at least with friendly takeovers, target corporations often require that potential acquirers agree not to contact other potential acquirers in exchange for access to nonpublic information concerning the takeover target.⁵⁷

5.3 JUDICIAL APPROACH

The underlying judicial antipathy to such cases seems evident. The decisions seem based on the premise that prohibiting collusion will discourage takeovers and thereby result in the retention of inefficient management. In *Finnegan*, the court held, "If the antitrust laws were applied to prohibit agreements between rival bidders, it would discourage potential bidders from making a tender offer."⁵⁸ The court reasoned that if rival bidders were precluded from joining to halt bidding, it would discourage takeover attempts, thereby frustrating the neutrality aimed for by the Williams Act.⁵⁹

The second point, that the courts feel that target shareholders unfairly benefit from rival bidding, appears unwarranted. If collusive bidding is permitted, then there is some premium being "paid" for the stock that is either going to one rival bidder (in exchange for withdrawing from the bidding contest)⁶⁰ or is being effectively split between the two bidders who, while once rivals, have now joined forces.⁶¹ Logically, however, any price being paid for the company

56. The SEC is able to regulate agreements between bidders by virtue of its authority to define fraudulent, deceptive, or manipulative practices and to prescribe means to prevent such practices. Through its power to prohibit fraudulent activity, the SEC has supervisory authority over the submission of joint bids or other agreements in the corporate auction contest. Although such agreements are not defined as deceptive practices under the regulations, the fact that they must be disclosed under Regulation 14D-1 clearly implies that the SEC contemplated their existence. *That the SEC has chosen not to prohibit agreements between rival bidders as fraudulent or manipulative practices once shareholders are properly informed of them does not reduce the SEC's supervisory authority over such agreements.* (Emphasis added.) (Citations omitted.) *Finnegan v. Campeau Corp.*, 915 F.2d 824, 831 (2nd Cir. 1990).

57. Correspondence with C. James Levin, J. D., M. M. O'Melveny & Meyers, Los Angeles, CA, January 21, 1994.

58. *Id.*

59. *Id.*

60. *Finnegan v. Campeau Corp.*, 722 F. Supp. 1114 (S.D.N.Y. 1989), *aff'd* 915 F.2d 824 (2nd Cir. 1990), *cert. denied* 111 U.S. 1624 (1991), discussed *infra* at Appendix A.4. See also discussion of Fruehauf bidding *infra* at Appendix A.2.

61. See, for example, discussion of West Point-Pepperell-J. P. Stevens buyout discussed *infra* at Appendix A.5.

should belong to the beneficial owners of the company, that is, the shareholders. Despite this, however, the decisions display a hostility to this outcome. "[N]owhere in the Williams Act," concludes the *Bucher* court, ". . . is it intimated that the purpose of the legislation is to force up the market by requiring possible contenders for corporate control to bid competitively so that the lucky shareholder of an attractive 'target' company can reap a windfall."⁶² The end result is that shareholders in target companies that have been the object of collusive bidding can expect no help from the courts other than to compel full disclosure from the rival bidders.

6. CONCLUSIONS

This paper attempts to demonstrate four assertions.

1. Explicit collusion among bidders engaged in a takeover is legal.
2. The laws did not mandate this finding by the courts.
3. Empirically, the cartels appear to have a negligible effect on share prices of the target firms.
4. Because of conflicting external effects, it is not generally clear what the appropriate public policy should be toward bidder cartels.

Given the number and vehemence of extant court decisions, it seems quite clear that bidder cartels will remain legal unless proscribed by a new act of Congress. This is true in spite of the fact that the major reason for the courts' decisions rests on the preemption of the antitrust laws by the securities laws, which explicitly say, "The rights and remedies provided by this title shall be in addition to any and all other rights and remedies that may exist at law. . . ." (Section 16).

We find that the announcement of a cartel has a small impact on the target share price. This could arise because the market anticipated the cartel's formation. We find this theory implausible, because there were few such cartels in the time period but many takeover contests. Even if the cartel were anticipated, this doesn't address the more profound question: Why didn't the cartel form earlier and prevent some of the bidding that did arise?

Our model is not intended to be an exact description of the bidding and cartel formation process. In particular, it would be desirable to endogenize the cartel formation. Moreover, the model cannot confront the multiple rounds of bidding that arise before cartels form. Nevertheless, the model illuminates two conflicting externalities that

62. *Bucher v. Shumway*, 452 F. Supp. 1288, 1294 (1978).

we think will play a role in any analysis of this issue. The first externality is informational in nature: An attempted hostile takeover alerts other potential bidders to the target. The second external effect is that takeover attempts preempt later takeovers; that is, the shareholders will not obtain the benefits of waiting for a higher bidder to come along. Either of these externalities can dominate, at least when bidders have market power, making the appropriate public policy unclear.

The courts do not wish to discourage hostile takeovers by prohibiting cartels. When the bidder market is competitive, increasing the frequency of bidder cartels increases the frequency of beneficial takeovers. In this environment, shareholders like cartels *ex ante*, because the increased frequency of takeovers results in higher share prices. Obviously, however, a shareholder would like to prevent the cartel *ex post*; that is, once the bidders have arrived and started bidding, the shareholders would like to prevent a cartel from forming. The courts' favorable view of bidder cartels may be rationalized by this model, in that the shareholders have already extracted the gains, through higher initial prices, of the likelihood of bidder cartels, and successfully blocking the cartel would result in a windfall transfer from the bidders (who have zero expected profits) to the target shareholders, and damage the share prices of other firms, because of the resulting decrease in profitability of bidding, and the reduction in the rate of beneficial takeovers. This illuminates an important difference between cartels of bidders in a takeover contest and other auction markets. Only in the takeover contest is there a mechanism for the cartel rents to be transferred back to the "victims," via the increase in market price associated with the expectation of an earlier takeover. That is, shareholders have a means of benefiting from the cartel behavior, while buyers of other products that become cartelized have no such means.

APPENDIX A: THE FIVE CASES

A1. PAUL KALMANOVITZ, IRWIN JACOBS, AND HEILEMAN BIDDING FOR PABST

In December 1981, investor Irwin Jacobs began a proxy battle for control of Pabst Brewing Co. *Wall Street Journal*, December 8, 1981, p. 8 (E). After his initial attempt failed in July 1982 due to antitrust problems, Jacobs and his fellow investor Paul Kalmanovitz, through their firm JMSL Acquiring Corp., offered \$22 per share to take the firm private. *Wall Street Journal*, October 27, 1982, p. 16 (E). Several days later, G. Heileman Brewing Co. bid \$25 per share for 73 percent of

the outstanding shares. *Wall Street Journal*, November 8, 1982, p. 4 (E). Two days later, Heileman increased its bid to \$27.50 per share for 73% of the outstanding shares. *Wall Street Journal*, November 10, 1982, p. 7 (W). In response, JMSL increased its bid to \$30 per share for three million shares. (Pabst had 8.2 million shares in total.) *Wall Street Journal*, November 19, 1982, p. 10 (W). Five days later, JMSL increased its bid again to \$35 per share for three million shares. *Wall Street Journal*, November 24, 1982, p. 6 (E). Then on November 28, 1982, Mr. Jacobs agreed to support Heileman's new bid of \$29 per share for 5.6 million shares. The remaining shares would be purchased with securities worth approximately \$24 per share. Heileman agreed to pay Mr. Jacobs \$7.5 million for legal expenses. However, Mr. Kalmanovitz vigorously objected to the deal, saying that Mr. Jacobs went "behind his back." Mr. Kalmanovitz's objection was that, unlike Mr. Jacobs, he owned no Pabst shares and so stood to gain nothing from the deal. Heileman offered Mr. Kalmanovitz \$5 million to withdraw from the bidding for Pabst, but Mr. Kalmanovitz turned the offer down, stating that he would bid \$42 per share for Pabst. *Wall Street Journal*, November 29, 1982, p. 3 (E). One week later, Mr. Kalmanovitz bid \$32 per share for 4.15 million shares. *Wall Street Journal*, December 6, 1982, p. 6 (E). Ten days later, Heileman increased its bid to \$32 per share for 5.6 million shares. *Wall Street Journal*, December 16, 1982, p. 56 (E). One week later, Mr. Kalmanovitz increased his bid to \$40 per share for 4.15 million shares. *Wall Street Journal*, December 16, 1982, p. 56 (E). In late December, Heileman won control of Pabst, despite its lower bid, when 6.73 million shares were tendered to it. Most arbitragers tendered their shares to Heileman because they feared that Mr. Kalmanovitz would not receive enough shares to complete his offer. *Wall Street Journal*, December 24, 1982, p. 22 (E). This case was litigated at *Kalmanovitz v. G. Heileman Brewing Co.*, 769 F.2d 152 (3d Cir. 1985).

A2. ASHER EDELMAN AND THE INCUMBENT MANAGEMENT OF FRUEHAUF BIDDING FOR FRUEHAUF

On March 27, 1986, investor Asher Edelman made an unsolicited offer of \$41 per share (\$783.1 million based on 19.1 million shares outstanding) for control of Fruehauf Corporation. Mr. Edelman had previously approached Fruehauf twice with leveraged buyout proposals, but had been rebuffed. *Wall Street Journal*, March 28, 1986, p. 32 (E). Fruehauf's stock price may have closed below Mr. Edelman's bid because in two previous takeovers, Mohawk Data Sciences Corp. and Datapoint Corp., the firms' stock prices fell after the takeovers. *Wall Street Jour-*

nal, April 1, 1986, p. 14 (E). Fruehauf's directors rejected Mr. Edelman's bid. *Wall Street Journal*, April 2, 1986, p. 27 (E). Mr. Edelman increased his offer to \$42 a share. *Wall Street Journal*, April 22, 1986, p. 25 (E). Fruehauf's directors again rejected Mr. Edelman's bid. *Wall Street Journal*, April 25, 1986, p. 36 (E). Mr. Edelman increased his offer to \$44 a share (\$946 million) and began a tender offer. The tender offer was contingent on receiving at least 51% of the total of 23.6 million fully diluted shares, as well as other factors. *Wall Street Journal*, June 12, 1986, p. 12 (E). The incumbent management of Fruehauf and Merrill Lynch & Co. announced a leveraged buyout at \$48.50 a share (\$1.1 billion), and simultaneously rejected Mr. Edelman's \$44 a share tender offer. The leveraged buyout would consist of \$48.50 cash for as many as 17.5 million shares (78% of the outstanding shares) and securities valued at \$48.50 for the remaining shares. However, traders valued the two-tier offer at approximately \$47.50 a share. *Wall Street Journal*, June 26, 1986, p. 2 (E). Mr. Edelman raised his bid the next day to \$49.50 a share but did not initiate a new tender offer at that price, so his previous tender offer of \$44 a share was his offer to shareholders. *Wall Street Journal*, June 27, 1986, p. 3 (E). On July 24, after the market had closed, a federal court barred Fruehauf and Merrill Lynch Co. from completing their leveraged buyout, but ordered them to keep the offer open until August 29. The judge also ordered Fruehauf to negotiate in good faith with Mr. Edelman. *Wall Street Journal*, July 25, 1986, p. 2 (E). A federal appeals court later upheld the judge's decision. *Wall Street Journal*, August 6, p. 4 (E). Mr. Edelman met with a special committee of outside Fruehauf directors and presented his offer of \$49.50 a share cash for 77% of the outstanding shares, and a package of securities for the remaining shares. *Wall Street Journal*, August 8, p. 4 (E). Mr. Edelman then modified his offer to be \$49.50 a share cash for 50.1% of the outstanding shares, and preferred stock with a face value of \$51 a share for the remaining shares. Wall Street sources suggested that the preferred stock may be worth less than \$51 a share. *Wall Street Journal*, August 19, p. 10 (E). Finally, the takeover contest ended when Mr. Edelman dropped out of the bidding. *New York Times*, August 23, 1986, p. 29. Merrill Lynch agreed to pay Mr. Edelman \$21 million and to pay \$49 a share cash for all of his two million shares, as opposed to the combination of cash and securities offered to other shareholders. *Id.* The management group acquired Fruehauf with an offer of \$49.50 a share each for 71% of the outstanding stock and a combination of preferred and common stock valued at \$48.75 a share for the remainder of the outstanding stock. *Id.*

A3. BLACK & DECKER AND KELSO BIDDING FOR AMERICAN STANDARD

On January 26, 1988, Black & Decker Corp. made an unsolicited offer for American Standard. *Wall Street Journal*, January 26, 1988, p. 3 (E). The offer price of \$56 per share constituted a substantial premium over American Standard's closing price of \$38. On January 27, American Standard closed at \$58.875. *Wall Street Journal*, January 28, 1988, p. 2 (E). On February 5, Black and Decker increased its offer to \$65 a share, and American Standard closed at \$63.875. *Wall Street Journal*, February 8, 1988, p. 7 (E). On February 9, American Standard rejected Black & Decker's bid. *Wall Street Journal*, February 10, 1988, p. 10 (E). On February 18, American Standard countered with a cash-and-debt recapitalization plan valued at \$68 to \$70 a share. *Wall Street Journal*, February 19, 1988, p. 23 (E). On February 23, Black & Decker raised its offer to \$68. *Wall Street Journal*, February 24, 1988, p. 4 (E). On March 4, American Standard raised the value of its cash-and-debt recapitalization plan to an estimated value of \$73 to \$74 a share; that same day Black & Decker raised its offer to \$73. *Wall Street Journal*, March 7, 1988, p. 4 (E). On March 7, American Standard again urged its shareholders to not tender their shares to Black & Decker. *Wall Street Journal*, March 8, 1988, p. 26 (E). On March 13, American Standard announced that it held talks with an undisclosed bidder to be acquired for more than \$75 a share. *Wall Street Journal*, March 14, 1988, p. 3 (E). On March 16, Black & Decker raised its offer to \$77 a share. *Wall Street Journal*, March 17, 1988, p. 4 (E). On March 17, American Standard announced that it had accepted a bid of \$78 a share from Kelso & Co., a closely held investment banking firm. *Wall Street Journal*, March 18, 1988, p. 2 (E). On March 21, the *New York Times*, p. D1, reported that many arbitrageurs still believed that Black & Decker would win the takeover contest because of its ability to pay shareholders 2 weeks before Kelso. The *Times* also noted that even after Kelso's bid, American Standard closed at only \$75.875, which was an indication that Kelso's bid was considered uncertain. On March 20, Kelso's managing partner stated the firm's willingness to increase its offer in order to win the contest. *Wall Street Journal*, March 21, 1988, p. 6 (E). On March 22, Black & Decker and Kelso announced a truce. *Wall Street Journal*, March 23, 1988, p. 5 (E). Under a settlement agreement, Kelso paid Black & Decker \$25 million, and Black & Decker withdrew from the bidding. Black & Decker noted that their expenses were less than \$25 million. A Black & Decker vice president noted that one reason for their withdrawal was Kelso's stated willingness to raise its offer price. American Standard closed at \$76.625, down 12.5 cents. The *New York Times*,

March 23, p. D1, noted: "The agreement—and the \$25 million consolation price—are likely to cost Kelso less than another round of bidding."

A4. CAMPEAU AND MACY'S BIDDING FOR FEDERATED

Campeau Corporation initiated an unsolicited takeover of Federated Department Stores on January 25, 1988. Campeau offered \$47 a share for Federated's 89.6 million outstanding shares (\$4.2 billion). *Wall Street Journal*, January 26, 1988, p. 2 (E). Federated filed suit to prevent the takeover. *Wall Street Journal*, January 27, 1988, p. 8 (E). Campeau offered \$61 a share contingent on a merger agreement. *Wall Street Journal*, February 4, 1988, p. 2 (E). Campeau then offered \$66 a share again contingent on a merger agreement, but Federated's board rejected the bid and responded with a restructuring proposal. *Wall Street Journal*, February 17, 1988, p. 3 (E). The next day, Campeau increased its hostile tender offer to \$61 a share. An analyst valued Federated's restructuring at \$55–\$60 a share. *Wall Street Journal*, February 18, 1988, p. 3 (E). Campeau then increased its hostile tender offer to \$66 a share (\$5.84 billion). *Wall Street Journal*, February 26, 1988, p. 3 (E). Campeau then offered \$68 a share (\$6.02 billion) contingent on a merger agreement. *Wall Street Journal*, February 29, 1988, p. 3 (E). Federated tentatively agreed to the merger but then received a bid from R. H. Macy & Co. for \$73.80 a share for approximately 80% of Federated's shares. Macy's proposed that the remaining shares would be exchanged for new shares in the Federated-Macy's combination. *Wall Street Journal*, March 1, 1988, p. 2 (E). Wall Street analysts valued Macy's bid at approximately \$71 a share. *Wall Street Journal*, March 2, 1988, p. 3 (E). Federated agreed to be acquired by Macy's. Under the agreement, Macy's would pay \$74.50 a share for approximately 80% of Federated's shares, with the remaining 20% of shares exchanged for stock equal to 40% of the combined firm. Analysts valued that stock at approximately \$10 a share. In response, Campeau raised its hostile tender offer. Campeau offered \$75 a share for approximately 80% of Federated's shares, and \$44 a share for the remaining shares to be paid after the firms merged. Analysts valued Campeau's bid at \$68 a share on a fully diluted basis. *Wall Street Journal*, March 3, 1988, p. 3 (E). Macy's increased its bid to \$77.35 a share for 80% of Federated's shares, but reduced its bid for the remaining 20% of the shares to 36% of the combined firm. *Wall Street Journal*, March 15, 1988, p. 3 (E). Campeau then raised its hostile tender offer to \$82 a share for approximately 80% of Federated's shares but reduced the offer for the remaining 20% of the shares to \$37. Campeau valued the offer at \$73

a share. *Wall Street Journal*, March 23, 1988, p. 3 (E). *Wall Street Journal*, March 23, 1988, p. 3 (E). Federated's board of directors then called for a "final" round of bidding. *New York Times*, March 29, 1988, p. D1. Campeau's final bid was valued at \$74 a share, and Macy's final bid was valued at \$73.88 a share. These bids were made on March 30. *New York Times*, April 1, 1988, p. D3. When Federated's board of directors informed Macy's that Campeau's bid was higher, Macy's responded by increasing its bid on March 31 to a blended value of \$75.51. *Id.* Federated's board of directors then said it would allow Campeau to submit another bid. *New York Times*, April 2, 1988, p. D3. Rather than accept the offer of Federated's board to submit another bid, Campeau met with Macy's on the evening of March 31, and the two firms agreed to stop their bidding. *Id.* Macy's agreed to drop out of the bidding under a plan in which Campeau would acquire Federated for \$73.50, then sell two Federated divisions (I. Magnin and Bullock's Wilshire) to Macy's and pay Macy's bidding costs of approximately \$60 million. *Id.* This case was litigated at *Finnegan v. Campeau*, 722 F. Supp. 1114 (1989), *aff'd* 915 F.2d 824 (2nd Cir. 1990), *cert denied* _____ U.S. _____ (1991).

A5. MANAGEMENT LBO, WEST POINT-PEPPERELL, AND ODYSSEY PARTNERS BIDDING FOR J. P. STEVENS

In February 1988, J. P. Stevens put itself into play with a management buyout offer of \$38 a share cash (17.8 million shares assuming full dilution and the exercise of options) plus a debenture package valued at \$5 a share (\$696 million). *Wall Street Journal*, March 2, 1988, p. 2 (E). On March 1, West Point-Pepperell made an unsolicited offer of \$56 a share cash (\$873.6 million), and the management group raised its offer to \$40 a share cash plus junior subordinated debentures valued at \$10 a share plus preferred stock valued at \$5 a share (\$858 million). *Id.* Two weeks later, J. P. Stevens agreed to an offer of \$61.50 a share cash (\$959.4 million) from Odyssey Partners, but West Point-Pepperell raised its offer to \$62.50 (\$975 million). *Wall Street Journal*, March 15, 1988, p. 4 (E). On March 24, West Point-Pepperell raised its bid to \$64 a share (\$1.14 billion) contingent on management signing a definitive takeover agreement by April 5. If such an agreement were not signed, West Point-Pepperell would proceed with its \$62.50 bid. *Wall Street Journal*, March 25, 1988, p. 4 (E). On March 29, Odyssey raised its bid to \$64 a share. *Wall Street Journal*, March 30, 1988, p. 4 (E). On April 11, West Point-Pepperell raised its bid to \$67 a share, and after the market closed Odyssey raised its bid to \$68.50 a share (\$1.22 billion). *Wall Street Journal*, April 11, 1988, p. 4 (E). West Point-Pepperell and

its ally NTC Group, Inc. met with Odyssey. *Wall Street Journal*, April 20, 1988, p. 6 (E). The *Wall Street Journal* noted that the meeting fueled "speculation that an accord to split up the textile giant would keep their bidding contest from going higher. . . . [However] analysts also think that Stevens is fully priced already, giving both suitors the incentive to stop their warring." *Id.* West Point-Pepperell and Odyssey agreed to stop bidding under a plan in which West Point-Pepperell purchased J. P. Stevens for \$68.50 a share and then sold several divisions to Odyssey for \$530 million and one-half of Stevens' towel business and 20% of Stevens' sheet business to NTC for \$170 million. NTC had initiated the talks between West Point-Pepperell and Odyssey. *Wall Street Journal*, April 26, 1988, p. 2 (E). Approximately 85% of J. P. Stevens shares were received by West Point-Pepperell in its tender offer. *New York Times*, May 10, 1988.

APPENDIX B: PROOFS AND DERIVATIONS

Proof of Lemma 1. From (1),

$$\begin{aligned} m_1 &= F(m_1)p_1 + (1 - F(m_1)) \left[\alpha m_1 + \frac{1 - \alpha}{1 - F(m_1)} \right. \\ &\quad \left. \times \left(\int_{m_1}^{y_1} x_2 f(x_2) dx_2 + y_1(1 - F(y_1)) \right) \right] \\ &= F(m_1)p_1 + m_1(1 - F(m_1)) + (1 - \alpha) \int_{m_1}^{y_1} 1 - F(z) dz. \end{aligned}$$

Thus,

$$0 = (m_1 - p_1)F(m_1) - (1 - \alpha) \int_{m_1}^{y_1} 1 - F(z) dz. \quad (\text{B1})$$

The right-hand side of (B1) is negative at $m_1 = p_1 < y_1$, positive at $m_1 = y_1$, and increasing for $m_1 \in (p_1, y_1)$, so the solution exists and is unique. \square

Proof of Lemma 2. Equilibrium beliefs require

$$\begin{aligned} 0 &= \frac{\partial \pi}{\partial y_1} \Big|_{y_1=x_1} \\ &= (1-\alpha)(1-F(x_1)) - m'_1(x_1)[1 + (1-\alpha)(1-F(m_1)) \\ &\quad - \left(1 - \frac{1}{2}\alpha\right)(1-F(m_1))] \\ &= (1-\alpha)(1-F(x_1)) - m'_1(x_1) \left[1 - \frac{1}{2}\alpha(1-F(m_1))\right]. \end{aligned}$$

This represents a maximum because $\partial^2 \pi / \partial x_1 \partial y_1 = 0$. □

DERIVATION OF UNIFORM EXAMPLE: Let $F(x) = x$ for $x \in [0, 1]$. From Lemma 2:

$$\left[1 - \frac{1}{2}\alpha + \frac{1}{2}\alpha m_1(y)\right] m'_1(y) = (1-\alpha)(1-y).$$

Integrating from m_0 to x and collecting m_0 terms, using $m_1(m_0) = m_0$, yields:

$$\frac{\alpha}{4} m_1(x)^2 + \left(1 - \frac{\alpha}{2}\right) m_1(x) = \frac{\alpha}{2} m_0 + \frac{1}{2} \left(1 - \frac{\alpha}{2}\right) m_0^2 + \frac{1}{2} (1-\alpha)(2x - x^2).$$

The quadratic formula gives that

$$\begin{aligned} m_1(x) &= \frac{2}{\alpha} \sqrt{\left(1 - \frac{1}{2}\alpha\right)^2 + \frac{1}{2}\alpha(\alpha m_0 + \left(1 - \frac{1}{2}\alpha\right) m_0^2 + (1-\alpha)(2x - x^2))} \\ &\quad + 1 - \frac{2}{\alpha}. \end{aligned}$$

This is used with eq. (6) to numerically solve for m_0 , from which numerical computations of Em_1 and Em_2 are straightforward.

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