

Antitrust Enforcement*

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Abstract: This article explores the enforcement of those laws intended to promote competitive markets through the prohibition of certain practices such as price-fixing, welfare-reducing mergers, and monopolization. The discovery and prosecution of violations are examined including the role of leniency programs. The determination of penalties is investigated with an assessment of their relationship to optimal penalties. Enforcement policy is found to vary over time and its determinants are reviewed. Finally, the efficacy of enforcement is assessed.

Antitrust enforcement is the process by which a more competitive environment is created through the prohibition of certain practices deemed illegal by antitrust laws.

Restraints of trade such as price-fixing and bid-rigging are prohibited in the U.S. under Section 1 of the Sherman Act (1890) and in the E.U. under Article 81 of the Treaty of the European Communities (1999). Practices designed to create monopolies (such as predatory pricing and tying) are prohibited in the U.S. under Section 2 and in the E.U. under Article 82. Mergers that are harmful to competition are prohibited in the U.S. under Section 7 of the Clayton Act (1914) and in the E.U. under Article 2(3) of the Merger Regulation. Though this article will take a U.S. focus, much of what is described is applicable to many OECD countries.¹

Enforcement can involve three stages: i) discovery and evaluation of a possible antitrust violation; ii) prosecution when it is deemed there is a violation; and iii) levying of penalties and enacting of remedies when prosecution is successful. Antitrust cases can arise in a variety of ways. With a recent exception noted below, cartels are generally not discovered by the antitrust authorities but rather customers, employees, and even competitors. Though not yet widely used, economic and econometric methods for detecting

*I appreciate the comments of Vivek Ghosal.

¹For a more general treatment on antitrust policy, see Motta (2004) for the E.U. and Viscusi, Harington, and Vernon (2005) for the U.S.

collusion include determining whether: i) firm behavior is inconsistent with competition; ii) there is a structural break in behavior; iii) the behavior of suspected colluding firms differs from that of some benchmark competitive firms; and iv) a collusive model fits the data better than a competitive model (Harrington, 2004). In contrast, prospective merger cases are brought by the participants themselves to the antitrust authorities, as mandated by the Hart-Scott-Rodino Act of 1976. In evaluating a proposed merger, the primary considerations are to what extent it would raise price and whether there are offsetting cost savings.

In the case of price-fixing, the government levies fines at the corporate level which, as a result of the Sentencing Reform Act of 1984, can be as high as twice the gross pecuniary gain of the defendant or twice the pecuniary loss of the victims (though a Supreme Court decision in 2005 has since put these guidelines into jeopardy). The most significant financial penalty comes from private damages which, due to the Clayton Act, allows direct buyers to receive compensation equal to three times the damages. At the individual level, the government imposes fines and prison sentences; since 1970, 53% of convicted individuals have been imprisoned (Gallo et al, 2000). The use of government fines is common in many other countries though prison sentences and civil damages are unique to the U.S. and Canada.

Are these penalties optimal? An optimal penalty is one that only deters those activities that are welfare-reducing. If the gain to the offenders is g , the loss to other agents is l , the probability of being penalized is p , and the penalty is f then optimality requires: $g - pf \geq 0$ if and only if $g \geq l$ (Polinsky and Shavell, 2000). Therefore, the optimal penalty is $f = l/p$. In practice, private damages are calculated as $(P^c - P^{bf}) D(P^c)$ where P^c is the observed (collusive) price, Q^c is the number of units sold, and P^{bf} is the "but for" price; that is, the price that would have been charged but for collusion. $P^c - P^{bf}$ is referred to as the "overcharge." A major source of contention in many price-fixing cases is the determination of P^{bf} , for which reduced form estimation methods are largely deployed using data encompassing both the cartel and non-cartel regimes. The "before and after" approach is quite common and entails estimating: $P(t) = \delta + \beta X(t) + \gamma \nu(t) + \varepsilon(t)$ where $P(t)$ is price, $X(t)$ is a vector of demand and cost shifters, and $\nu(t)$ is a dummy variable that equals one in those periods that firms were colluding (Page, 1996). If $\hat{\delta}$ and $\hat{\beta}$ are the parameter estimates then $P^{bf}(t) = \hat{\delta} + \hat{\beta} X(t)$. Since damages, as calculated in practice, ignore deadweight loss then penalties are neither optimally punitive nor compensatory: $g < (P^c - P^{bf}) Q^c < l$. Government fines also suffer from this deficiency as they tend to

be proportional to sales, $P^c Q^c$.

Of course, if collusion only serves to reduce supply then $l > g$ and thus we should prevent all collusion in which case $f \geq g/p$ is desired. As cartels continue to form, penalties clearly fall short. But how far off are they from being an effective deterrent? In practice, cases are largely settled out of court and single (not treble) damages are typical (Lande, 1993). For international cartels over 1990-2003, Connor (2004a) calculates private and public recovery in the U.S. was only 115% of damages. Bryant and Eckard (1991) back out from observed cartel lengths that the chances of a price-fixing cartel being indicted in a 12-month period is 11-15%. Though that estimate relies on a properly specified functional form for the distribution on cartel lifetimes, it is safe to say that the probability of a cartel being discovered and paying penalties is well below one so that financial penalties are woefully inadequate. What may be more effective is the use of prison sentences (Werden and Simon, 1987).

Though remedies have been used in price-fixing cases (for example, a ten-year consent decree in 1994 placed restrictions on announcements of future price changes by airlines), they are typically more important in merger and monopolization cases. Some proposed mergers receive government approval only after re-structuring, such as the selling off of assets that, if retained by the newly merged firm, would significantly harm competition. In rare cases, the authorities seek to prevent the merger entirely. In the case of monopolization, remedies may be either behavioral or structural. Behavioral remedies could, for example, require a firm to license intellectual property to competitors (as with Xerox) or prohibit certain contractual arrangements (as with Microsoft). Structural remedies are typically quite draconian and accordingly rare. Notable examples include the break up of Standard Oil and AT&T. A lower court initially ordered Microsoft to be broken in two companies - one with the operating system and the other with applications - though it was later remanded by the Court of Appeals and the DOJ stopped pursuing it as a remedy.

One of the most significant innovations in antitrust enforcement in recent years is the 1993 revision of the DOJ's Corporate Leniency Program and the institution of a similar program by the European Commission in 1996. The first member of a cartel to come forward and cooperate receives full amnesty with respect to government penalties and liability for only single damages. As part of entering the program, company representatives must answer an "omnibus question" which asks them whether they know of any collusion in other markets. Failure to truthfully answer that question results in the loss of all amnesty. This policy has proven useful both for the discovery and prosecution of cartels

Using the standard repeated game framework, a leniency program impacts the stability of collusion through the usual equilibrium condition: the expected payoff from continuing to collude must be at least as great as the payoff to a firm from (optimally) cheating on the cartel.² More leniency enhances the payoff to cheating because a firm that does so can simultaneously apply for amnesty and thereby reduce expected penalties. However, leniency also affects the expected collusive payoff because firms anticipate the possibility of using the program in the future. More leniency lowers penalties in the event that leniency is received and thus can raise the payoff from continuing to collude. But it is also possible that waiving a higher fraction of penalties *increases* future expected penalties. The reason is that there can be two equilibria; one in which all firms apply for amnesty and one in which none do. The latter can Pareto-dominate because only one firm can receive amnesty and use of the program results in conviction for sure. More leniency can destabilize the Pareto-preferred equilibrium in which all firms do not use the program because it becomes too attractive for a firm to apply (given the other firms do not). Though there are then several countervailing forces, it is generally optimal to provide some leniency and conditions are not too restrictive for it to be optimal to waive all penalties.

An enforcement policy is described not just by the types of cases pursued but also by its intensity. One might expect the socially optimal level of enforcement to vary with economic activity as, for example, there are more merger notifications during booms and possibly more cartels during periods of weak demand. Furthermore, government preferences regarding the level and focus of enforcement may vary with the Presidential administration.

The budgets of the DOJ and FTC budgets are indeed increasing in GDP (Kwoka, 1999) but antitrust case activity is countercyclical (Ghosal and Gallo, 2001). Though most studies do not find case activity to be related to the administration's party, Ghosal (2004) shows that this is due to aggregation and misspecification. He disaggregated data for 1958-2002 into criminal and civil cases and allowed there to be a structural break in the relationship between the usual independent variables - such as GDP, the DOJ's budget, and the President's political party - and the number of DOJ cases. Reasons for a break are the growing influence among economists and judges of the Chicago School - which argued that a number of previously considered antitrust offenses may be profitable for firms to

²The discussion here is based on Harrington (2005) though also see Motta and Polo (2003) and Spagnolo (2003).

pursue for competitive reasons - and that the Supreme Court had a two-thirds majority of Republican-nominated justices starting in 1972. Both of these forces would give less credence to certain practices - such as vertical restraints and monopolization practices - as being antitrust violations. A break in the number of civil cases (such as mergers and vertical restraints) occurred around the mid-1970s which resulted in a significant decline, while a significant rise in the number of criminal cases (collusion) occurred around the late 1970s. There is also a post-regime rise in polarization between Republican and Democratic Presidential administrations with Republicans pursuing more (less) criminal (civil) cases.

But is enforcement having an effect? This is a difficult question for which hard facts are lacking and sharply divergent views have been expressed.³ With respect to the most egregious offense - collusion - we pose three questions: Do cartels actually charge higher prices? Does prosecution lower prices? And, does successful prosecution have a deterrent effect?

The evidence is overwhelming that cartels raise prices. Connor (2004b) has provided an exhaustive survey and found the median overcharge is 25%. The evidence is mixed regarding how prices respond after indictment and conviction. A price decline was found in the break up of cartels in white pan bread (Block, Nold, and Sidak, 1981) and Feinberg (1984) found, for four of five cartels, that the PPI for the cartelized market fell by 6.6 to 11.4% relative to a broader industry price index. Evidence to the contrary is provided in Sproul (1993) where, for 25 price-fixing cases over 1973-84, price (measured relative to that of a related good) *rose* by 7% in the four-year period after the indictment though, in some cases, the immediate response was a 9-10% fall in price. In light of the well-established evidence of an overcharge, the natural interpretation is that though prosecution may reduce prices in the short-run, in the longer run collusion may re-establish itself either explicitly or tacitly.

Even if prices do rebound from a conviction, prosecution and penalties are still useful because they reduce the profitability of collusion and thus may deter some cartels from forming. Indeed, there is some evidence of deterrence. The general method for testing for it is to have a reduced form equation explaining markups over time and to include a dummy variable when an action has been filed for collusion in a related market. In the case of white pan bread, markups fell for cities in a region for which the DOJ had filed an action that year in some other city in that region (Block et al, 1981). Similar evidence of

³See Baker (2003) and Crandall and Winston (2003) though the latter should be read with caution as their review of some literatures is seriously deficient; Kwoka (2003) and Werden (2004) provide a critique.

deterrence holds for highway construction procurement auctions, which are notorious for bid-rigging (Block and Feinstein, 1986).

In sum, the evidence is that cartels exist, they substantially raise price, and the indictment and conviction of firms may result in lower prices and may have a deterrent effect. Finally, financial penalties fall significantly short of making collusion unprofitable.

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