



Buyer resistance for cartel versus merger [☆]



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ABSTRACT

Procurement practices are affected by uncertainty regarding suppliers' costs, the nature of competition among suppliers, and uncertainty regarding possible collusion among suppliers. Buyers dissatisfied with bids of incumbent suppliers can cancel their procurements and resolicit bids after qualifying additional suppliers. Recent cartel cases show that cartels devote considerable attention to avoiding such resistance from buyers. We show that in a procurement setting with the potential for buyer resistance, the payoff to firms from forming a cartel exceeds that from merging. Thus, firms considering a merger may have an incentive to collude instead. We discuss implications for antitrust and merger policy.

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1. Introduction

In the late 1800s, although neither mergers nor cartels were illegal,¹ many firms chose to form a cartel rather than merge.² Although cartels in this period did not need to hide their existence to avoid prosecution, they operated in a clandestine manner to disguise their presence from their customers.³ This suggests that a key benefit of cartel formation versus merger is that a cartel can take advantage of customer beliefs that the policing action of competition is still in place.

Procurements commonly include an element of "buyer resistance," whereby buyers that are concerned that the policing action of competition is not adequate can resist high prices. As shown through a review of municipal procurements (see Appendix A.1), which are typically organized as sealed-bid competitive procurements, buyer

¹ Mergers as an effort to monopolize were not recognized as a violation of the law until the resolution of *Northern Securities v. U.S.* (197 U.S. 400) (hereafter *Northern Securities*) in 1904. The operation of a cartel was not recognized as a violation until decisions of 1897 and thereafter (Bittlingmayer, 1985, p.77).

² As described by George Bittlingmayer (1985, p.77): "Perhaps as much as one-half of U.S. manufacturing capacity took part in mergers during the years 1898 to 1902. These mergers frequently included most of the firms in an industry and often involved firms that had been fixing prices or that had been operated jointly through the legal mechanism of an industrial trust. ... The Sherman Antitrust Act was passed in 1890, and the first crucial decisions making price fixing illegal – *Trans-Missouri* (1897), *Joint Traffic* (1898), and *Addyston* (1899) – occurred just before or during the first stages of the merger wave. Merger of competing firms remained unchallenged until 1904."

³ See Hylton (2003, pp.30–37).

resistance to high prices often comes in the form of buyers rejecting all bids in an initial procurement and then after some delay holding a new procurement with additional bidders present.⁴ Colluding firms often face buyer resistance that limits their ability to implement collusive price increases.⁵

Considering the tradeoffs between merger and cartel formation, a merged entity does not incur costs associated with disguising its existence from its customers, and a merged entity does not have to overcome the difficulties faced by cartels associated with incentives for cartel members to secretly deviate from the terms of a collusive agreement (see Stigler (1964)). Thus, in the absence of agency problems and transaction costs inherent in large firms as in Williamson (1985) or Coase (1937), one might expect a merged entity to be able to do anything that a cartel can do and also potentially be able to do things that a cartel cannot. However, a clandestine cartel may be able to take advantage of customer beliefs that the policing action of competition might still be in place, and thus may face reduced buyer resistance. Thus, firms may prefer cartel over merger.

There are, of course, other possible explanations for a preference for cartel over merger. For example, collusion might allow the suppression of rivalry among a larger number of firms than would be permitted through merger. High fixed costs or other transaction costs of a merger might create a preference for collusion. If executives of one merging firm could lose their jobs as part of the consolidation, but would keep their jobs in the case of collusion, then they might resist a merger. Finally, if price setting behavior is similar under cartel and merger, then the firms may be close to indifferent between the two, choosing one if the other is not feasible. Although we recognize these other possibilities, we focus on the choice between merger and collusion under buyer resistance and on a model that is designed to address that issue.

In this paper, we examine whether one can understand the decision by firms to form a cartel rather than merge as an equilibrium response to buyer resistance. We consider a model in which firms have an opportunity to merge, collude, or remain noncooperative and in which there is a procurement process with the possibility for buyer resistance. We model buyer resistance as the ability of the buyer to reject initial bids and hold a new procurement after inviting additional bidders to participate.⁶ In Section 2, we discuss the details of one such episode that received attention in the landmark Addyston Pipe conspiracy. For additional examples, see Appendix A.1.

As we show, firms may find a cartel structure to be more profitable than a merger when customers are uncertain as to whether nonmerged firms are operating as a cartel or not. We show that in an environment where buyers are strategic, firms prefer to collude rather than merge.

We are able to quantify the expected payoff gain from collusion versus a merger within the context of our model. We show that the incremental payoff from collusion relative to a merger with no cost efficiencies can be substantial and that the efficiency effects of a merger may not be sufficient to offset these gains. We discuss evidence from

prosecuted cartels that is consistent with a choice of collusion over merger in Appendix A.2.

While cartels and horizontal mergers have been widely studied in the past,⁷ there is not much work that addresses the incentives for firms to choose between these two forms of industrial organization.⁸ An exception is Bittlingmayer (1985), which directly addresses why many firms preferred colluding over merging in the past. Building on Sharkey (1973), Bittlingmayer (1985) emphasizes the role of fixed costs in industries with uncertain demand. Bittlingmayer argues that in cyclical industries, where fixed costs can be recovered during periods of high demand but not during periods of low demand, firms may prefer collusion because it allows them the flexibility to coordinate only during period of low demand, when it is necessary to recover fixed costs.

Bittlingmayer (1985) also argues that early antitrust decisions against cartels raised the cost of maintaining cartels, which left firms with merger as the next best option and resulted in the first large-scale merger wave in the U.S. between 1898 and 1904. Stigler (1950) suggests that firms in the past might have preferred to cartelize rather than merge due to the obstacles posed by large capital requirements for mergers. Stigler argues that mergers became feasible because of the development of a sound market for securities by the New York Stock Exchange at the end of the 19th century and the removal of restrictions on the formation of large corporations after 1880.

Our paper is also related to the literature examining whether a merger might trigger entry. In our model, a cost to firms that merge rather than forming a cartel is that buyers respond to the merged market structure by being more likely to encourage entry. The Horizontal Merger Guidelines of the U.S. Department of Justice and Federal Trade Commission recognize the issue of merger-induced entry with discussion of how such entry affects their evaluation of proposed mergers. Werden and Froeb (1998) use merger simulations to show that in the absence of significant efficiency gains, mergers by price-setting firms may not induce entry, implying that competition authorities cannot rely on entry to remedy anticompetitive effects from mergers. Spector (2003) extends this work, establishing conditions under which, in the absence of efficiency gains, any profitable merger decreases welfare even if it does induce entry. In contrast, Cabral (2003) shows that with endogenous entry, the possibility of post-merger entry substantially improves the effect of a merger on consumer welfare, and Davidson and Mukherjee (2007) show that with endogenous entry, under certain conditions, all privately beneficial mergers are socially beneficial.

In our model, the prices offered by colluding sellers to the buyer are constrained by the ability of the buyer to shift demand to a later period in order to qualify an additional seller to participate in the procurement. In Snyder (1996), the buyer can also constrain collusive prices through the threat to shift demand to a later period, but the effect there arises from the dynamic nature of the game and the fact that the buyer can accumulate demand over time.⁹ As Snyder (1996) shows, because

⁴ The ability of federal procurement officials to reject all bids is formalized in the U.S. Federal Acquisition Regulations, which state: "Invitations may be cancelled and all bids rejected before award but after opening when ... (6) All otherwise acceptable bids received are at unreasonable prices, or only one bid is received and the contracting officer cannot determine the reasonableness of the bid price; (7) The bids were not independently arrived at in open competition, were collusive, or were submitted in bad faith." (U.S. Federal Acquisition Regulations, Section 14.404 Rejection of bids, <https://www.acquisition.gov/Far/reissue/FARvol1ForPaperOnly.pdf>).

⁵ In the Vitamins Cartel, which included firms BASF, Roche, and Daiichi, "When BASF's customers resisted the increase, Roche supported the rise by also announcing an increase.... According to Daiichi, the concerted increase was unsuccessful because of customer resistance...." (EC Decision in *Vitamins*, par. 325) In the Cartonboard Cartel, where colluding firms sold product to packaging manufacturers referred to as converters, "The converters have on some occasions resisted a proposed price increase for cartonboard on the ground that their own customers would in their turn refuse to accept a price increase for packaging...." (EC Decision in *Cartonboard*, par. 19).

⁶ For other approaches to modeling buyer resistance, see Harrington and Chen (2006) and Marshall et al. (2008).

⁷ On cartels, see the survey article by Levenstein and Suslow (2006) and the references therein. On mergers, see the survey article by Mookherjee (2006) and the references therein.

⁸ One could offer an explanation for the choice between a cartel and a merged entity as in Coase (1937). The trade-off between the costs of maintaining and operating a cartel versus the cost of running a large merged entity due to, say, diseconomies of scale or agency problems, is likely to influence the "merge or cartelize" decision for firms. See Nocke and White (2007) for the effects of vertical mergers on incentives to collude and Kovacic et al. (2009) for effects of horizontal mergers. For an examination of the tradeoff between merger and predation, see, e.g., Persson (2004).

⁹ Snyder (1996) considers a dynamic game in which in each of an infinite number of periods, there is a procurement in which sellers submit bids. The dynamics are provided by the fact that the buyer, who has a fixed demand in each period, can decline to purchase in some periods, accumulating a backlog of unmet demand, and then purchase a larger amount in a later period. The accumulation of demand (or the threat of accumulating demand) can benefit the buyer because, as described in Rotemberg and Saloner (1986), the existence of periods of high demand followed by periods of anticipated low demand makes it more difficult for sellers to sustain collusion because the gain from a deviation in the high demand period is large relative to the future punishment for deviating.

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