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Measuring the Extent of Structural Remedy in Section 7 Settlements: Was the US DOJ Successful in the 1990s?☆

MIKHAIL S. KOULIAVTSEV
School of Business Administration, Philadelphia University, Henry Ave and Schoolhouse Ln, Philadelphia, PA 19144. E-mail: kouliavtsevm@philau.edu

Abstract. This paper suggests an innovative measure of structural relief obtained in a typical Section 7 settlement. The fraction of competitive overlap subject to divestiture as a condition of the settlement is modeled as a function of merger-specific efficiencies, the proportion of the deal held "hostage" to antitrust review, the merger's anticompetitive potential, and other factors. The model is applied to data on 86 recent Justice Department cases covering the period 1990–2003 and to the subsample of 1990s cases. All data are collected from publicly available documents only. The government is found to secure larger divestitures when the cost to the acquirer of delaying the settlement is high. The resulting estimates are used to predict several out-of-sample observations.

Key words: merger policy, U.S. Department of Justice, structural remedies.

JEL Classifications: L44, C24.

I. Introduction

Potentially anticompetitive mergers are challenged by the U.S. antitrust authorities under the power granted to them by Section 7 of the Clayton Act of 1914, as amended by the Celler-Kefauver Act of 1950. Structural relief or asset divestiture is recognized as the preferred method of resolving potential anticompetitive problems in Section 7 cases. Studies by Elzinga (1969), Pfunder et al. (1972), and Rogowsky (1982, 1986) revealed that nonstructural remedies—court orders prohibiting certain conduct, for example—are often ineffective as ways of restoring competition in affected (product and geographic) markets. This paper develops an innovative technique to assess the extent of structural relief obtained in a

☆I would like to thank the General Editor and two anonymous referees for many helpful suggestions on earlier drafts of this paper. The remaining errors are mine.

typical Section 7 settlement and analyzes the impact of various exogenous factors on the resulting outcome.

The remainder of the paper is structured as follows. The next section reviews the relevant literature; Section III describes the issues to be addressed and provides a brief theoretical background; Section IV discusses some empirical estimation issues; Section V outlines the sources and construction of the data; Section VI presents the estimation results; Section VII discusses prediction of out-of-sample observations; and Section VIII concludes.

II. Literature Review

The issue of the inadequacy of the relief obtained by the government in its challenges of anticompetitive mergers was first introduced in a path-breaking study by Elzinga (1969). He analyzed the facts in 39 cases filed by either the Federal Trade Commission (FTC) or the Antitrust Division of the U.S. Department of Justice (DOJ) between 1957 and 1964, and found that in 93 percent of them relief could not be rated as successful. The case analysis in Elzinga (1969) relies on the evaluation of the factual information, obtained from the agencies' files, on the structural variables, such as firms' market shares, existence and significance of entry barriers, and ease of collusion. Specific criteria are developed for "Successful Relief:" for example, full divestiture of the acquired firm must be present; otherwise the competitive injury persists, and the case is lowered into the Sufficient, Deficient, or Unsuccessful Relief category. In addition to analyzing the outcome of each merger case itself, Elzinga determined what occurred in the relevant market subsequent to the resolution of the case: that is, did the ordered divestiture actually take place? After all, the ultimate result is what is of interest; in other words, the pure intention of obtaining successful relief is not enough, as compliance with the order must be ensured as well.

Similar conclusions were obtained by a group of Yale Law students who assessed the degree of compliance with divestiture orders in a sample of Section 7 cases (Pfunder et al., 1972). Their results, although quite interesting, had little economic theory as foundation; hence, their policy recommendations were modest and mainly confirmed what Elzinga's study suggested earlier.

A student of Elzinga's, Robert Rogowsky, repeated this exercise in the early 1980s with an expanded sample (104 cases) and slightly reevaluated criteria. Rogowsky (1982, 1986) makes an argument for relaxing some of Elzinga's stringent standards for Successful Relief: For example, it is possible to obtain an efficient amount of relief with just a partial divestiture in the presence of litigation costs. That is, if it is costly for the government to fight for full divestiture in court, then the efficient relief will be

obtained by securing the relief to the extent where the value of another dollar spent on litigation is just offset by its value in alternative uses. Rogowsky also distinguishes explicitly the degree of success attained by the government in analyzing the cases and devising a remedy from the parties' subsequent compliance with that remedy. He finds that compliance on average is much more successful than the orders themselves; also, there is little correlation between the two, so they appear to be independent stages of the process. Rogowsky's results are similar to Elzinga's: He finds that about 93 percent of cases in his sample are rated unsuccessful (Rogowsky, 1986).[1]

The application of econometric methods to studying antimerger enforcement has been limited by the need to generate data "manually" from reviewed cases. Hence, samples found in the literature are usually small, and empirical models are crude and simple. A large portion of the merger enforcement literature deals with modeling the government's decision to challenge a particular merger.[2] For each case, one observes the responsible agency's decision (Challenge/Not Challenge) and determines how this decision responds to various merger characteristics (structural variables and some proxies of entry barriers and ease of collusion) and other factors (for example, political influences, use of a "failing firm" defense, and "efficiency" arguments). Ryan (2000) is also able to conclude that the level of antimerger activity is closely linked to the business cycle and the partisan composition of the government.

Such models allow one to investigate what influences the level of antimerger enforcement activity and how it changes over time, but not the degree of its success (i.e., effectiveness), as merger remedies are not considered, only whether the transaction is challenged. A few notable

[1] A considerable contribution, however, is made when Rogowsky undertakes an analysis of the welfare contribution of merger policy. That is, he evaluates the case selection procedures used at the FTC and the DOJ in order to determine whether the mergers reviewed by the agencies did in fact result in competitive injury that needed repairing. The results of this assessment indicate that a vast majority of cases are "meritless" – the mergers presented no likelihood of substantially lessening competition. In such a situation, no relief may be preferable to successful relief. The general conclusion emerging out of Rogowsky's investigation is that antimerger enforcement contributed very little to welfare: Substantial structural relief was achieved in nearly one-third of the sample cases; of these more than seventy percent were meritless. Only eleven cases out of 104 achieved any consumer welfare gain. Rogowsky concludes that if there is any benefit to federal antimerger enforcement, it must lie in its deterrent effect (Rogowsky, 1986). This deterrent effect has been studied in a number of papers. The interested reader is referred to Kouliavtsev (2003), where this literature is thoroughly summarized. In particular, see Eckbo (1992) and Audretsch (1983). For a recent critique of the deterrent effect, see Winston and Crandall (2003).

[2] See, for example, Coate (1992, 1995a, 2000); Coate et al. (1990); Coate and McChesney (1992).

exceptions are the investigations of the application of Merger Guidelines to policy at the FTC and the Antitrust Division. Coate and McChesney (1992), for example, attempt to establish whether the FTC relies on factors besides the Herfindahl-Hirschman Index (HHI) thresholds[3] when deciding whether to pursue a challenge; Tremblay (1993), similarly, investigates whether efficiency arguments specified in the Guidelines are given any consideration. Again, such studies seldom consider the competitive relief secured in merger cases.

Several studies attempt to quantify the impact of premerger notification on the parties' incentives to merge and settle or pursue litigation. For example, Johnson and Parkman (1991) examine the delay—the duration of the case, from complaint to divestiture order—in Section 7 challenges to test for the effect of the Hart-Scott-Rodino (HSR) premerger notification program on merger activity. Lopatka and Mongoven (1995) compare cases brought under HSR to those not subject to premerger notification to evaluate the decision-making process on the part of the antitrust agencies. They report, for example, that whenever preliminary relief is denied, the FTC tends to proceed with litigation in nearly every case, whereas the Justice Department opts to drop the case almost 50 percent of the time. The large disparity is attributed to the differences in the nature of the two agencies: The DOJ is a purely executive agency, which does not need routinely to make a public decision to seek preliminary relief.

The majority of the studies reviewed in the preceding paragraphs are concerned with exploring the patterns of antimerger policy and its enforcement, not their effectiveness or success. The few authors who have undertaken a comprehensive evaluation of the ability of the enforcement process to secure relief—Elzinga (1969) and others—relied largely on theoretical arguments and subjective criteria for their assessments of cases. An exception is an attempt by Rogowsky (1986) to model the amount of time the agencies take to secure a divestiture as a function of some case characteristics and merger-specific variables. He found that none of the variables proved to have significant explanatory power, and he was forced to conclude that other noneconomic factors (perhaps political or bureaucratic) drive the underlying relationship.

Also, both Elzinga's and Rogowsky's studies focused on the pre-HSR period; that is, their samples included only cases filed prior to 1978, the first year of pre-merger notification rules. Since the late 1970s, both the focus of merger policy and the criteria for review have evolved substantially, with far greater emphasis placed on economic logic today. Even more importantly, the mergers of 1950s and 1960s are hardly

[3] The HHI is a commonly accepted measure of market concentration and is defined as $\mathrm{HHI} = \sum s_i^2$ where s_i is firm i's market share, $i = 1, \ldots, n$.

comparable to the ones reviewed by the antitrust agencies today. The textbook merger between firm A and firm B, in which both derive their revenues only from sales in (product and geographic) market X, is a thing of the past. Modern day mergers usually involve large conglomerate firms, competing in several markets, that possibly present anticompetitive concerns only in some of those markets. It follows that the standard requiring "full divestiture" à la Elzinga cannot be the criterion of successful relief.

Of the remaining existing empirical analyses, none considers the economic effectiveness of antimerger remedies. Several models are put forth in the literature to explain the tendency of the antitrust agencies to challenge specific kinds of cases—models based on the Chicago approach versus the structuralist school, as well as pure econometric models[4]—and a different class of models focused on the abnormal returns to firms related to the merger. Some of these (especially the stock market event studies) rely explicitly on the assumption that the government is able to secure a "victory" in each merger challenge; in other words, policy, if pursued, is assumed to be effective and costly to the defendants. Others simply deal with other issues, avoiding having to review the facts of each particular acquisition.

1. LIMITATIONS OF EXISTING LITERATURE

Recent contributions to the economic literature on merger policy have been largely limited to the studies that tend merely to "scratch the surface" of the underlying problems. Despite the eye-opening papers by Elzinga (1969) and Rogowsky (1986) decades ago, too much attention, even in recent years, has focused on what can be done from the legal perspective to allow the antitrust authorities to detect and be able to contest the mergers likely to harm competition. In the meantime, the real question of interest in this study—what happens once the challenge is issued in the proper instance?—remains unanswered. Several attempts, including the FTC Divestiture Study (Federal Trade Commission, 1999), were made to assess individual parts of the enforcement process; however, no comprehensive studies have been undertaken recently.

Meanwhile, the debate over the track record of the antitrust agencies in devising merger remedies is active, especially among the antitrust attorneys, who are often intimately involved in these cases.[5] Some interesting descriptive articles appear periodically in the antitrust and economics publications[6] that shed light on the review and enforcement procedures at

[4] See Coate and McChesney (1992) and Coate (2000) for a good survey.

[5] See, for example, the recent exchange among Baer and Redcay (2001), Blumenthal (2001), and Sims and McFalls (2001).

[6] See, for example, Triggs (2002), Katz (2002), and Scheffman and Coleman (2002).

the agencies. It is common for these and other studies to be undertaken by employees of the agencies themselves. In fact, to the author's knowledge, no study of merger remedies by someone not connected to the antitrust authorities currently exists.[7]

III. Purpose of Study and Background

Three issues motivate this paper. First, antitrust merger relief continues to be problematic today. While the antitrust agencies have committed to improving their approach and performance,[8] there is evidence of inadequate remedies being used to address serious competitive issues related to recent merger activity. For example, Coate and Kleit (2004), who review 113 of recent FTC consent decrees, report that 31 of them were "compromise" or problematic settlements. They identify six cases in which divestiture was inadequate to address all of the likely competitive issues, and five cases with no structural remedy at all.

Second, the effectiveness of antitrust merger relief has not been adequately addressed in the empirical economics literature. An independent assessment of the outcomes in Section 7 cases is desperately needed.

Third, applications of econometric techniques for assessing the outcomes of merger cases are rare. No serious attempts to quantify the extent or effectiveness of antimerger remedies have been reported.

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[7] While the present paper was in revision, the FTC publicly released some summary data on its merger review process as part of its Merger Transparency Project. The data are described in detail in Coate and Ulrick (2005) and Coate (2005). The latter paper investigates the use of the 1992 Merger Guidelines in the FTC's merger enforcement over the period 1993–2003. Coate finds that the FTC staff is more likely to move against a merger when the relevant market is highly concentrated; however, the relevant measure of concentration depends on the theory of anticompetitive behavior alleged in a particular case. For mergers where collusion among post-merger rivals is found to be likely, the Herfindahl Index is a better predictor of enforcement action, while in cases where unilateral effects is the relevant theory, the number of significant rivals matters most. Other results suggest that "hot" documents – such as companies' internal emails referring to post-merger price increases – and customer complaints make enforcement more likely.

A few points are in order. First, the analysis and results reported in Coate (2005) and its companion paper Coate and Ulrick (2005), while relevant here, are still based on non-public data; the summary tables released to the public do not permit analysis of any depth. Second, only cases handled by the FTC are included in the sample. Third, the paper simply models the likelihood of enforcement action as a function of various variables, not the ultimate outcome – as in Coate et al. (1995) or as proposed in the present paper. Nevertheless, there are important policy recommendations advanced: for example, to improve clarity and transparency, the next revision of the Merger Guidelines might incorporate the FTC's use of the appropriate concentration measure depending on the relevant theory applied. I thank the General Editor for bringing this to my attention.

[8] See Parker and Balto (2000) and Scheffman and Coleman (2002).

Table I summarizes the merger enforcement activity at the DOJ during the period 1990–2003.[9] As is evident from the rightmost column, most merger cases are settled through consent decrees rather than litigated. This usually means that the merger is allowed to proceed subject to a divestiture by the acquiring firm of certain assets judged to overlap with the assets of the acquired firm.

A typical settlement in a Section 7 case is reached between parties to the merger and the DOJ after the firms notify the Antitrust Division staff of their intent to merge (pursuant to the Hart-Scott-Rodino Act requirement), and the DOJ (after an investigation) responds by informing the parties that it intends to challenge this proposed merger on anticompetitive grounds. The negotiation that follows can be thought of as a bargaining game between two players: the acquiring firm and the government (represented by the Justice Department.)

The scope of the conflict between the parties and the antitrust agency is the disagreement over the likely potential effects of the proposed merger vis-a-vis competition in affected markets. By challenging the merger, the agency signals that it believes that the merger—or, at least, significant parts of the merger—is on balance anticompetitive; by not abandoning the transaction the parties in turn signal that they believe that their merger is not anticompetitive and/or is net efficient or welfare-enhancing. Since the settlement is necessarily a compromise, the resulting remedy will not always be complete in the sense of Elzinga (1969) and Rogowsky (1982)—some of the competitive problems will remain unresolved even if the firms comply fully with the order.

To introduce a measurable gauge of the extent of divestiture, I employ a bargaining framework. The players bargain over the assets determined to constitute the *competitive overlap*; that is, markets where both firms have a presence, and where the merger would lead to the elimination of a competitor, and therefore restrict competition. The outcome of this bargaining situation is the division of the overlap between the players. Normalizing the value of these assets to unity, the fraction of the overlap that the acquiring firm retains is its payoff, while the remainder—the fraction to be divested—is the government's payoff. Standard bargaining theory results suggest that this division depends only on the players' relative costs of delaying the negotiations (i.e., the degrees of patience).[10] The outcome of

[9] In the United States, two government agencies carry out the enforcement of merger policy—the DOJ and the FTC. The present paper focuses only on cases reviewed by the U.S. Department of Justice due to the limited availability of data, but, a priori, similar results would be expected from an analysis of FTC's actions.

[10] Bargaining theory models can be specified to include the effects of players' outside options and other factors. For more details on the theoretical foundation of this model,

Table I. Antimerger Activity at the Antitrust Division of the DOJ

FY	Number of Challenges	Number of Complaints	Outcome		
			Settled (% of Complaints)	Restructured or Abandoned	Litigated
1990	13	11	5 (45.5)	2	6
1991[a]	13	4	3 (75)	9	0
1992	7	4	4 (100)	3	0
1993	10	5	4 (80)	5	0
1994	22	10	7 (70)	14	1
1995	18	9	6 (66.7)	10	2
1996[b]	30	10	9 (90)	20	0
1997	31	14	13 (92.9)	17[c]	1
1998	51	15	10 (66.7)	41[d]	0
1999	47	21	20 (95.2)	26[c]	1
2000	48	21	18 (85.7)	29[e]	1
2001	32	8	8 (100)	24[c]	0
2002	10	4	2 (50)	7[f]	1
2003	15	9	5 (55.6)	9[g]	1

[a] One case was dismissed after the court denied a preliminary injunction.

[b] One transaction that was challenged by the DOJ was subsequently approved by a regulatory agency.

[c] All transactions were restructured or abandoned after the DOJ informed the parties of its intent to challenge the merger.

[d] 36 transactions were restructured or abandoned after the DOJ informed the parties of its intent to challenge the merger, four were abandoned after complaints were filed, one was abandoned after the decree was issued.

[e] 27 transactions were abandoned after the DOJ informed the parties of its intent to challenge the merger, two were dropped after the filing of complaints.

[f] Six transactions were restructured or abandoned after the DOJ informed the parties of its intent to challenge the merger, one was dropped after the filing of complaint.

[g] Six transactions restructured or abandoned after the DOJ informed the parties of its intent to challenge the merger, one was dropped after the filing of complaint, one was dropped after a preliminary injunction was obtained, one became moot when the assets in question were sold to another buyer under a bankruptcy order.

Source: FTC Annual Reports to Congress pursuant to the HSR Act, FY 1990–2003.

this negotiation is a compromise in which each side "concedes" some of the "pie" in order to reach an agreement.

In particular, parties to the merger may be willing to agree to a larger divestiture if that speeds up the negotiation, especially if the proportion of the deal found to be problematic (from the competitive point of view) is relatively small. This is precisely what makes competitive relief obtained by the government through such settlements often incomplete. I discuss this and other factors likely to affect the firms' and the government's costs of delaying the settlement in Section V below.

It is worth noting at this point that a more complete model would embed settlements in a broader framework, where firms are allowed to pursue any one of the "fight, fold, or settle" strategies, thus avoiding the risk of introducing a potential selection bias. However, such an approach is not pursued here on practical grounds—abandoned mergers generate no public data, which makes including them not possible. On the other hand, the small number of litigated cases in recent years suggests that omitting them probably does not taint the results too much.

IV. Estimation Issues

The measure of the extent of relief obtained by the government in any given sample case I use is D, the fraction of the competitive overlap that the acquiring firm must divest as a condition of the settlement. Naturally, $0 \leq D \leq 1$, where the lower and upper boundaries correspond to no structural divestiture (minimal relief secured) and complete divestiture of all overlap assets (full relief secured), respectively. To make this measure usable, a workable definition of *overlap* is needed. Given the relevant market defined by the Justice Department in the course of its investigation, the size of the overlap is taken to be equal to the revenues of the bidder or target (whichever firm has the smaller share of the market) derived from assets in this market.[11] The fraction of this overlap subject to divestiture—measured by the ratio of sales from assets to be divested to sales from all overlap assets—is the dependent variable, D, used below in the regressions.

A complicating issue arises in some cases, where the parties agree to divest assets, sales from which exceed those from the assets tied up in

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Footnote 10 continued
see Kouliavtsev (2003). For a general reference on bargaining theory, see Muthoo (1999). In this paper, I attempt to ascertain (empirically) what factors are important in determining the outcome of a given settlement.

[11] This is distinct from the approach used in Coate et al. (1995) and Coate and Kleit (2004), where the variable $OVERLAP$ measures the portion of the merger subject to investigation and equals the ratio of firms' combined sales in the contested markets to the acquired entity's total sales.

overlap. This can occur in a number of ways, but the most common is as follows: Suppose that Firm A has facility X in some (product and geographic) market and Firm B has facility Y in the same market. Further, suppose that sales of Y are smaller than sales of X, so Y (B's facility) determines the size of the overlap. If A wants to acquire B, the settlement may prescribe that before completing the merger, A must sell *either* X or Y since the overlap will be completely eliminated in either scenario. Firm A may choose to divest itself of its own facility X,[12] meaning that the ratio of divested sales to overlap sales would exceed one. This is clearly in conflict with the bargaining framework I employ here, since the government succeeds in obtaining more than the entire "pie" through negotiation. Therefore, in such cases, I set the divestiture ratio D equal to one, corresponding to full divestiture of all overlapping assets.

To formalize the above discussion somewhat, let D^* be the (unconstrained) ratio of divested assets' sales to total overlap sales. I define the censored variable D as

$$D = \begin{cases} 0 & \text{if } D^* \leq 0 \\ D^* & \text{if } D^* \in (0,\ 1) \\ 1 & \text{if } D^* \geq 1 \end{cases}$$

Thus, the dependent variable is "censored" from above and below (at 0 and 1). This makes use of Ordinary Least Squares (OLS) inappropriate, so a variant of the Tobit model (also known as censored regression model) is used instead. Conceptually, the fraction of the overlap that must be divested as part of the settlement is an unknown function f of the various factors affecting the individual players' degrees of patience in negotiation. Formally, for the ith case

$$D_i = f(\mathbf{V}_i^F,\ \mathbf{V}_i^{US}) + \epsilon_i$$

where $\mathbf{V}^F$ and $\mathbf{V}^{US}$ are vectors of exogenous factors affecting the cost of delay to the firm and the Justice Department, respectively, and ϵ is i.i.d. The model is estimated in reduced form.[13]

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[12] Why a firm may opt to do this—for example, to preserve viability of the acquired entity and avoid "carving out" a piece of a new acquisition—is an interesting issue, but one that lies outside the scope of this paper.

[13] While a possibly richer structural model would be an interesting direction, it is not pursued here for several reasons: First, the bargaining framework dictates a nonlinear relationship between the players' discount rates (i.e., costs from delay) and the dependent variable, the estimation of which unnecessarily complicates things. Second, several of the variables of interest may have complicated effects on the outcome; using the reduced form of the underlying structural model allows one simply to observe the "net" effect of these. Third, I am interested mainly in the explanatory and predictive powers of the model in this context.

V. Sources and Construction of the Data

The sample is obtained from the universe of 114 Section 7 cases settled by the U.S. Department of Justice between 1990 and 2003. Elimination of cases dealing with joint ventures, as well as those for which reliable data could not be located, produced 86 usable observations. An observation in this instance is a settlement between the parties on the one hand and the DOJ on the other, which is fewer than the number of transactions reviewed.[14] For each case, the relevant information was taken from the texts of the Formal Complaint, the Proposed Final Judgment, and the Competitive Impact Statement (CIS) filed by the staff of the Antitrust Division. Where additional information was required, other sources, such as industry periodicals and company financial statements, were consulted. It is worth noting that all information used is publicly available to any researcher for replication.

Many of the right-hand-side variables explained below are similar to those used in previous empirical research by Malcolm Coate and others; see especially Coate et al. (1995) and Coate and McChesney (1992). The following briefly describes the variables used in this paper and, where applicable, their construction.

D (the dependent variable) = ratio of sales generated by the assets to be divested to sales from total overlap assets;

$VALUE$ = the value (in millions of 1996 dollars) of the proposed transaction;[15]

$SALES$ = total annual sales of the acquiring firm (in millions of 1996 dollars);

$CONSUMER$ = dummy variable; equals one if the merger involves a consumer product;

USA = dummy variable; equals one if the acquirer is a domestic firm;

$RETAIL$ = dummy variable; equals one if the potential divestiture would involve selling retail units (e.g., grocery stores or movie theaters);

$COURT\%$ = estimated probability that the merger would be enjoined by the court, if litigated (see the details below);

[14] Several cases dealt with asset swaps or multiple transactions (sometimes involving three or more firms).

[15] In several cases, where the acquiring firm was a non-U.S. entity and the value of the deal was specified in a foreign currency, the official exchange rate on the day of the announcement was used. In another case involving a stock swap, the stock price at closing on the day preceding the announcement was used to determine the value of the acquisition.

Table II. Frequency of the Observed Dependent Variable

Value	Frequency	Percent
$D=0$	9	10.5
$0<D<1$	42	48.8
$D=1$	35	40.7
Total	86	100.0

$HOSTAGE$ = proportion of the deal not subject to antitrust review;[16]

$EFFICNCY$ = proxy for merger-related efficiencies that would potentially accrue to the acquiring firm; equals $VALUE$ times the fraction of the deal under review;[17]

$WORK$ = measure of the workload at the Antitrust Division at the time of each case; equals the total number of transactions reported to the Antitrust Division in the month when complaint is filed;

$CONGRESS$ = share of Democrats in the House of Representatives;

$LOGWSJ$ = natural log of one plus the number of articles published in *The Wall Street Journal* dealing with the merger;

$TIME$ = number of months since the first case in the sample.

Table II gives the frequency of the dependent variable D. Approximately one-half of all sample observations are limit observations: i.e., where D is censored.

The fraction of the transaction subject to antitrust review is calculated as the ratio of overlap to the acquired firm's total sales.[18] Where the Complaint or the CIS presented the case in terms of firms' facilities in affected markets (rather than revenues), the ratio of overlap facilities to total facilities being acquired is used.

[16] This is the so-called "hostage" effect: The entire proposed acquisition is delayed because of an alleged problem with a (sometimes) small part – i.e. the overlap. This variable is similar to Coate et al.'s (1995) $OVERLAP$ and $SETTLEVALUE$ variables used to assess whether parties to mergers with small "problematic" portions tend to settle quickly rather than insist on litigation.

[17] In other words, $EFFICNCY = VALUE \times (1 - HOSTAGE)$.

[18] For example, in Georgia Pacific's 2000 acquisition of Fort James, the DOJ alleged that the parties' overlapping operations in the "away-from-home" (AFH) tissue market posed a threat to competition if the merger were allowed. Fort James' sales in this market, according to the Complaint, were $1.3 billion in 1999, while its total sales for 1999 were $7 billion. Therefore, the fraction of this deal subject to review is $1.3/7 = 0.1857$, which implies a hostage effect for this case of 0.8143.

The effect of costly delay to the acquirer due to antitrust review is captured by $HOSTAGE$, the portion of the deal held "hostage." One would expect that firms facing substantial hostage effects would be less patient and prefer to settle quickly, which should translate into larger divestitures. The variable $SALES$ is included to determine whether larger acquirers tend to be more patient negotiators and therefore obtain better settlements for themselves. Alternatively, Coate and Kleit (2004) suggest that big firms may not be the toughest negotiators because of the reputation effect of repeated dealings with the antitrust authorities: Large firms are likely to have more frequent interactions with the Justice Department. Also, USA distinguishes foreign from domestic acquirers to see whether there are any systematic differences in their approaches to settlement negotiations. Finally, following some previous studies (for example, Coate and Kleit, 2004), the variable $RETAIL$ is intended to capture any additional anticipated cost of divesting a given package of assets consisting of retail outlets. The rationale is simple: Selling several such outlets may be particularly challenging because to ensure their viable and independent operation it is often required that all stores go to the same buyer; otherwise some economies of distribution may be lost. Since this is likely to make the search for an acceptable buyer more difficult, one would expect firms faced with this possibility to be more patient.

$CONSUMER$ and $LOGWSJ$ attempt to capture the extent to which the proposed merger is covered by the media, thus putting pressure on the DOJ to bring the case to quick resolution. Additional pressures on the agency stem from one of two sources: internal, proxied by $WORK$, a measure of the current workload at the agency, and external, captured by $CONGRESS$ (to see whether partisan differences in the approach to merger policy are important) and by $EFFICNCY$—a crude proxy for merger-specific efficiencies or synergies.[19]

The expected signs of the coefficients on all variables are summarized in Table III.

A more detailed explanation of the computation involved in constructing $COURT\%$ is in order. The hypothetical probability of each merger stopped by the court is simulated from a model estimated in Coate (1995b) and used in Coate and Kleit (2004). Using the data on FTC's Section 7 cases from the 1980s and early 1990s, Coate (1995b) estimates the following

[19] The motivation for the construction of $EFFICNCY$ as a function of both the absolute size of the deal and the relative size of the overlap is as follows: If allowed to combine, the two firms would scrap (or sell off – i.e., divest) those assets or operations where they "overlap" first. Therefore, *a priori* these savings are the only ones that are more-or-less certain to materialize.

Table III. Variables' Expected Signs

Variable	Expected Sign
$EFFICNCY$	−
$CONSUMER$	−
$WORK$	−
$CONGRESS$	?
$LOGWSJ$	−
$HOSTAGE$	+
$SALES$	?
USA	?
$RETAIL$	−
$COURT\%$	+
$COURT\%^2$	−
$TIME$	?

model:

$$COURT\% = F(-6.2 + 1.97COLLUDE + 4.26BARRIER + 0.000816HHI) \quad (1)$$

where $F()$ is the cumulative normal distribution, $COLLUDE$ and $BARRIER$ are dummy variables indicating, respectively, whether coordinated action among firms in the relevant market(s) is likely and whether barriers to entry are significant, and HHI is the Herfindahl-Hirschman Index;[20] all coefficients are statistically significant.

For the purposes of simulation, the variables are defined as follows: The post-merger HHI is computed for each affected market assuming no divestiture takes place; $BARRIER$ is given the value of one only if the CIS contains specific evidence of difficult or costly entry;[21] similarly, $COLLUDE$ is set to one only for cases with clear evidence of past collusion among firms or where market conditions are determined to be conducive of future such attempts. Coate (1995b) estimates the model in equation (1) using a probit model with the dependent variable the outcome of litigation: one if the merger is enjoined, zero if it is allowed to proceed.

[20] Where several markets were affected, the largest value of HHI is used in the simulation.

[21] A priori, every case brought under Section 7 arguably involves significant entry barriers because otherwise increases in market concentration would pose no threat to competition. However, in order to distinguish those cases where future entry is particularly unlikely, untimely, or insufficient, this variable equals one only where the issue of entry is specifically addressed in the official record. In 68 out of the 86 examined cases the entry barriers were documented to be substantial.

I use these estimated coefficients with my sample cases to simulate the counterfactual probabilities. Admittedly a very crude estimate, the probability of the government's prevailing in court provides a proxy of the perceived anticompetitive potential of the merger.[22] The above notwithstanding, $COURT\%$ is essentially a computable index of the merger's relative potential harm. For example, a merger leading to a post-acquisition HHI of 5000, with significant entry barriers and no hard evidence of collusive behavior, has a .9838 probability of being enjoined; one with HHI = 2000, difficult entry and unlikely coordination among firms has a .379 probability.

A significant anticompetitive potential of any given acquisition may have a nonlinear effect on the dependent variable: On the one hand, it puts pressure on the DOJ to resolve the case with a strong settlement, thus making the staff more patient; on the other hand, the firms may be relatively more patient as well, as they anticipate benefiting substantially from greater market power, assuming that the agreed-upon divestiture does not diminish it too much. In other words, the former effect would predict a positive impact of $COURT\%$ on D, while the latter a negative one. To address this issue, the squared as well as linear form of $COURT\%$ is included. Table IV presents the variables' descriptive statistics.

VI. Estimation Results

Table V displays the results of Tobit estimation. The table entries are marginal effects of explanatory variables.[23]

Two models are estimated for the full sample of 86 cases, as well as for the 1990s cases only (73 observations). Seven out of 13 coefficients in Model 1 are statistically significant at conventional levels for the 1990s sample.[24] The variable of interest, $HOSTAGE$, is significant and positive, as predicted by theory. The $EFFICNCY$ measure is also highly significant as is $LOGWSJ$, although $LOGWSJ$ has the wrong sign. It may be that a great deal of media exposure increases the pressure on the agency to "get

[22] The reliability of this measure is further reduced by the fact that the underlying model is generated by the data from the FTC but is being applied to the data from the Justice Department for a later period.

[23] These are needed since the Tobit coefficients' (the $\hat{\beta}$s') magnitudes themselves are meaningless. The marginal effects are computed as partial derivatives of the expected value (conditional mean) of the observed dependent variable with respect to the independent variables, and equal the estimated coefficients scaled by the probability of nonlimit observations in the sample. That is, $\partial E[D|\mathbf{x}_i]/\partial \mathbf{x} = \beta \times \text{Prob}[0 < D < 1]$.

[24] The model was tested for the presence of multiplicative heteroskedasticity using the Pagan and Vella (1982) moment-based approach. The null of constant variance cannot be rejected at any level. The Tobit residuals were also tested for normality using a modified moment-based test. Results are available from the author upon request.

Table IV. Descriptive Statistics (Full Sample)

Variable	Mean	Std. Dev.	Min.	Max.
D	0.6373	0.368	0	1
$VALUE$[a]	6.3438	2.2706	2.0148	10.9651
$EFFICNCY$[a]	4.6042	2.0479	−0.868	9.9075
$CONSUMER$	0.3177	0.4683	0	1
$WORK$[b]	3.0884	1.1884	0.75	4.94
$CONGRESS$	0.5026	0.0494	0.469	0.6138
$LOGWSJ$	1.3215	1.0265	0	3.8712
$HOSTAGE$	0.6697	0.3124	0	0.9963
$SALES$[a]	7.5602	2.0876	2.7661	11.6667
USA	0.8706	0.3377	0	1
$RETAIL$	0.0824	0.2765	0	1
$COURT\%$	0.7906	0.3483	0.00002	1
$TIME$	104.2605	42.2146	0	179.8667

$N = 86$.

[a] Natural logs of actual values.

[b] $WORK$ is reported as hundreds of transactions per month.

it right", thus making it more patient. If this is a correct conjecture, then $LOGWSJ$ will have a positive effect on the outcome.

The coefficient on $CONGRESS$ is significant and negative, suggesting that a larger share of Democrats is associated with less successful anti-merger policy. The coefficient on $WORK$ is not significant, indicating that heavy workloads at the DOJ do not seem to affect the settlement outcomes.

The insignificance of the coefficients on $SALES$ and on the dummy variables $CONSUMER$, USA, and $RETAIL$ suggests that bigger firms, domestic producers, makers of consumer products, and retail chains do not on average receive any special treatment. Finally, the anticompetitive potential measure, $COURT\%$ and its squared form, $COURT\%^2$, are both significant and have opposite signs.[25]

Model 2, also reported in Table V, retains only the variables whose coefficients are statistically significant in Model 1 and discards the rest. The results are qualitatively similar to Model 1.

Using the marginal effects from Model 2 and the variables' descriptive statistics shown in Table IV, one can compute the impact of a one-standard-deviation change in each of the statistically significant variables on the outcome (D^*, the underlying unobserved measure of relief, whose

[25] A χ^2 test for the joint significance of both coefficients produced a test statistic of 7.795, which is significant at the 5 percent level with two degrees of freedom; the null of zero coefficients is rejected.

Table V. Estimation Results (Tobit).

Variable	Model 1		Model 2	
	1990s Sample	Full Sample	1990s Sample	Full Sample
Constant	2.0636**	1.1408	1.2096**	0.7794
	(2.166)	(1.236)	(2.267)	(1.487)
EFFICNCY	−0.0794***	−0.0528**	−0.0662**	−0.03899
	(2.717)	(1.981)	(2.337)	(1.505)
CONGRESS	−3.1279**	−1.8273	−1.5477*	−1.1095
	(2.107)	(1.281)	(1.812)	(1.302)
CONSUMER	0.0633	−0.0193		
	(0.647)	(0.208)		
WORK	0.0876	0.0339		
	(1.198)	(0.839)		
LOGWSJ	0.205***	0.1299**	0.205***	0.1479***
	(3.062)	(2.279)	(3.476)	(2.688)
HOSTAGE	0.3152**	0.3687***	0.3399**	0.4075***
	(2.097)	(2.675)	(2.342)	(2.983)
USA	−0.0823	−0.1742		
	(0.579)	(1.462)		
SALES	0.0266	0.0434*		
	(1.031)	(1.844)		
RETAIL	0.0447	0.0749		
	(0.27)	(0.459)		
COURT%	−1.5529**	−0.8227	−1.4225**	−0.717
	(2.403)	(1.344)	(2.302)	(1.237)
$COURT\%^2$	1.4739***	0.8159	1.2875**	0.6717
	(2.516)	(1.474)	(2.268)	(1.261)
TIME	−0.0046**	−0.00173		
	(1.97)	(1.116)		
Log Likelihood	−50.9225	−65.0372	−53.5611	−68.5715

$N = 73$ for the 1990s sample, $N = 86$ for the full sample
Absolute value t-statistics in parentheses
* Significant at the .10 level; ** significant at the .05 level; *** significant at the .01 level.

censored counterpart is D.) Table VI shows these marginal impacts in the rightmost column.

The conditional mean of D, as reported by Limdep, is 0.3645. This is the predicted value from the Tobit model computed as

$$E[D|\mathbf{x}_i] = 0 \cdot \text{Prob}[D = 0] + 1 \cdot \text{Prob}[D = 1] + E[D|0 < D < 1] \cdot \text{Prob}[0 < D < 1].$$

Table VI. Marginal Impacts (MI) of Significant Variables

Variable	Mean	Std. Dev. (σ_x)	MI of σ_x
$EFFICNCY$	4.5749	1.9596	−0.12973
$CONGRESS$	0.5056	0.0532	−0.08234
$LOGWSJ$	1.3695	1.0283	0.2108
$HOSTAGE$	0.6657	0.3142	0.1068
$COURT\%$	0.782	0.354	−0.08395[a]

[a] The marginal impact for $COURT\%$ is computed for a one-standard deviation *decrease* rather than an increase because increasing this probability by one $\sigma_x = 0.354$ from its mean of 0.782 would produce a value greater than one. This computation is further complicated by the presence of the squared form of $COURT\%$ in the regression function. See Appendix A for details of this calculation.

Increasing the proportion of the deal held "hostage" during the antitrust review from roughly 67 percent to 98 percent appears to make the parties to the merger willing to concede more in terms of the conditions of the settlement: The fraction of overlap to be divested increases by almost 11 percent. The overall effect of the anticompetitive potential of the merger is also positive: a one-standard-deviation decrease in $COURT\%$ tends to reduce the extent of structural divestiture obtained. Specifically, a merger with a 35 percent lower chance of being enjoined is subject to an approximately 8.4 percent smaller (relative) divestiture.

The largest impact on the dependent variable is caused by a change in the media coverage of the case, proxied by $LOGWSJ$: a one-standard-deviation increase is associated with a 21 percent larger relative divestiture package. This is no doubt caused by the substantial variation in the number of *Wall Street Journal* articles in the sample, as the mean is about six and the standard deviation is almost nine articles.

Interpretation of the marginal impact of $EFFICNCY$ requires some caution. It enters the regression in log form; therefore, a one-sigma increase in $EFFICNCY$ corresponds to an increase in anticipated merger-specific efficiencies from roughly \$98.2 million to about \$675.4 million. Given the construction of this variable, these results should not be considered more than a crude estimate of the underlying effect. Nonetheless, the estimated effect is significantly negative and quantitatively important.[26]

[26] Several additional model specifications were attempted: for example, including controls for the presidential administrations and/or the Assistant Attorney Generals for antitrust and replacing the continuous $COURT\%$ measure with dummy variables for ranges of the corresponding probabilities. In addition, a model equivalent to Model 5 was

Table VII. Out-of-Sample Prediction

Case	Predicted divestiture[a]		Observed
	Model 1	Model 2	divestiture
2001 Cases			
3D Systems/DTM	**0.29125**	0.79194	0
AB Volvo/Renault/Mack Trucks	0.6746	**0.71324**	1
Georgia-Pacific/Fort James	0.63723	***0.78795***	1
Premdor/Int'l Paper/Masonite	***0.61469***	0.62707	0.5
News Corp/Fox/Chris-Craft	0.48916	**0.54473**	1
Signature Flight Support/ Ranger	0.78862	***0.85489***	1
WorldCom/Intermedia	0.14633	**0.29373**	0.93118
2002-03 Cases			
Manitowoc/Grove INvestors/National	0.14828	**0.62146**	1
Archer-Daniels-Midland/Minnesota Corn Processors	**0.37124**	0.79109	0
Univision Communications/Hispanic Broadcasting	0.18134	***0.74709***	0.5
Waste Management/Allied Waste	0.21603	***0.72773***	0.87566
GE/Instrumentarium	0.008435	***0.13657***	0.375
Alcan/Alcan Aluminum/Pechiney	0.18882	**0.63074**	1

[a] For each case, the closer of the two predictions is **bold**; *italics* indicate a prediction within 0.25 of the observed outcome.

VII. Out-of-Sample Prediction

To evaluate the estimated models' predictive power, I use the 1990s sample estimates to predict the outcomes of settlements in the following two years. Table VII presents the results of this exercise along with the observed outcomes for each case.[27]

Model 2, the model with only the significant variables from Model 1, does better overall: Its predictions are closer to the observed values in five of the seven 2001 cases and in five of the six 2002-03 cases. In only one case does Model 1 yield a *good* prediction – defined here as $|\bar{D} - D| \leq 0.25$ – whereas a total of five cases are predicted well by Model 2. Furthermore, the lone case where model 1 does well, the Premdor/Masonite merger, gets a prediction from Model 2 that is quite close as

Footnote 26 continued
attempted with a zero-one dependent variable separating strong from weak settlements. None of these specifications yielded significantly different results from those reported here. These estimates are available to the interested reader from the author upon request.

[27] For a more detailed discussion of these cases see Kouliavtsev (2005). More in-depth analysis of some individual cases can be found in Katz (2002).

well. Also, Model 2 does well predicting all nonlimit observations with the exception of Worldcom/Intermedia.

Two points of caution are in order here. First, the prediction results are obviously not meant to be used as a definitive indication of the expected outcome for a given case to be settled. Ideally, this or a similar model would allow parties contemplating a particular acquisition to gauge roughly what kind of concessions in terms of asset divestiture to expect in order to get the merger cleared by the antitrust authorities. Second, the 2001 and subsequent settlements may have been reached under somewhat different conditions than those in the previous years: Beginning in 2001 the FTC and the DOJ raised the reporting thresholds for mergers subject to prior notification requirements. In other words, fewer mergers, many of which were bigger and involved larger firms, were reported to the Justice Department beginning in 2001 than in the preceding years. To the extent that this change may represent a structural shift in the negotiation and settlement process, the prediction results may be less accurate. The poor fit of the model to the entire sample (including the 2001-03 cases) appears at least indirectly to support this conclusion as well.[28]

VIII. Conclusion

In this paper, I have attempted to address empirically a particular question that is often neglected in the literature on merger policy: What makes a given structural remedy more or less complete (i.e., effective) in any given settled merger case? The use of econometric techniques is rare in the studies of antitrust policy, partly due to a scarcity of public data. It is my hope that the approach and the model estimated here are a first step in the right direction.

A new empirical approach is suggested for measuring and estimating the extent of structural remedies given the data made available to the public by the staff of the Antitrust Division of the U.S. Department of Justice. I find that the settlements frequently result in "compromise" or less-than-full removal of the competitive overlap argued to be the source of harm to future competition. By viewing the bargaining strengths of players as determined by their respective willingnesses to wait, I empirically introduce firm- and agency-side factors affecting the outcome. The results suggest that more complete divestitures secured by the Justice Department are associated with (a) mergers in which the portion of the deal subject to antitrust challenge is relatively small; (b) mergers that are well publicized by

[28] To be sure, the change in reporting requirements affected only the number of reported mergers valued under $50 million. These transactions, however, make up a significant portion of my sample—there are 18 cases (21 percent) with a nominal value less than $50 million; 16 of these have a value less than $50 million in 2000 dollars.

the media, and (c) mergers that have a higher probability of being stopped by courts, if litigated.

One example of a possible application of these results is given in Section VII. The prediction exercise suggests that while one can get a rough idea of the likely divestiture in a "typical" case, accurate prediction of any given case requires more exact calibration. Another application would consider the non-settled (i.e., litigated) cases and ask: To what kind of divestiture would the acquirer have to concede in order to obtain a settlement? Such predictions may be useful to firms contemplating merging with their competitors; moreover, those whose acquisitions are already being reviewed/challenged could make better-informed decisions about their "fight, fold, or settle" strategies.

Appendix

A. Marginal Impact Computation for COURT%

To calculate the change in the dependent variable induced by a one-standard-deviation change in $COURT\%$, write the relevant part of the index function as

$$E[D|\mathbf{x}_i] = \cdots + \psi_1 \bar{X} + \psi_2 \bar{X}^2 + \ldots \tag{2}$$

where $\bar{X}$ is the mean of the variable of interest (in this case, $COURT\%$), and $\psi_i = \hat{\beta}_i \times \text{Prob}(0 < D < 1)$ is the marginal impact. What is the effect on the LHS of a one-σ_x change in X?

$$\begin{aligned} E[D|\mathbf{x}_i, \sigma_x] &= \psi_1(\bar{X} + \sigma_x) + \psi_2(\bar{X} + \sigma_x)^2 \\ &= \underbrace{\psi_1 \bar{X} + \psi_2 \bar{X}^2}_{\text{Expression in (2)}} + \psi_1 \sigma_x + \psi_2(2\sigma_x \bar{X} + \sigma_x^2) \end{aligned}$$

Therefore,

$$E[\Delta D|\mathbf{x}_i, \sigma_x] = \psi_1 \sigma_x + \psi_2(2\sigma_x \bar{X} + \sigma_x^2),$$

where $\psi_1 = -1.4225$, $\psi_2 = 1.2875$, $\bar{X} = 0.782$, and $\sigma_x = -0.354$.

B. Results of Additional Specifications

In this section, I report the estimates from some alternative specifications of the main model (Model 1.)

B.1. ALTERNATIVE MEASURES OF ANTICOMPETITIVE POTENTIAL

In place of $COURT\%$ and $COURT\%^2$ I use a set of dummy variables: $COURT20$ equals one for cases with $0.20 \leq COURT\% < 0.50$ and

Table VIII. Marginal Effects from Tobit Estimation

Variable	Full Sample	1990s Sample
Constant	1.10597	1.916**
	(1.208)	(2.055)
EFFICNCY	−0.0577**	−0.0829***
	(2.017)	(2.761)
CONSUMER	−0.00168	−0.0014
	(0.162)	(0.473)
WORK	0.0217	0.0345
	(0.547)	(0.454)
CONGRESS	−1.8717	−2.8362**
	(1.309)	(1.961)
LOGWSJ	0.1457**	0.217***
	(2.394)	(3.32)
HOSTAGE	0.3821**	0.3132**
	(2.451)	(2.091)
SALES	0.0439*	0.02858
	(1.801)	(1.128)
USA	−0.2005*	−0.1245
	(1.653)	(0.899)
RETAIL	0.0879	0.0281
	(0.54)	(0.174)
*COURT*20	−0.06565	−0.3648
	(0.298)	(1.455)
*COURT*50	−0.2027	−0.355**
	(1.207)	(2.038)
*COURT*80	0.0146	−0.111
	(0.117)	(0.824)
TIME	−0.00109	−0.00233
	(0.712)	(0.971)

$N = 86$ for Full Sample, $N = 73$ for 1990s Sample.
Abs. value t-statistics in parentheses
* Significant at the .10 level; ** significant at the .05 level; *** significant at the .01 level.

zero otherwise; $COURT50$ equals one for cases with $0.50 \leq COURT\% < 0.80$ and zero otherwise; and $COURT80$ is set to one for any case with $COURT\% \geq 0.8$. Cases with estimated court probability less than 0.2 are the omitted group. Table VIII reports these results.

Only $COURT50$ appears significant—its negative coefficient indicates that mergers with the chances of being enjoined in the 50 to 80 percent

range are resolved with somewhat weaker settlements than cases with very low (under 0.20) probabilities.

B.2. ADDITIONAL POLITICAL CONTROLS

To introduce additional measures of political pressure on the Antitrust Division, I attempt to include dummy variables for the leadership of the antitrust staff at the DOJ. Each of the three dummy variables – $BINGAMAN$, $KLEIN$, and $JAMES$ – takes on the value of one for cases initiated when Anne Bingaman, Joel Klein, or Charles James was Assistant Attorney General for Antitrust at the DOJ, respectively. The early cases initiated under James Rill are the reference group.[29] The results are shown in Table IX.

The three coefficients—on $BINGAMAN$, $JAMES$, and $KLEIN$—are negative and barely statistically significant at the .1 level. While this would tend to suggest that settlements during each of these periods were weaker than those secured under Rill, the effects are not strong and do not lend themselves to easy interpretation.

B.3. BINARY DEPENDENT VARIABLE RESULTS

I estimate two versions of Model 1 using a binary dependent variable corresponding to the weak-vs-strong settlement dichotomy. The dependent variables D_{weak} and D_{strong} are defined as follows:

Weak definition:

$$D_{\text{weak}} = \begin{cases} 0 & \text{if} \quad D = 0 \\ 1 & \text{if} \quad 0 < D \leq 1 \end{cases}$$

Strong definition:

$$D_{\text{strong}} = \begin{cases} 0 & \text{if} \quad 0 \leq D < 1 \\ 1 & \text{if} \quad D = 1 \end{cases}$$

In other words, under the weak definition, any settlement requiring any structural divestiture is considered "strong" (indicated by 1's), and only no divestiture settlements are labelled "weak" (indicated by 0's). Conversely, under the strong definition, only the settlements requiring complete divestiture of overlap (i.e., where $D = 1$) are considered "strong" (indicated by 1's), and every other outcome – that is, less-than-complete divestiture or no divestiture – is a "weak" result (indicated by 0's). Table X reports the

[29] An alternative specification including dummies for the years under Bill Clinton's and George W. Bush's respective presidencies produced no significant results.

Table IX. Marginal Effects from Tobit Estimation

Variable	Marginal Effect
Constant	1.6659
	(1.378)
EFFICNCY	−0.06877**
	(2.441)
CONSUMER	−0.00156
	(0.216)
WORK	0.1108*
	(1.553)
CONGRESS	−3.0049
	(1.631)
LOGWSJ	0.1951***
	(2.976)
HOSTAGE	0.3572**
	(2.538)
SALES	0.0313
	(1.288)
USA	−0.1374
	(1.163)
RETAIL	0.0514
	(0.32)
COURT%	−1.264**
	(1.96)
COURT%^{2}	1.2143**
	(2.043)
TIME	0.00362
	(0.981)
BINGAMAN	−0.5431*
	(1.747)
JAMES	−0.8969*
	(1.69)
KLEIN	−0.8345*
	(1.818)
PATE	−0.5234
	(0.912)

$N = 86$

Abs. value t-statistics in parentheses

* Significant at the .10 level; ** significant at the .05 level; *** significant at the .01 level.

Table X. Probit Estimation Results

Variable	Weak Definition	Strong Definition
Constant	4.332	4.2527
	(0.599)	(1.008)
EFFICNCY	0.0069	−0.3037**
	(0.035)	(2.334)
CONSUMER	−1.0554	−0.0059
	(1.246)	(0.15)
WORK	0.5831	0.0092
	(1.561)	(0.057)
CONGRESS	−11.8065	−8.7
	(0.959)	(1.331)
LOGWSJ	−0.1478	0.8173***
	(0.31)	(3.159)
HOSTAGE	3.1073**	1.247*
	(2.519)	(1.882)
SALES	0.4702**	0.0578
	(2.283)	(0.544)
USA	0.2666	−0.7543
	(0.31)	(1.58)
RETAIL	5.165	0.5608
	(0.000)	(0.825)
COURT%	−0.4485	−4.9809*
	(0.074)	(1.834)
COURT%^{2}	−0.0522	4.7152*
	(0.009)	(1.883)
TIME	0.0245*	−0.002
	(1.703)	(0.294)
McFadden pseudo-R^2	0.539	0.297

$N = 86$

t-statistics in parentheses

*Significant at the .10 level; ** significant at the .05 level; *** significant at the .01 level.

results for the full sample of 86 cases. The results obviously differ from the Tobit estimates reported in the text; this is hardly surprising given the very different nature of the question being posed and answered here. On the other hand, some reassurance as to the robustness of the results is apparent: The qualitative effects of *EFFICNCY*, *LOGWSJ*, *HOSTAGE*, and *COURT%* are the same as with the more general approach (using the censored continuous regressand.)

The models do not perform well. Although the Strong Definition regression results in five significant coefficients, the McFadden goodness of fit measure is below 0.3—in terms of the prediction of settlements' strength, a coin toss would substantially improve over this model. The Weak Definition regression has better goodness of fit performance, but tells very little else of interest. The results from the Tobit estimation (see Table V in the text) are clearly preferable.

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