

The Effects of FTC Antitrust Challenges
on Rival Firms 1981-1987:

An Analysis of the Use of Stock Returns to Determine
the Competitive Effects of Horizontal Mergers



by

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BUREAU OF ECONOMICS
FEDERAL TRADE COMMISSION

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EXECUTIVE SUMMARY

This report finds that rivals of firms involved in horizontal mergers that were challenged by the Federal Trade Commission over the period 1981-1987 earned significant positive abnormal returns, on average, when the mergers were first announced and zero abnormal returns when the antitrust complaints were announced. Although past studies have concluded that similar patterns of abnormal returns indicate that the challenged mergers were, in fact, procompetitive, further analysis contained in this report indicates that this pattern of abnormal returns may be perfectly consistent with mergers that both lessen competition and signal potential efficiencies through consolidation. The report concludes that the study of rivals' stock returns may not be an effective method for determining the competitive effects of horizontal mergers.

The report updates and reexamines the conclusions and methodology of Eckbo (1983) and Eckbo and Wier (1985). These articles attempted to determine if the

horizontal mergers challenged by the Department of Justice (DOJ) and the Federal Trade Commission (FTC) were actually anticompetitive by examining the effects of the mergers and antitrust complaints on the values of rivals of the merging firms. The hypothesis underlying the analysis contained in these articles is that mergers that reduce competition should benefit rival firms by increasing product prices, and mergers that enhance competition should harm rivals by lowering product prices. Similarly, an antitrust challenge to an anticompetitive merger should harm rivals by preventing anticompetitive price increases, and an antitrust challenge to a merger that is actually procompetitive should benefit rivals by preventing the merging firms from realizing potential efficiencies.

Eckbo (1983) and Eckbo and Wier (1985) found that rival firms did indeed benefit, on average, from the announcements of the mergers that were later challenged. However, these articles also reported that the values of the rivals were unaffected by the antitrust complaints. Since rivals were not harmed by the antitrust

complaints, both articles concluded that the challenged mergers were not anticompetitive.

The authors reasoned that the merger announcements signalled that firms within the industries could become more efficient through consolidation, and that these efficiency gains would enhance industry competition. According to the authors, the rivals benefit from the original merger announcement not because product prices would increase, but because the merger announcements signalled to the rivals that they too could become more efficient and profitable through consolidation. Eckbo and Eckbo and Wier further reasoned that the rivals were unaffected by the antitrust complaints because the benefits they would receive from the government blocking efficiency enhancing mergers were offset by the decreased probability that they could also merge and benefit from the potential efficiencies. The results reported in these articles have been cited in a number of related articles as evidence that the creation of market power is not a factor motivating horizontal mergers.

The basic premises of this report are that 1) a horizontal merger may create efficiencies and, at the same time, lessen competition; and 2) an antitrust challenge to a horizontal merger may have disparate effects on rivals depending on the rivals' relative size within the industry.

This report examines the effects on rival firms of 37 mergers that were challenged by the FTC from 1981-1987. The report finds a pattern of returns very similar to those reported in Eckbo (1983) and Eckbo and Wier (1985). On average, rivals benefit from the merger announcements and are unaffected by the antitrust complaints. However, whereas rivals as a whole are unaffected by the antitrust complaints on average, small rivals, those whose relative size within their industry is less than the median, benefit significantly from the antitrust complaints.

If an anticompetitive merger also signals potential efficiencies through consolidation, then an antitrust challenge to the merger may benefit smaller rivals at the expense of larger rivals. Small rivals may benefit

from an antitrust complaint for two reasons. First, a challenge to an anticompetitive merger that also signals potential efficiencies may act to protect smaller, marginal producers that would be unable to realize these efficiencies themselves through consolidation. Second, a challenge to an anticompetitive merger that also signals efficiencies may increase the likelihood that small rivals will be subsequently taken over since the acquisition of a small rival may not raise antitrust concerns. Such circumstances could create patterns of returns similar to those reported by Eckbo and Eckbo and Wier despite the fact that the challenged merger was, in fact, anticompetitive. Thus, the report concludes that the examination of rivals' abnormal returns cannot distinguish between mergers that enhance or diminish competition, and that the conclusions drawn by Eckbo and Eckbo and Wier do not necessarily follow from the patterns of abnormal returns that they report.

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I. Introduction

A large body of research has examined the profitability of mergers and tender offers by measuring the impact of merger announcements on stock prices. These studies have consistently found that the shareholders of target firms earn large positive abnormal returns while the shareholders of acquiring firms tend to earn roughly normal returns.¹ These results imply that corporate acquisitions increase value; nevertheless, studies that examine the profitability of targets and bidders generally cannot distinguish the sources of these gains.

Theoretically, corporate acquisitions can increase value in a number of different ways. Acquisitions may increase net wealth by allowing firms to take advantage

¹ See Jensen and Ruback (1983) and Jarrell, Brickley, and Netter (1988).

of economies of scale or scope in production, marketing, planning, or finance, and through the replacement of inefficient management. Acquisitions may also potentially benefit shareholders at the expense of others by redistributing wealth from bondholders, workers, or taxpayers.² In the case of horizontal acquisitions, increases in value might also arise through the creation of market power.

Recent papers by Stillman (1983), Eckbo (1983), and Eckbo and Weir (1985) have investigated the question of whether or not acquisitions challenged by the Department of Justice (DOJ) and the Federal Trade Commission (FTC) were in fact anticompetitive by examining the effects of the acquisitions on samples of rival firms. The rationale underlying the analysis contained in these papers is that acquisitions that enhance market power should benefit rivals by increasing the prices of their

² For example, Shleifer and Summers (1987) argue that the gains from takeovers could come at the expense of labor through the exploitation of implicit contracts. While wealth redistribution may, theoretically, motivate acquisitions, there is little empirical evidence of such transfers. See Jarrell, Brickley, and Netter (1988).

products, and efficiency enhancing mergers should harm rivals by increasing industry competition and lowering prices. Similarly, antitrust challenges to anticompetitive mergers should harm rivals and antitrust challenges to mergers that are, in fact, procompetitive should benefit them.

The results reported in these papers, unfortunately, do not neatly fit these patterns. The papers by Eckbo and Eckbo and Wier, for example, report that rivals' shareholders significantly benefitted, on average, from the original announcements of the mergers, but were unaffected by the announcements of the challenges. The authors argue that these results are inconsistent with the hypothesis that the challenged mergers were actually anticompetitive.

The purpose of this study is to demonstrate that the pattern of returns reported in these studies is not necessarily inconsistent with the challenged mergers being anticompetitive. Two important points are argued that together may explain the pattern of results reported in Eckbo (1983) and Eckbo and Wier (1985).

First, a horizontal acquisition may create efficiencies and signal that other firms in the industry can also realize these efficiencies, and, at the same time, lessen competition by facilitating collusion or allowing a newly created dominant firm to charge supercompetitive prices. Second, an antitrust challenge to a horizontal merger may have disparate effects on rivals depending on the rivals' relative sizes within their industry.

This report argues that the differential effects of an antitrust challenge on smaller and larger rivals may explain the pattern of rivals' stock returns reported in Eckbo (1983) and Eckbo and Wier (1985) regardless of the actual effects of the challenged mergers on industry competition. This result leads us to conclude that the study of rivals' stock returns by itself is an ineffective means of determining the competitive effects of horizontal acquisitions.

Section II of this study reviews the major results and conclusions from past studies of the effects of antitrust enforcement on rivals and a number of criticisms of these past studies. Section III describes

the sample and data. Section IV discusses the empirical methods and results of estimating rivals' abnormal returns. Section V attempts to explain the pattern of rivals' abnormal returns by examining the effects of relative firm size on rivals' abnormal returns, and Section VI summarizes the results.

II. Past Studies

Stillman (1983), Eckbo (1983), and Eckbo and Wier (1985) studied the effects of challenged horizontal mergers on rival firms using the "event study" method. This method, which is discussed in more detail in Section IV, measures the impact of an event on the profitability of firms by calculating the "abnormal" stock return caused by the event. The abnormal return is the portion of a firm's stock return not explained by a model generating normal, expected returns.

Stillman studied the effects of 11 horizontal mergers attempted between 1964 and 1972 and challenged by either the DOJ or the FTC under Section 7 of the Clayton Act. Stillman found only one case where rivals' abnormal returns were consistent with the market power hypothesis. In a second case, he found the somewhat ambiguous result in which the sole rival's abnormal return was significant in the direction of an anticompetitive result at the time of one event, but insignificant at the time of another event. In the

remaining 9 cases, Stillman found that the rivals did not exhibit abnormal returns of any kind, leading him to conclude that, overall, antitrust enforcement had not been directed toward mergers that were anticompetitive.

Eckbo (1983) and Eckbo and Wier (1985) also rejected the market power hypothesis, although the results of these papers are somewhat different from those reported by Stillman. Eckbo (1983) (hereafter referred to as Eckbo) studied 65 challenged horizontal mergers attempted between 1963 and 1978. Unlike Stillman, who used records from court and agency proceedings to select his sample of rival firms and examined each case individually, Eckbo selected rivals based on Standard Industrial Classification (SIC) product line classification codes and reported the average effects over his entire sample. Eckbo found that rivals of challenged mergers earned, on average, significant positive abnormal returns in the period encompassing the announcement of the pending mergers. These results taken alone would be consistent with the market power hypothesis. Eckbo, however, rejected the market power

hypothesis after finding that rivals' abnormal returns were unaffected by the antitrust challenges to these mergers.³ He reasoned, if the mergers were in fact anticompetitive, then rivals would be expected to earn negative abnormal returns upon the announcement of an antitrust complaint since such a complaint would lower the probability that the merger would be successfully completed.⁴

³ When Eckbo broke down his sample of cases by enforcement agency (FTC cases vs. DOJ cases) the results were somewhat more complicated. Eckbo found that for cases challenged by the FTC, rivals earned, on average, significant positive abnormal returns on the day that mergers were challenged, but insignificant (normal) returns on the day the mergers were first announced and over numerous intervals surrounding the announcements. In cases challenged by the Department of Justice (DOJ), rivals exhibited positive abnormal returns over various intervals surrounding the announcements of the mergers, but insignificant (normal) returns around intervals encompassing the challenges.

⁴ If the antitrust complaints had been anticipated before their announcement, the absence of any abnormal performance on the part of rivals would be expected and Eckbo's conclusion would not follow from his results. However, Eckbo found that the target firms in the challenged mergers experienced highly significant, negative abnormal returns at the time of the complaint announcements. This result indicates that the complaint announcements did provide previously unanticipated information to investors.

Eckbo reconciled the merger announcement results with the complaint results by arguing that the announcements of the mergers have informational as well as competitive effects on rivals. Eckbo argued that the announcement of an efficiency enhancing acquisition acts as a signal to rival firms that they too can become more efficient and, consequently, more profitable, and that this effect can dominate the harm to the rivals from the increased efficiency of the merging firms.⁵ Similarly, an antitrust challenge to an efficiency-enhancing horizontal merger has the "information effect" of signalling a lower probability that rivals will be able to undergo a merger themselves. This information effect offsets the competitive benefits to rivals from the challenge to a procompetitive merger. However, Eckbo

⁵ If, as Eckbo suggests, the potential efficiencies signalled by the original merger are not firm specific but are available to all firms in the industry, then in the long-run profits should revert back to their pre-merger levels. Nevertheless, if entry into the industry (or capacity expansion by incumbent firms) takes time, the profits of the firms within the industry may increase in the short-run on account of whatever efficiencies are signaled, and rivals' values would, subsequently, increase.

did not explain why the informational effects would dominate the competitive effects at the time of the original merger announcements, but only just offset the competitive effects at the time of the antitrust challenges.

Eckbo and Wier (1985) expanded Eckbo's 1983 sample to 82 challenged horizontal mergers by including mergers challenged through December 1981. Eckbo and Wier (hereafter referred to as EW) studied two samples of rivals. For all 82 cases, EW developed a sample of rivals based on SIC codes using the selection criterion described in Eckbo. For 36 of the 82 cases EW developed a second sample of rivals identified by the DOJ and the FTC in court and agency proceedings as competitors of the merging firms. By extending the sample to include the years 1979-1981, EW were able to investigate the effects of the September 1978 implementation of the premerger notification requirements specified by the Hart-Scott-Rodino Antitrust Improvement Act (HSR).

The results reported by EW are similar to those reported in Eckbo. In both the SIC and the agency

samples of rivals, EW found that the original announcement of the challenged horizontal mergers had the effect of creating significant positive abnormal returns for the rivals while the announcement of the antitrust challenges had no effect at all. Relying on the logic of Eckbo (1983), EW concluded that the challenged mergers were, in fact, procompetitive. Moreover, they found that this pattern of rivals' abnormal returns was unaffected by the implementation of the HSR regulations.

The strong policy conclusions drawn by Eckbo and EW have had a substantial impact on the debate concerning corporate acquisitions in general and the role of government antitrust policy. Jensen and Ruback (1983), Jensen (1984), and Jarrell, Brickley, and Netter (1988) cite the results of these papers as indicating that increases in monopoly power cannot explain any of the gains from takeovers. Jensen (1984) goes so far as to dismiss as folklore the assertion that "by merging competitors, takeovers create a monopoly that will raise product prices, produce less, and thereby harm

consumers."⁶

Werden and Williams (1988) are highly critical of the sample and methods used by EW. They contend that 1) not all of the acquisitions studied were horizontal, 2) not all of the rivals were actually rivals in the markets where anticompetitive effects were alleged, and 3) not all of the dates of event announcements were accurate. These criticisms may be correct, but their existence would imply that substantial random error exists in the EW sample. This problem would be expected to lead to statistically insignificant results. EW, however, found significant effects of merger announcements, which tends to undermine the importance of these criticisms.

Recently, Salinger and Schumann (1988) reexamined the results reported by Eckbo and EW. They tested further implications of Eckbo's explanation of his results, which led Eckbo and EW to conclude that the challenged mergers actually enhanced competition. Salinger and Schumann hypothesized that the announcement

⁶ Jensen (1984), p. 114.

of a horizontal merger puts the rivals "in play," that is, it generates anticipation that they too will be acquired. Eckbo's explanation of his results makes sense only if the information effect dominates the competitive effect at the time that a challenged merger was first announced, and the two effects just offset one another at the time that an antitrust challenge is announced. Eckbo offered no explanation as to why the relative importance of the information effects would differ at these two events. The hypothesis that the merger announcement puts rivals "in play" provides this explanation.

The antitrust challenges in the Eckbo and EW samples typically occurred sometime after the original merger announcement; in some cases, as long as a few years after the announcement. The longer the period between the original merger announcement and the antitrust challenge, the smaller will be the information effects at the time of the challenge. If the challenge were to occur so long after the original merger announcement that any remaining rivals not already

acquired were no longer considered "in play" by the market, the only effect at the time of the challenge would be the competitive effect. Thus, while the information effect may be very strong at the time of the original merger announcement when rivals are first put "in play," as time passes its importance, on average, vis a vis the competitive effect will diminish. Since challenges occurred over a distribution of time after the original merger announcements, from shortly after the merger announcements to years after the announcements, on average the information effects and the competitive effects might just offset one another at the time of the antitrust challenges.

Salinger and Schumann (1988) (hereafter, S&S) examine five hypotheses implied by the "in play" effect. If it were the case that the original announcements of the challenged mergers put rivals "in play," then the abnormal returns earned at the time of the announcements by rivals that were not later acquired should dissipate over time. This hypothesis is designated as hypothesis (1) in S&S.

Specifying "late challenges" as those occurring over two years after the announcements of the original merger leads to hypotheses (2) and (3). Since late challenges are likely to have a relatively small information effect, the abnormal returns created by late challenges should reflect primarily the competitive effects of the mergers. Since Eckbo and EW conclude that the mergers enhanced competition by creating efficiencies, hypothesis (2) predicts that the abnormal returns of nonacquired rivals should be negative during periods preceding late challenges. Hypothesis (3) predicts that the announcement of late challenges should increase the value of rivals by denying the merging firms the benefits from the efficiency gains created by the mergers.

If it were the case that the original announcement of the challenged mergers put rivals in play, then, holding everything else constant, one would expect that the proportion of rivals actually acquired following a merger announcement would be greater than would have otherwise been expected. Of course, in the case of the

Eckbo and EW samples, everything else is not held constant. In particular, one might expect that an antitrust challenge announced shortly after a merger announcement might lower the probability that rivals would be acquired. That is, a "fast challenge" should have a relatively large information effect opposite, but equal in magnitude to the information effect of the merger announcement.

These two observations resulted in hypotheses (4) and (5). Hypothesis (4) predicts that if the merger announcement put rivals in play, the number of rivals subsequently acquired should be greater than otherwise expected. If the results indicate rejection of hypothesis (4) for the reasons discussed above, then the "in play" hypothesis would predict that rivals' abnormal returns from "fast" challenges should be negative. This latter prediction is designated as hypothesis (5).

Table 1 summarizes the hypotheses examined by S&S, the implications of each hypothesis, the results that

S&S report, and their conclusions.⁷ Although some of the individual results are consistent with an "in play" effect, the results as a whole are not, and S&S reject the hypothesis that an "in play" effect could explain Eckbo's conclusion that the challenged mergers were actually procompetitive. Thus, the Eckbo and EW results are still in search of a coherent explanation.

⁷ The term CAR used in Table 1 refers to the cumulative abnormal return. See Section IV for a definition of this term.

Table 1

The Salinger and Schumann "In Play" Effect

	(1)	(2)	(3)	(4)	(5)
Hypothesis	CAR of non-acquired rivals is negative once "in play" effect is dissipated	CARS of non-acquired rivals negative prior to "late" challenges	"Late" challenges increase value of non-acquired rivals	High number of subsequent acquisitions	Combination of merger announcement and fast challenge lowers value of rivals OR
Importance	Indirect evidence of "in play" effect; also needed to reconcile different magnitudes of information effect at announcement and challenge	Same as hypothesis 3, but a clearer test since intervening challenges do not confound the results	Test of competitive effect without confounding information effect	Evidence of "in play" effect	Possible reconciliation of "in play" effect and low rate of subsequent acquisition
Results	CARS of non-acquired SIC rivals became negative; CARS of non-acquired agency rivals remain positive	CARS negative after six months but near 0 after 1 year	"Late" challenge associated with increase in value of non-acquired rivals, but choice of event window is important	Low rate of subsequent acquisition	Merger announcement and fast challenge associated with increase in value of rivals
Conclusions	Ambiguous	Ambiguous, depending on choice of event window	On balance, consistent with efficiency hypothesis	Inconsistent with the "in play" effect and, in turn, the efficiency hypothesis	

III. The Sample of Challenged Horizontal Mergers

The sample of challenged acquisitions is drawn from the FTC document "Competition Mission Accomplishments," which is compiled by the Evaluation Office of the FTC's Bureau of Competition and is available to the public on request. The universe consists of 50 horizontal mergers that were challenged by the FTC between January 1981 and December 1987. To be included in the study, the cases had to meet the following criteria: 1) Announcements of the proposed acquisition appeared in a public source. (Typically, the Wall Street Journal was the source of merger announcements, although in a few cases other newspapers or trade journals were used.) 2) Stock returns were available for at least one of the merging firms and one rival identified in internal documents.

The final sample contains 37 challenged acquisitions, which are listed in Table 2 and sorted into 3 subsamples.⁸ The first subsample consists of 19

⁸ Of the thirteen cases dropped from the sample, four were dropped because public announcements of the acquisitions could not be found. These cases typically

cases in which the FTC authorized its staff to seek a preliminary injunction (PI) to block the acquisition. Within this subsample, 11 acquisitions were cancelled by the merging parties after authorization of the PI and 8 acquisitions were settled through administrative proceedings.

The second and third subsamples contain cases in which a PI was not authorized. The second subsample

involved the purchase of assets (production facilities) or very small subsidiaries of much larger parent corporations. Of the remaining nine cases, eight were dropped because the rivals identified in agency documents were either privately held corporations or, in the case of two hospital mergers, nonprofit corporations. The thirteenth case was deemed not suitable for this study for more complicated reasons. In this case, due to the nature of the industry, the relevant geographic markets were determined to be 19 metropolitan statistical areas (MSAs) in which the target and acquiring firms competed against one another. Agency documents identified 10 of these 19 geographic markets as markets in which the acquisition would have no anticompetitive effects and possible procompetitive effects. Of the rivals identified as operating in the 9 markets in which the acquisition could reduce competition, only one was publicly traded. Unfortunately, this one firm competed in only 2 of the 9 markets in which the merger was alleged to be anticompetitive, while also competing in 7 of the ten markets in which the merger was potentially procompetitive. Consequently, the merger was dropped from the sample.

consists of four cases that were settled through administrative proceedings, and the third subsample consists of thirteen cases that were settled by consent agreements.

A sample of rival firms was constructed for each challenged merger in the study. The sample of rivals consists of firms identified in internal staff memoranda as competitors to the merging firms in those markets in which a potential antitrust violation was alleged. To be included in the sample, the rivals were required to be publicly owned corporations whose stock was listed on the New York or American Stock Exchanges or sold over-the-counter through the National Association of Security Dealers Automated Quotation (NASDAQ) system. Further, stock returns had to be available for 250 trading days (approximately one year) before each announcement and for twenty five trading days following each announcement. The final sample of rivals consists of 167 firms.

Table 2

Sample of Challenged Horizontal Mergers

<u>Case</u>	<u>Docket #</u>	<u>Matter #</u>	<u>Firms</u> <u>(Bidder/Target)</u>	<u>Merger</u> <u>Announcement</u> <u>(YYMMDD)</u>	<u>Challenge</u> <u>Announcement</u> <u>(YYMMDD)</u>
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Subsample 1: Preliminary Injunctions Authorized

1		8710018	American Hoechst Corp./Celanese	861103	870114
2		8510060	Baker Intl. Co./Paccar (Wagner Mining Equipment)	850114	850419
3 ^a			(Carbon Black)	831020	840418
	D9177	8410049	Columbian Enterprised Inc/Conoco (Continental Carbon)		
	D9178	8410050	Bass Brothers /Ashland Oil (Carbon Black Sub.)		
4 ^b	D9207	8610076	Coca-Cola/Dr. Pepper	860221	860620
5		8710008	Du Pont (Conoco Inc)/Asamera	861007	861231
6	D9155	8110127	Great Lakes Chemical Corp./Northwest Inds. (Velsicol)	810309	810602
7		8210110	Gulf Oil/Cities Service	820618	820730
8		8610133	Kidde Inc./Harnischfeger	860528	861202
9		8210005	LTV Corp/Grumman	810923	811028
10		8210020	Mobil Corp./Marathon Oil	811102	811209
11		8410138	Nestle S.A. (Alcon Labs)/Coopervision	840425	840727
12		8510024	NL Industries Inc./American Cyanimid	841010	850117
13	D9212	8810002	Owens-Illinois/Brockway	870918	871119
14	D9205	8610065	Occidental Petroleum Corp./Tenneco (Tenneco Polymers)	860110	860403
15 ^b		8610074	Pepsico/Seven Up	860122	860620
16	D9204	8510198	PPG Industries Inc./Swedlow	850821	851216
17	D9211	8710065	Pacific Resources/Shell	870313	870814
18		8510109	Smithkline Beckman Corp./American Optical Corp.	850326	850724
19	D9174	8410003	Warner Communications/Polygram	830630	840306

Subsample 2: Administrative Complaints (No PI Authorized)

20	D09159	8210013	B.F. Goodrich/Diamond Shamrock	811001	811230
21	D09157	8110094	Echlin Mfg./Borg Warner	810205	810723
22	D09198	8510179	Midcon/United Energy	850812	850923
23	D09164	8310046	Schlumberger/Accutest	821022	830202

Table 2

Sample of Challenged Horizontal Mergers -- Continued

<u>Case</u>	<u>Docket #</u>	<u>Matter #</u>	<u>Firms</u> <u>(Bidder/Target)</u>	<u>Merger</u> <u>Announcement</u> <u>(YYMMDD)</u>	<u>Challenge</u> <u>Announcement</u> <u>(YYMMDD)</u>
<u>Subsample 3: Settled by Consent Agreement (No PI Authorized)</u>					
24	C3109	8110191	Allied Corp./Fisher Scientific	810731	810901
25	C3157	8510019	Allied Corp (Bendix)/King Radio Corp.	840927	850129
26	C3099	8210077	Batus Inc./Marshall Field	820315	820419
27	C3074	8110130	British Petroleum/Kennecott Copper	810312	810601
28	C3100	8110158	Canada Cement/General Portland Cement	810624	811116
29	C3103	8210086	Conagra Inc./Peavey	820419	820720
30	C3088	8110085	General Electric Co./United Telecom. (Calma Co.)	801205	810403
31	C3066	8110015	Godfrey Co./Jewel	801003	810102
32	C3168	8510111	Internorth Inc./Houston Natural Gas	850503	850607
33	C3075	8110059	Kennecott Corp./Curtiss-Wright (Dorr Oliver)	810122	810429
34	C3136	8310014	Pilkington Bros./Libby-Owens-Ford	821019	840127
35	C3147	8410109	Standard Oil of Ca./Gulf	840307	840424
36	C3137	8410077	Texaco/Getty	840109	840214

a. Case 3 consists of two separate antitrust cases that are treated as a single case for the purpose of this study. The two mergers were announced on consecutive days and involved the same product market (the production of carbon black). The rivals were, therefore, the same firms for both cases and complaints were issued by the Commission on the same day for both cases. The announcement of the first merger was used as the announcement date.

b. The Coke/Dr. Pepper merger and the Pepsi/Seven-Up merger involved the same product market (carbonated soft drinks) and were announced approximately one month apart. The Commission authorized staff to seek preliminary injunctions to block both cases on the same date. Abnormal returns encompassing the announcement of each merger were calculated separately; however, the two cases were treated as a single case with respect to the calculation of abnormal returns encompassing the challenges.

Table 2

Sample of Challenged Horizontal Mergers -- Continued

<u>Case</u>	<u>Docket #</u>	<u>Matter #</u>	<u>Firms</u> <u>(Bidder/Target)</u>	<u>Merger</u> <u>Announcement</u> <u>(YYMMDD)</u>	<u>Challenge</u> <u>Announcement</u> <u>(YYMMDD)</u>
<u>Subsample 3: Settled by Consent Agreement (No PI Authorized)</u>					
24	CS109	8110191	Allied Corp./Fisher Scientific	810731	810901
25	CS187	8510019	Allied Corp (Bendix)/King Radio Corp.	840927	850129
26	CS099	8210077	Batus Inc./Marshall Field	820315	820419
27	CS074	8110130	British Petroleum/Kennecott Copper	810312	810601
28	CS100	8110158	Canada Cement/General Portland Cement	810624	811118
29	CS103	8210086	Conagra Inc./Peavey	820419	820720
30	CS088	8110085	General Electric Co./United Telecom. (Calma Co.)	801205	810403
31	CS066	8110015	Godfrey Co./Jewel	801003	810102
32	CS168	8510111	Internorth Inc./Houston Natural Gas	850503	850607
33	CS075	8110059	Kennecott Corp./Curtis-Wright (Dorr Oliver)	810122	810429
34	CS136	8310014	Pilkington Bros./Libby-Owens-Ford	821019	840127
35	CS147	8410109	Standard Oil of Ca./Gulf	840307	840424
36	CS137	8410077	Texaco/Getty	840109	840214

a. Case 3 consists of two separate antitrust cases that are treated as a single case for the purpose of this study. The two mergers were announced on consecutive days and involved the same product market (the production of carbon black). The rivals were, therefore, the same firms for both cases and complaints were issued by the Commission on the same day for both cases. The announcement of the first merger was used as the announcement date.

b. The Coke/Dr. Pepper merger and the Pepsi/Seven-Up merger involved the same product market (carbonated soft drinks) and were announced approximately one month apart. The Commission authorized staff to seek preliminary injunctions to block both cases on the same date. Abnormal returns encompassing the announcement of each merger were calculated separately; however, the two cases were treated as a single case with respect to the calculation of abnormal returns encompassing the challenges.

IV. Abnormal Returns From Challenged Acquisitions:

Methods and Results

A. Methods

The effects of the announcements of the acquisitions and antitrust challenges on the stock market returns of the rivals are measured using the event study method developed by Fama, Fisher, Jensen, and Roll (1969).⁹ This procedure, which has been used in many previous studies of mergers, measures the stock market's reaction to an event such as a merger by calculating the difference between the return earned by a share of stock of a firm experiencing the event and the expected return predicted by an appropriate model of return generation. Formally, the abnormal return is defined as

$$e_{it} \equiv R_{it} - [a_i + b_i R_{mt}], \quad (1)$$

where a_i and b_i are the ordinary least squares estimates of the parameters α_i and β_i from the market model

⁹ For more recent discussions of this methodology see Brown and Warner (1980, 1985) and Salinger (1989).

equation

$$R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it}, \quad (2)$$

R_{it} is the day t return on an equally-weighted portfolio of the rivals to acquisition i , and R_{mt} is the day t return on the market portfolio. The coefficient β_i measures the systematic co-movements of R_i and the market portfolio, R_m . ϵ_{it} is a normally distributed random disturbance. The return on the Center for Research in Security Prices' (CRSP) value-weighted index of the New York and American stock exchanges is used as the proxy for R_m .

In calculating the abnormal returns, time is measured relative to each announcement date; day 0 being the day of the announcement, day -1 being the day before, day +1 the day after, and so on. The market model parameters are estimated over the 225 day period beginning on day -250 and ending on day -26. Abnormal returns are calculated over various intervals or "windows" encompassing the event announcements using the estimated market model parameters.

The overall effects of the merger announcements and

antitrust challenges are measured by first calculating the cumulative abnormal return (CAR) of each portfolio of rivals over the various windows. Three windows around each event are examined: 1) a 3-day window from day -1 through day +1; 2) an 11-day window from day -5 through day +5; and 3) a 21-day window from day -10 through day +10. The CAR for window w over interval $-K$ to $+K$ is

$$CAR_w = \sum_{\tau=-K}^{\tau=+K} e_{i\tau} .$$

Next, the average cumulative abnormal return (ACAR) is calculated as

$$ACAR_w = (1/n) \sum_{i=1}^n CAR_{wi} ,$$

where n is the number of mergers in either the overall sample or one of the three subsamples.

Standard errors for each CAR are calculated using the formula derived in Salinger (1989). A common error in event studies is to estimate the variance of the estimated cumulative abnormal return for an event as the sum of the variances of the individual abnormal returns associated with the event. Such a procedure assumes the

independence of the estimated abnormal returns; yet, since the abnormal returns are forecast errors calculated from the estimation of equation (2), they will be correlated with estimation errors of the market model parameters, and, in turn, serially correlated with one another. Salinger shows that the correct formula is:

$$\sigma^2 = Us^2[1 + (U/T) + (U/T)(R-r)^2/V], \quad (3)$$

where σ^2 is the variance of the estimated cumulative abnormal return, s^2 is the variance of the market model residual, T is the number of observations in the estimation period, U is the number of observations in the event window, R is the average market return during the event window, r is the average market return during the estimation period, and V is the variance of the market return during the estimation period.¹⁰

Tests of the null hypothesis of zero abnormal

¹⁰ By combining the individual returns of the rivals to a particular acquisition into a portfolio, the method adjusts for contemporary covariance across these rivals. However, in contrast to Salinger (1989), we do not adjust for contemporaneous covariance across portfolios.

returns ($ACAR_s = 0$) are performed using the asymptotically normal Z-statistic, where

$$Z_s = (1/\sqrt{n}) \sum_{i=1}^n (CAR_i/\sigma_i)$$

and σ_i is the standard error of CAR_i calculated from equation (3).

B. Abnormal Performance of Merging Firms

Before examining the abnormal returns to the rivals, we examine the abnormal returns to the target and bidding firms in the challenged acquisitions. Examining the abnormal returns of the rivals at the times of the original merger announcements and antitrust challenges would tell us nothing if those events were fully anticipated before they were publicly announced. Therefore, by examining the abnormal returns of the firms participating in the challenged acquisitions, we are able to test whether or not these events actually provided new information to investors.

Table 3 summarizes the abnormal returns to the target firms over the three windows encompassing each event. As indicated in Table 3, the announcements of

the acquisitions provided the shareholders of the target firms with highly significant positive abnormal returns. This pattern holds not only for the sample as a whole, but also for each of the three subsamples. The high degree of significance indicates that the merger announcements provided investors with previously unexpected information. Figure 1 plots the average cumulative abnormal returns (ACARs) for the entire sample of target firms. The highly significant results summarized in Table 3 and Figure 1 indicate that the announcement dates of the mergers are appropriate dates for examining the effects of the mergers on the sample of rival firms.

In the case of the announcements of the antitrust challenges to the mergers, the results reported in Table 3 are somewhat ambiguous. For the sample as a whole, Table 3 indicates that the announcements of the challenges significantly lowered the value of the target firms -- a result that would certainly be expected; however, when the sample is broken down into the three subsamples, the effects of the challenges are

significant only for those cases in which the challenge was in the form of an authorization to file a PI to stop the acquisitions. In the cases for which a PI was authorized, the abnormal returns unambiguously indicate that the announcements provided new information to investors. Figures 2 and 3 plot the ~~ACARs~~ measuring the effects of the antitrust challenges for the entire sample of target firms and the subsample of target firms for those cases in which PIs were authorized, respectively.

In the cases in which FTC opposition to the acquisitions took the form of a consent agreement or an administrative complaint without authorization to file a PI, the abnormal returns associated with the challenges are insignificant. These results could indicate that the announcements of these forms of FTC opposition had been anticipated and that, consequently, the dates of these announcements would not be appropriate dates for studying their effects on rival firms. However, such a conclusion is not necessarily warranted. In the cases in which the FTC agreed to a consent or in which an

Table 3
Average Cumulative Abnormal Returns of Target Firms
(FTC Cases 1981-1987)

Sample	Announcement	Summary Statistic	Period Relative to Announcement (Day 0)		
			(-1,1)	(-5,5)	(-10,10)
Total Sample	Merger Proposal (30 Targets)	ACAR Z-Statistic	15.75% (25.73)**	18.69% (16.51)**	22.84% (14.70)**
	Challenge (24 Targets)	ACAR Z-Statistic	-2.68% (-2.40)**	-3.31% (-2.18)**	-5.64% (-2.42)**
P.I. Cases	Merger Proposal (15 Targets)	ACAR Z-Statistic	14.23% (16.46)**	16.49% (9.93)**	16.61% (7.07)**
	Challenge (14 Targets)	ACAR Z-Statistic	-4.43% (-3.42)**	-5.73% (-2.77)**	-9.97% (-3.70)**
Litigated Cases - No P.I. Authorized	Merger Proposal (2 Targets)	ACAR Z-Statistic	8.62% (5.29)**	7.05% (2.25)**	8.59% (1.96)**
	Challenge (2 Targets)	ACAR Z-Statistic	-0.14% (-0.16)	-1.85% (-0.56)	-1.53% (-0.87)
Consent Cases - No P.I. Authorized	Merger Proposal (13 Targets)	ACAR Z-Statistic	18.71% (19.33)**	23.18% (13.53)**	33.29% (13.96)**
	Challenge (8 Targets)	ACAR Z-Statistic	-0.04% (0.43)	0.86% (0.76)	1.46% (-0.87)

** Significant at .05 level

* Significant at .1 level

Note: P.I. refers to a preliminary injunction to block an acquisition. Cases classified as "Litigated Cases - No P.I. Authorized" are cases settled through administrative hearings following the issuance of an administrative complaint, but not authorization to file a P.I. Cases classified as "Consent Cases - No P.I. Authorized" are cases in which complaints were settled by consent agreements rather than through administrative hearings.

EFFECT OF MERGER ANNOUNCEMENTS
ON TARGET FIRMS

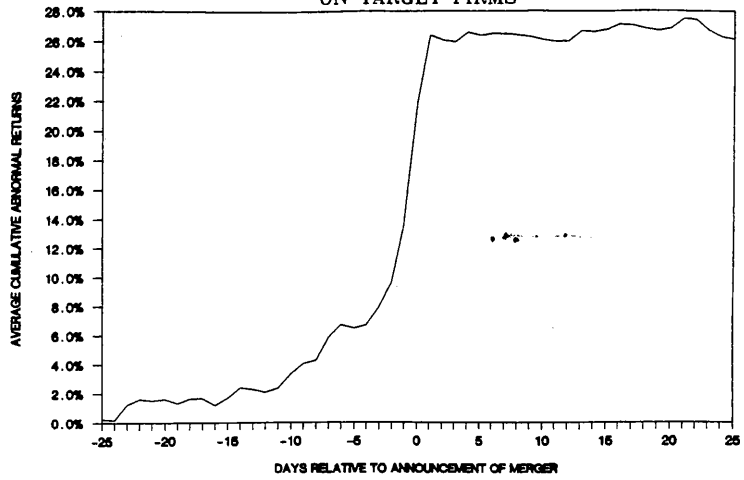


Figure 1

EFFECT OF ANTITRUST CHALLENGE
ON TARGET FIRMS

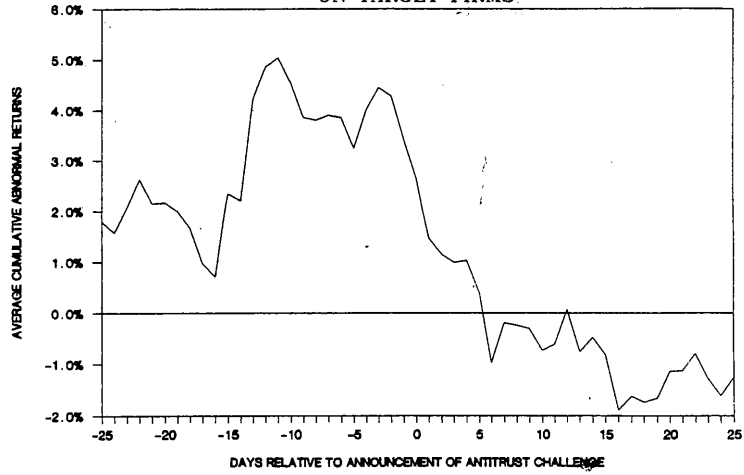


Figure 2

EFFECT OF AUTHORIZATION OF PI
ON TARGET FIRMS

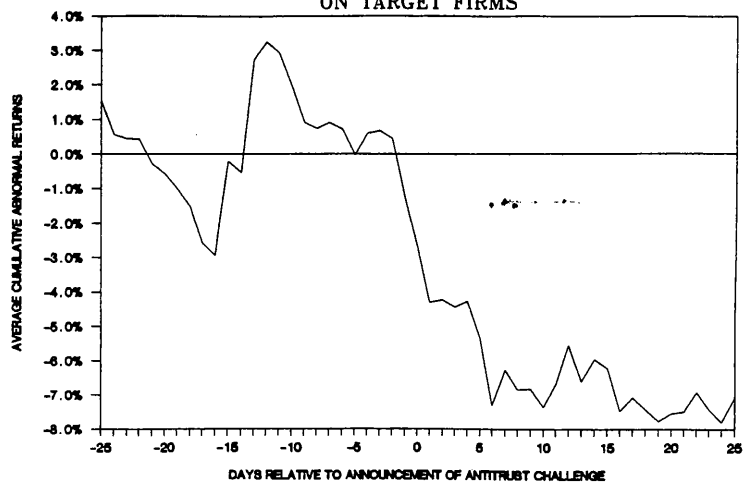


Figure 3

administrative complaint was filed, but no PI was authorized, the FTC allowed the acquisition to take place;¹¹ therefore, as long as the benefits of the acquisitions to the target firms' shareholders had already been capitalized, we might expect opposition to the acquisitions in these forms to have little if any effect on the value of the target firms. Thus, in these cases, the impact of FTC opposition to the acquisitions would be felt primarily by the bidding firms.

Table 4 and Figures 4 and 5 summarize the abnormal

¹¹ For example, in those cases in which no PI was authorized and the antitrust complaint was resolved by a consent agreement, typically the acquiring firm agreed to divest the division or divisions of the target in which anticompetitive effects were alleged. In cases in which an administrative complaint was issued, but a PI was not authorized, the acquiring firms were allowed to complete the acquisition under the threat that an administrative law judge might at some future time require divestiture of the division or divisions of the target in which anticompetitive behavior might occur. Often in these types of cases, the number of markets in which the alleged anticompetitive effects might be felt represent a small fraction of the total number of markets in which the target firm operates. In both of these cases, we might expect that the FTC's complaints would have a significant effect on the value of the acquiring firms by denying them the alleged monopoly profits, but have little if any effect on the value of the target firm, since the acquisition would be allowed to take place.

returns of the bidding firms. The results reported in this table are interesting in a number of respects. The ACARs for each window at the time of the original merger announcements are all negative, indicating that any expected increases in profits that the acquisitions may have created are captured entirely by the shareholders of the target firms. This result seems somewhat inconsistent with the proposition that the acquisitions were motivated by the bidders' desires to earn monopoly rents, though it is equally inconsistent with the proposition that the bidders were motivated by the desire to earn profits at all. Given the prices paid by the bidders for the targets, the bidders lose whether the acquisitions enhanced efficiency, decreased competition, or both.¹²

¹² These results with respect to bidding firms are consistent with a large number of studies of mergers (as opposed to tender offers) that have reported insignificant or negative abnormal returns earned by bidding firms (Jensen and Ruback (1983) and Roll (1986) discuss many of these studies). A number of theories have been posited to explain this anomalous empirical regularity. One common theory is that the separation of ownership from control in modern corporations allows managers to maximize their own utility at the expense of shareholders. (See Shleifer and Vishny (1988) for a

These results are fairly consistent with those reported in Eckbo, but differ substantially from those reported in EW. Eckbo finds that over most intervals encompassing the merger announcements, bidding firms' average abnormal returns are negative, but statistically insignificant. However, Eckbo also reports that on the day of the merger announcements, bidding firms earned, on average, significant negative abnormal returns. In contrast to Eckbo and Table 4 here, EW reports that bidding firms earn significant positive abnormal returns during intervals encompassing the merger announcements.

The only statistically significant ACARs for bidding firms from the periods encompassing the

recent discussion of this theory.) Managers are assumed to receive utility from managing large and growing firms, and will, therefore, seek to maximize growth, even if by doing so they do not maximize shareholder value. This theory, however, is usually presented as a rationale for conglomerate mergers (See Mueller (1969)). Roll (1986) argues that hubris on the part of managers that try to maximize value results in the overestimation of the value of target firms. Roll's "hubris theory" is a variation of the "winner's curse" (see Thaler (1988)) and implies that managers of bidding firms tend to behave irrationally. As discussed by Roll (1986), the "hubris theory" does not necessarily imply that the market for corporate control is inefficient.

Table 4
Average Cumulative Abnormal Returns of Bidding Firms
(FTC Cases 1981-1987)

Sample	Announcement	Summary Statistic	Period Relative to Announcement (Day 0)		
			(-1,1)	(-5,5)	(-10,10)
Total Sample	Merger Proposal (31 Bidders)	ACAR Z-Statistic	-1.35% (-2.76)**	-3.42% (-3.16)**	-2.83% (-1.73)*
	Challenge (31 Bidders)	ACAR Z-Statistic	-0.34% (-0.95)	-0.42% (-0.16)	-0.99% (-0.18)
P.I. Cases	Merger Proposal (15 Bidders)	ACAR Z-Statistic	-1.66% (-2.40)**	-3.17% (-2.22)**	-2.88% (-1.22)
	Challenge (15 Bidders)	ACAR Z-Statistic	0.24% (0.04)	0.83% (0.61)	-0.40% (-0.11)
Litigated Cases - No P.I. Authorized	Merger Proposal (4 Bidders)	ACAR Z-Statistic	-1.17% (-1.11)	-2.90% (-1.00)	-1.86% (-0.67)
	Challenge (4 Bidders)	ACAR Z-Statistic	-0.05% (-0.03)	4.15% (2.02)**	0.44% (0.58)
Consent Cases - No P.I. Authorized	Merger Proposal (12 Bidders)	ACAR Z-Statistic	-1.02% (1.11)	-3.92% (-2.02)**	-3.09% (-1.02)
	Challenge (12 Bidders)	ACAR Z-Statistic	-1.20% (-1.55)	-3.51% (-1.97)**	-2.19% (-0.50)

** Significant at .05 level
* Significant at .1 level

Note: P.I. refers to a preliminary injunction to block an acquisition. Cases classified as "Litigated Cases - No P.I. Authorized" are cases settled through administrative hearings following the issuance of an administrative complaint, but not authorization to file a P.I. Cases classified as "Consent Cases - No P.I. Authorized" are cases in which complaints were settled by consent agreements rather than through administrative hearings.

EFFECT OF MERGER ANNOUNCEMENTS
ON BIDDING FIRMS

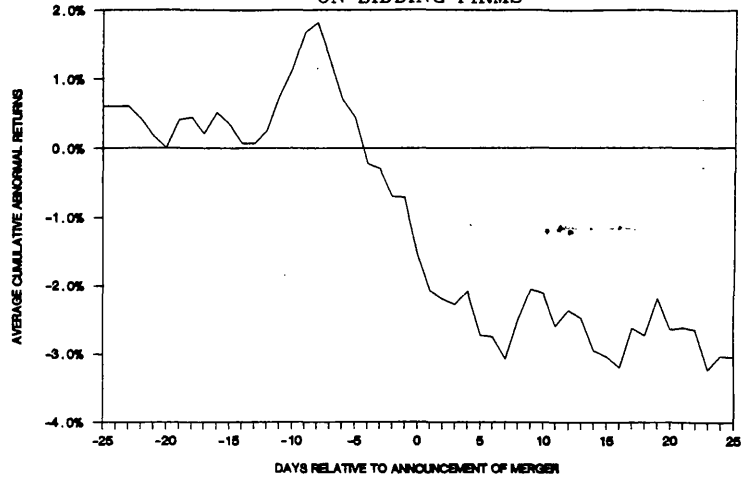


Figure 4

EFFECT OF ANTITRUST CHALLENGE
ON BIDDING FIRMS

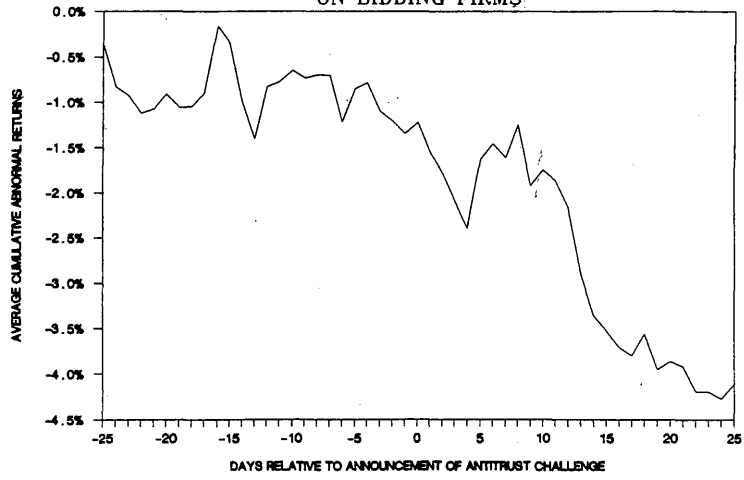


Figure 5

antitrust challenges are from the cases in which no PI was authorized, a result one might expect given the discussion above. Figures 6 and 7 plot the bidders' ACARs over periods encompassing the FTC's challenges for the two subsamples in which no PI was authorized. As indicated in Figure 6, in the case of the subsample of firms in which an administrative complaint (but no PI) was authorized, the significant positive gains over the

EFFECT OF ANTITRUST CHALLENGE ON BIDDING FIRMS
 (ADMINISTRATIVE COMPLAINTS - NO PI AUTHORIZED)

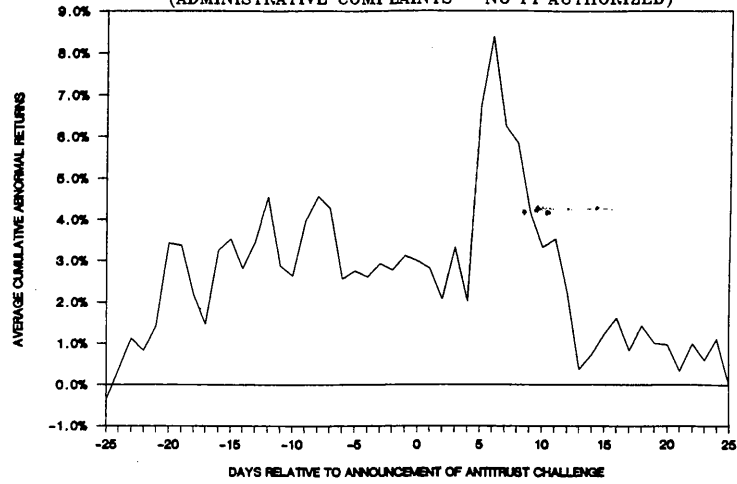


Figure 6

EFFECT OF ANTITRUST CHALLENGE ON BIDDING FIRMS
 (CONSENT CASES - NO PI AUTHORIZED)

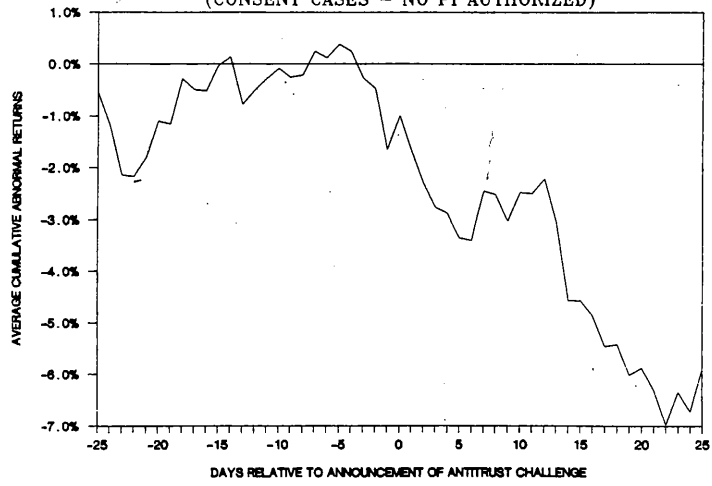


Figure 7

11-day window reported in Table 4 are illusory and disappear shortly after being realized. Nevertheless, as indicated in Figure 7, in the case of the acquisitions that were settled directly by consent agreements, these announcements do appear to have a significant negative effect on the values of the bidding firms.

In summary, the results reported in Tables 3 and 4 indicate the announcements of the challenged acquisitions represent true "events" in which new information became available to investors. The announcements of FTC authorization for its staff to file preliminary injunctions to prevent acquisitions also appears to have provided investors with unanticipated information. In those cases in which FTC opposition to acquisitions took forms other than the authorization of a PI, the dates of the FTC's actions may not be appropriate for the study of the effects of these challenges on rival firms, though, the evidence for this conclusion is stronger for those cases in which administrative complaints were authorized than it is for

those cases in which consent agreements were approved.

C. Abnormal Performance of Rival Firms

Table 5 summarizes the ACARs of the rival firms for the 37 merger cases and for the three subsets of merger cases. Figures 8 and 9 plot the ACARs around the merger announcements and challenges for the sample of rival firms. The results reported in Table 5 are remarkably similar to those reported in Eckbo and EW. The ACARs for the windows encompassing the merger announcements indicate that the rivals, on average, earned significant positive abnormal returns over these periods. The ACARs for the windows encompassing the announcements of the FTC's challenges to the mergers are, with one exception, statistically insignificant, indicating that the rivals earned, on average, normal returns during these periods.

Eckbo and EW interpreted similar results as indicating that the challenged mergers were, in fact, not anticompetitive. As discussed in Section II, the authors of these papers reasoned that if the challenged mergers were anticompetitive, the announcements of the

Table 5
Average Cumulative Abnormal Returns to Rivals of Merging Firms
(FTC Cases 1981-1987)

Sample	Announcement	Summary Statistic	Period Relative to Announcement (Day 0)		
			(-1,1)	(-5,5)	(-10,10)
Total Sample	Merger Proposal	ACAR Z-Statistic	1.10% (3.35)**	1.28% (2.10)**	2.43% (2.71)**
(36 Cases)	Challenge	ACAR Z-Statistic	-0.20% (-0.21)	0.28% (0.46)	0.31% (0.01)
P.I. Cases	Merger Proposal	ACAR Z-Statistic	0.55%* (1.73)*	0.72% (0.95)	2.02% (1.83)*
(19 Cases)	Challenge	ACAR Z-Statistic	-0.26% (-0.19)	-0.34% (-0.06)	-0.49% (-0.52)
Litigated Cases - No P.I. Authorized	Merger Proposal	ACAR Z-Statistic	2.34% (1.96)**	3.28% (1.80)*	3.55% (1.03)
(4 Cases)	Challenge	ACAR Z-Statistic	1.73% (2.03)**	2.64% (1.39)	3.97% (1.43)
Consent Cases - No P.I. Authorized	Merger Proposal	ACAR Z-Statistic	1.53% (2.76)**	1.49% (1.52)	2.70% (2.11)**
(13 Cases)	Challenge	ACAR Z-Statistic	-0.70% (-1.26)	0.41% (0.06)	0.31% (-0.23)

** Significant at .05 level
* Significant at .1 level

Note: P.I. refers to a preliminary injunction to block an acquisition. Cases classified as "Litigated Cases - No P.I. Authorized" are cases settled through administrative hearings following the issuance of an administrative complaint, but not authorization to file a P.I. Cases classified as "Consent Cases - No P.I. Authorized" are cases in which complaints were settled by consent agreements rather than through administrative hearings.

EFFECT OF MERGER ANNOUNCEMENTS
ON RIVAL FIRMS

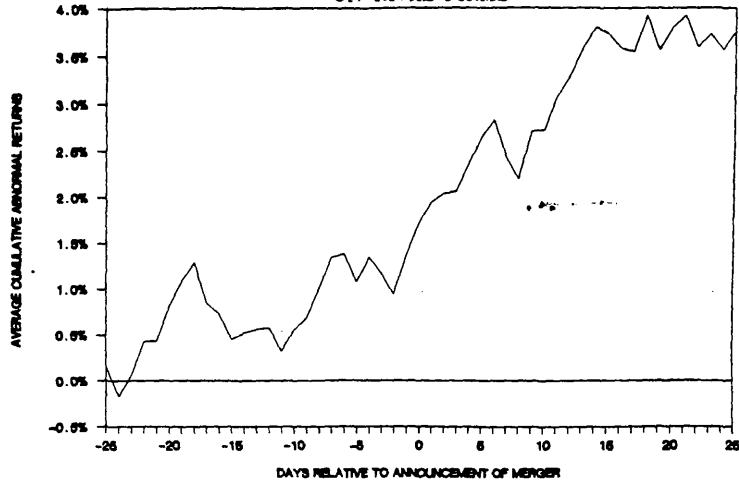


Figure 8

EFFECT OF ANTITRUST CHALLENGE
ON RIVAL FIRMS

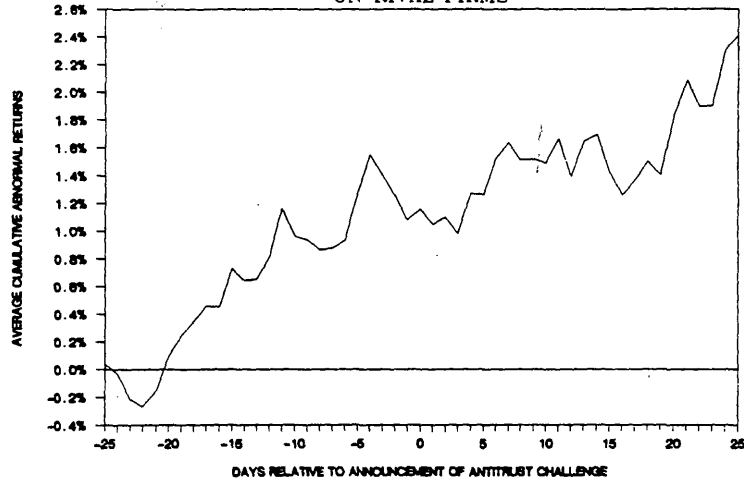


Figure 9

antitrust enforcement agencies' challenges to them would have lowered the value of the rival firms. Having concluded that the challenged mergers enhanced competition, Eckbo reasoned that the positive abnormal returns earned by rivals at the time of the acquisitions' original announcement were the result of "information effects" that outweighed the competitive effects of the acquisitions, the information being that the rivals could, themselves, become more efficient and profitable. The normal returns earned by rivals at the time of the antitrust complaints result from the balancing of the value-increasing competitive effects on the rival firms from the antitrust complaints with the value-decreasing information effects, the information effects being the decreased probability that the rivals might achieve efficiencies by being acquired.

S&S's reexamination of the Eckbo and EW results casts doubt on the Eckbo and EW interpretation of their results. In the following section of this paper, an alternative interpretation of the effects of the challenged mergers on rival firms is presented. As with

Eckbo's theory, the explanation for the results presented below relies on information effects confounding the competitive effects of the mergers. However, in contrast to the Eckbo story, the theory presented below implies that the pattern of abnormal returns reported in Table 5 can be consistent with the challenged mergers being anticompetitive. This result follows from the differential effects that an antitrust complaint can have on rivals of different size.

V. Market Structure and the Effects of Antitrust Complaints

A. Theory

To begin to better understand the differential effects antitrust complaints can have on the value of rival firms in an industry, we examine three propositions. First, the efficiencies signalled by a merger announcement may affect different firms in the industry in very disparate ways. Second, an antitrust complaint may affect different firms in the industry in very disparate ways, and third, a most important characteristic of a firm that forms the nexus relating these first two propositions is the firm's relative size within its industry.

There is substantial evidence that production technologies utilized by firms within an industry vary substantially across firms of different size. One important empirical finding supporting this assertion is that capital-output ratios are positively related to

firm size within industries.¹³ The evidence suggests that large firms are more capital-intensive than small firms because they use production technologies with greater capital requirements to achieve technical economies of scale.¹⁴ This implies that the combination of two small firms through merger will not create a firm identical to a large firm, since a small firm may not be merely a smaller proportionate clone of a large firm.

This result does not necessarily imply that the combination of small firms, or of a large firm and a small firm, cannot create efficiencies. It does,

¹³ For a relatively recent discussion of this finding, see Caves and Pugel (1980). Earlier evidence of the relationship between firms' size and capital-output ratios are discussed in Davis (1956) and Stigler (1963).

¹⁴ An alternative explanation of the observed relationship between size and capital-output ratios is that larger firms are more vertically integrated than small firms. As noted by Mills and Schumann (1985), "Other things equal, firms that are more vertically integrated have greater capital requirements since they produce intermediate products as well as final products. If size varies directly with the degree of vertical integration, then large firms would be more capital-intensive" (p. 759). Nevertheless, Moroney and Duggar (1967) find that the degree of vertical integration is not the major factor explaining the positive relation between firm size and capital-output ratios.

however, suggest that if a merger between two relatively large firms in an industry signals that rivals in the industry can achieve lower costs through consolidation, the effect of such information may vary substantially across rivals of different size. A hierarchy of potential merger targets may result in which larger rivals are most likely to be acquired, followed by medium-sized rivals, followed by smaller rivals. If efficiencies created through consolidation might be exhausted through the combination of larger rivals, smaller, less efficient rivals, might not be attractive merger targets ex post, even if potential efficiencies exist ex ante.

Just as the information of potential efficiencies signalled by a merger announcement may have disparate effects on rivals depending on their relative size within an industry, an antitrust complaint may also have disparate effects that depend upon relative size within an industry. The merger of large firms within an industry will have a relatively large impact on industry concentration, whereas the merger of small firms will

not.

The effects of mergers and acquisitions on industry concentration have long been a primary factor taken into consideration in antitrust enforcement. While the thresholds considered relevant to establish potentially anticompetitive acquisitions have changed over the years, the role of concentration in facilitating anticompetitive activity remained an important consideration in antitrust enforcement during the Reagan administration. As noted in the DOJ's 1984 Merger Guidelines,

Other things being equal, concentration affects the likelihood that one firm, or small group of firms, could successfully exercise market power. The smaller the percentage of total supply that a firm controls, the more severely it must restrict its own output in order to produce a given price increase, and the less likely it is that an output restriction will be profitable. If collective action is necessary, an additional constraint applies. As the number of firms necessary to control a given percentage of total supply increases, the difficulties and costs of reaching and enforcing consensus with respect to the control of that supply also increase.

In evaluating horizontal mergers, the Department will consider both the post-merger market concentration and the increase in

concentration resulting from the merger.¹⁵

Although the FTC is not bound by the DOJ's Merger Guidelines, the FTC's enforcement policy has tended to follow them.¹⁶

An antitrust complaint signals that relatively large firms within an industry will not be allowed to combine and achieve any potential efficiencies available through consolidation. The above discussion suggests that the effects of such a signal may vary across rivals

¹⁵ "Merger Guidelines Issued by Justice Department, June 14, 1984, and Accompanying Policy Statement," Antitrust & Trade Regulation Report, Special Supplement, June 14 1984, p. S-5. The critical thresholds of industry concentration established in the DOJ's 1984 Merger Guidelines are the same as those established in the DOJ's 1982 Merger Guidelines.

¹⁶ The FTC's "Statement of the Federal Trade Commission Concerning Horizontal Mergers," which was released at the time of the announcement of the DOJ's 1982 guidelines, expresses its "collective judgement of the reasons why it supports changes in the 1968 Guidelines" and highlights "the principal considerations that will guide its horizontal merger enforcement." The FTC's "Statement" continues, "However, the Department of Justice's 1982 revisions to the 1968 Guidelines will be given considerable weight by the Commission and its staff in their evaluation of horizontal mergers and in the development of the Commission's overall approach to horizontal mergers." (Emphasis added)

depending on their relative size within the industry. Specifically, it suggests that small firms may benefit from such a complaint at the expense of large firms.

Two alternative hypotheses explain the benefits to small firms from an antitrust complaint. If the merger of a large and small firm or two small firms can create efficiencies despite the varied production technologies adopted by differently sized firms, then the antitrust complaint may increase the probability that small rivals will be subsequently acquired by prohibiting the merger of large firms in the industry. This hypothesis is designated as the "small rival in play" hypothesis. Alternatively, if the merger with a small rival (by either a large rival or another small rival) cannot create the efficiencies attainable through the combination of large firms (because of the small rivals' choice of production methods), the antitrust complaint benefits smaller rivals at the expense of larger ones by protecting the small rivals from the efficiency gains that their larger rivals might otherwise have achieved. This hypothesis is designated as the "disadvantaged

small rival" hypothesis.

Three points are worth noting here. First, the two alternative hypotheses are strongly related to one another. They arise from the evidence indicating that smaller firms tend to use production technologies that may not allow them to achieve the technical economies of scale available to larger firms in an industry. If there are any potential efficiencies from merging with small rivals, the antitrust complaints may increase the probability that smaller rivals will be subsequently acquired by preventing the merger of larger rivals that might offer greater efficiencies and exhaust potential scale economies. If the production methods adopted by small rivals preclude economies of scale through merger, the antitrust complaints act to protect smaller rivals from the potential efficiency gains achieved through the combination of larger rivals.

Second, evidence supporting these hypotheses does not necessarily imply that the challenged mergers took place in industries that were not competitive. The theory of the dominant firm indicates that small, less

efficient rivals may survive if they are protected by a supercompetitive price "umbrella" created by large "dominant" firms in the industry. Nevertheless, Mills and Schumann (1985) present a model in which small firms using "staticly" inefficient production technologies relying heavily on variable inputs, may survive in a long-run competitive equilibrium in an industry characterized by fluctuating demand. Mills and Schumann assume that "the space of available technologies affords a trade-off between static-efficiency and flexibility..."¹⁷ In a competitive world of stationary demand and constant price, only static-efficient firms with the lowest minimum average cost can survive, but with fluctuating demand, firms with higher minimum average costs can survive if they are sufficiently flexible. That is, the smaller firms survive by being able to respond to output fluctuations at lower cost,

¹⁷ Flexibility, as defined in Stigler (1939), is a characteristic of firms that enhances their ability to vary output. By relying more heavily on variable inputs and by avoiding the control-loss problems associated with large organizations, small firms can respond at lower cost to demand induced output fluctuations.

despite higher minimum average cost.

Third, and most importantly, the two hypotheses discussed above imply a pattern of abnormal returns consistent with those reported in Eckbo, EW, and in Table 5, and also consistent with the challenged mergers being anticompetitive. This result indicates that if Eckbo's explanation for his results has any merit, then the pattern of abnormal returns that he and EW report is consistent with the challenged mergers being either anticompetitive or procompetitive. Thus, the examination of rivals' abnormal returns at times of merger announcements and subsequent antitrust complaints cannot tell us anything about the competitive effects of the challenged mergers.

To see how the pattern of abnormal returns reported in Eckbo, EW, and Table 5 can be consistent with the challenged mergers lessening competition, first assume that a challenged merger both signaled potential efficiencies, yet at the same time, facilitated collusion or allowed a newly created dominant firm the ability to charge supercompetitive prices. In this

case, both the competitive and informational effects of the merger would tend to increase the value of the rivals and create positive abnormal returns on average. Now consider the effects of an antitrust challenge to this presumably anticompetitive merger. One effect of such a challenge would be to lower the value of the rivals since they would not be able benefit from higher market prices created by the merger. On the other hand, if an antitrust complaint increases the probability that small rivals will subsequently be acquired or acts to protect small rivals from efficiencies available to larger ones through consolidation, then the complaint would increase the value of the smaller rivals. The net result could be that the challenge would have no effect on the average value of the rivals as a whole. Thus, if horizontal mergers can signal potential efficiencies through consolidation and, at the same time, lessen competition within the industry, we could very well find a pattern of rivals' average abnormal returns similar to

those reported in Eckbo, EW, and Table 5.¹⁸

B. An Example of the "Small Rival In Play" Effect

The Pepsi/Seven UP - Coke/Dr Pepper case affords an excellent example of the "small rival in play" effect described here.¹⁹ In January 1986, PepsiCo announced an agreement to purchase the Seven-Up Company from the Philip Morris Corporation. Approximately one month later, the Coca-Cola Company announced its intention to

¹⁸ Mergers that result in higher market prices, yet also create efficiencies, could increase social welfare (see Williamson (1968)). As discussed by Williamson (1968), the proper role of antitrust enforcement agencies in such cases should be to weigh the costs of lessened industry competition against the benefits of any potential efficiencies. Of course, weighing the benefits of the efficiencies against the costs of the lessening of competition may not be easy. However, if the efficiencies are industry-wide in nature (as implicitly assumed by Eckbo), allowing smaller firms to generate such efficiencies while opposing mergers of larger firms in which the anticompetitive effects may be greatest, could be optimal. An example might be acquisitions in a declining industry where rationalization may be inevitable.

¹⁹ For a more detailed discussion of this case, see Chapter 3 of Kwoka and White (1989), "Application of the Merger Guidelines: The Proposed Merger of Coca-Cola and Dr. Pepper." This chapter was written by Lawrence White, who was an expert witness for the FTC in this case.

purchase the Dr Pepper Company.

These two mergers, had they taken place, may have lessened competition in the carbonated soft drink (CSD) industry through two distinct effects. First, the mergers may have facilitated price coordination by substantially increasing industry concentration.²⁰ Second, Coke and Pepsi are often distributed by independent bottlers (owned by neither Coke nor Pepsi) that also own franchises to distribute other brands of soft drinks. Thus, it is not unusual for an independent Coke bottler to also distribute Seven-Up, Hires Root Beer, Orange Crush, and/or other small independent

²⁰ Pepsi, the second largest seller of CSD concentrate with a market share of 28.9%, intended to purchase the third largest seller (Seven-Up) with a market share of 5.7%. Coke, the leading seller of concentrate with a market share of 37.4%, intended to purchase the fourth largest seller (Dr Pepper) with a market share of 4.6%. Had both acquisitions taken place, the industry Herfindahl-Hirschman index (HHI) would have risen from 2308 to 2982, an increase of 674; had the Pepsi/Seven Up merger taken place and not the Coke/Dr Pepper merger, the industry HHI would have risen to 2638, an increase of 330; had the Coke/Dr Pepper acquisition taken place and not that of Pepsi/Seven Up, the industry HHI would have risen to 2652, an increase of 344. (The source for the market share numbers is Kwoka and White (1989), Chapter 3, Table 1.)

brands of soft drink. If, for example, an independent Pepsi bottler owned the rights to distribute Dr Pepper, following the merger of Coke and Dr Pepper the bottler could be used as a device by Coke and Pepsi to exchange information, and lessen competition.

On June 20, 1986, the FTC authorized its staff to seek a preliminary injunction to block both mergers. Shortly thereafter, Pepsi and Seven-Up cancelled their proposed merger. Coke and Dr Pepper chose to pursue their merger and on June 24 the FTC asked the U.S. District Court for the District of Columbia to issue a preliminary injunction to prevent the acquisition. On July 31, 1986 Judge Gerhard Gesell ruled in favor of the FTC, and facing the prospect of a potentially lengthy appeal through administrative proceedings, Dr Pepper chose to cancel the acquisition.

What makes the Pepsi/Seven Up - Coke/Dr Pepper cases so interesting with respect to the "small rival in play" hypothesis are the events that followed the cancellations of these proposed mergers. In July of 1986, Schweppes purchased Canada Dry from R.J. Reynolds.

From August through December of 1986, investment groups headed by Hicks & Haas purchased Dr Pepper, the domestic operations of Seven-Up, and Squirt & Co. Hicks & Haas had already purchased A & W Brands in May of 1986, and by the end of the year it controlled approximately 14% of the carbonated soft drink market. . . .

In its briefs filed before Judge Gesell, Coke argued that its acquisition of Dr Pepper could create economies by consolidating the operations of the two firms and by utilizing its marketing skills and resources to improve the profitability of Dr Pepper. One might expect that such economies of scale in production, distribution, and marketing could also be realized, at least in part, by Hicks & Haas and Schweppes.

One could argue that the Pepsi/Seven Up - Coke/Dr Pepper mergers would not have been anticompetitive. Perhaps carbonated soft drinks is not a relevant market. Perhaps consumers are able to thwart price increases in this "market" by purchasing more coffee, milk, or orange juice. Such an argument is beside the point. As long

as increases in concentration in whatever markets antitrust enforcement agencies deem relevant to a case are an important factor leading to antitrust challenges, then if the merger of relatively large firms signals to investors the existence of potential efficiencies, an antitrust challenge to the merger could increase the likelihood that smaller firms in the industry might be acquired. That is, as long as the challenged merger signalled potential efficiencies, an antitrust challenge to it may put smaller firms "in play" regardless of the actual competitive effect of the challenged merger.

C. Empirical Results

The hypotheses outlined above give rise to a number of testable implications relating rivals' abnormal returns and their relative size within their industries. To test these hypotheses, relative size of the rivals is measured by their market shares. Data on rivals' market shares were collected from internal FTC documents. In a number of cases, assigning market shares to individual rivals was not possible because challenges involved

allegations of potential anticompetitive effects in multiple product or geographic markets. Excluding these "multi-market" cases resulted in a sample of 28 challenged mergers with 97 rivals.²¹

If an antitrust challenge to a merger increases the value of smaller rivals through either a "small rival in play" effect or a "disadvantaged small rival" effect, we would expect that the abnormal returns earned by small rivals at the time of a challenge would be positive, ceteris paribus. To examine this implication of the hypothesis, we designated "small rivals" as the 48 rivals whose market shares were less than the median. The sample of small rivals represents 22 of the 28 cases for which market shares could be unambiguously assigned.

²¹ Multi-market mergers created a number of problems. First, some firms that were rivals in one market were not rivals in other markets. Second, firms that were rivals in multiple markets often had very different market shares in the different markets. Third, the effects of the mergers on industry concentration often varied considerably across the different markets. Dropping the multi-market mergers from the sample could introduce some unknown bias in the results; nevertheless, assigning a single market share to a rival in these cases would be arbitrary and not altogether meaningful. Dropping these acquisitions from the sample was chosen as the lesser of evils.

Table 6 summarizes the ACARs for the small rivals at the time of the antitrust challenges. The ACARs were calculated in the manner described in Section IV. For the sample of small rivals as a whole, Table 6 tends to support the hypothesis that the antitrust complaints benefit the small rivals. The 11-day and 21-day ACARs are both positive and highly significant. The ACARs for the subsample of cases in which the FTC authorized staff to seek a preliminary injunction to block the acquisitions are not significant, however, though they are positive over the 11-day and 21-day windows. The ACARs for the subsample of cases settled by consent agreements are negative and significant at the .1 level over the narrow 3-day windows, but positive and significant at the .05 level over the wider 11-day and 21-day windows.

Table 6
Average Cumulative Abnormal Returns to Small Rivals
At Time of Challenges
(FTC Cases 1981-1987)

Sample	Summary Statistic	Period Relative to Announcement (Day 0)		
		(1,-1)	(-5,5)	(-10,10)
Total Sample (22 Cases)	ACAR Z-Statistic	-0.09% (-0.24)	* 2.77% (3.15)**	3.34% (2.35)**
P.I. Cases (13 Cases)	ACAR Z-Statistic	-0.09% (-0.52)	0.68% (1.01)	0.94% (0.92)
Litigated Cases - No P.I. Authorized (3 Cases)	ACAR Z-Statistic	3.85% (4.64)**	5.89% (2.97)**	7.49% (2.15)**
Consent Cases - No P.I. Authorized (6 Cases)	ACAR Z-Statistic	-2.06% (-1.67)*	5.76% (2.71)**	6.48% (2.14)**

** Significant at .05 level
* Significant at .1 level

Note: P.I. refers to a preliminary injunction to block an acquisition. Cases classified as "Litigated Cases - No P.I. Authorized" are cases settled through administrative hearings following the issuance of an administrative complaint, but not authorization to file a P.I. Cases classified as "Consent Cases - No P.I. Authorized" are cases in which complaints were settled by consent agreements rather than through administrative hearings.

If it were the case that the FTC opposed an acquisition in which the effects on industry concentration were relatively small to begin with, then one might expect that the merger of smaller rivals in the industry might also be challenged. If so, we might not expect the small rivals to be put "in play" by the challenge. This would imply that, holding constant any anticompetitive effects from the challenged merger, the smaller the change in concentration created by a challenged merger, the smaller the abnormal returns to rival firms at the time of a challenge. This implies that the correlation between the change in concentration and the rivals' CARs would be positive at the announcement of the antitrust challenge for small changes in concentration.

On the other hand, if large increases in concentration facilitate market power, then when changes in concentration are high, an antitrust challenge should hurt rivals in general (both small and large rivals). Thus, holding the "in play" effect constant, we would expect a negative correlation between changes in

concentration and rivals' CARs when changes in concentration are large. Thus, if the benefits to small rivals arise from a "small rival in play" effect, these two observations imply a concave relationship between the effect of a merger on industry concentration and the effect of an antitrust challenge on rivals' CARs. The "small rival in play" hypothesis therefore implies a positive first-order effect and a negative second order effect on rivals' returns from changes in industry concentration.

Similarly, if the gains to small firms arising from the antitrust complaints result from a "disadvantaged small rival" effect, we might also expect a concave relationship between rivals' abnormal returns and the change in concentration created by the challenged merger. The "disadvantaged small rival" hypothesis would have little relevance when the change in concentration is small because a small change in concentration would indicate that whatever efficiencies are available through merger can be attained through the acquisition of relatively small rivals. A large change

in concentration from the challenged merger could, under this hypothesis, signal that only very large rivals could obtain the efficiencies available through merger. Thus, if the gains to small rivals are caused by a "disadvantaged small rival" effect, as the changes in concentration resulting from the challenged mergers rise, the benefits from an antitrust complaint will accrue to a greater number of rivals, indicating a positive first order relationship between a given rival's abnormal returns and the change in concentration that would have been created by the challenged merger. As in the case of the "in play" effect, if large changes in concentration facilitate market power, an antitrust complaint should hurt rivals in general. Together these effects indicate that rivals' abnormal returns at the time of the antitrust complaints will increase at a decreasing rate as the changes in concentration resulting from the challenged mergers increase.

Using the entire sample of rivals for which market shares could be unambiguously assigned, we estimate the following equation:

$$CAR_{im} = c_1 + c_2MKTSHR_{im} + c_3\Delta HHI_m + c_4\Delta HHI_m^2 + \epsilon_{im}. \quad (4)$$

In equation (4), CAR_{im} is the 11-day CAR for rival i in merger m , $MKTSHR_{im}$ is the market share of rival i in merger m , ΔHHI_m is the change in Herfindahl-Hirschman index (HHI) resulting from merger m , $(\Delta HHI_m)^2$ is the square of the change in HHI from merger m , and ϵ_{im} is a random disturbance.

Since each CAR_{im} is calculated from a different market model estimation, the assumption of homoscedastic disturbances ϵ_i necessary for the ordinary least squares estimate of equation (4) is violated. Equation (4) is, therefore, estimated using the method of weighted least squares, the weights being the variance of each CAR_{im} calculated with the formula specified in equation (3).

The estimation of equation (4) is summarized in Table 7. The market share coefficient is negative and significant at the .05 level, supporting our hypothesis that smaller rivals benefit more than larger rivals from the announcement of an antitrust complaint. The coefficient on ΔHHI is positive and significant at the

.05 level. Although the coefficient on ΔHHI^2 is not statistically significant at standard levels, the negative sign is consistent with the hypothesized concave relationship between rivals' CARs at the time of a complaint announcement and the challenged mergers' effect on concentration. Although the concave relationship between rivals' abnormal returns and ΔHHI is, at best, only weakly supported, it is consistent with the "small rival in play" effect and the "disadvantaged small rival" effect having little relevance in those cases in which challenged mergers had small effects on concentration. Moreover, as discussed above, it is consistent with large changes in concentration lessening competition within the industries.

The results reported in Tables 6 and 7 strongly support the hypothesis that small rivals benefit from an antitrust complaint at the expense of large rivals. Nevertheless, these results cannot differentiate between the "small rival in play" hypothesis and the "disadvantaged small rival" hypothesis. To help

Table 7

The Effects of Market Structure on Rivals' Abnormal Returns
At the Announcement of an Antitrust Challenge

	<u>Coefficient</u>	<u>t-statistic</u>
Constant	-0.00935147	-0.4218
MKTSHR	-0.19607200	-2.2967**
Δ HHI	0.00013201	2.0993**
Δ HHI ²	-0.00000005	-1.5403

R² 0.10
 F (3,93) 3.50**
 97 rivals from 28 challenged acquisitions

* Significant at 0.1 level
 ** Significant at 0.05 level

distinguish between these two alternative hypotheses, we next examine a number of their implications.

If the positive ACARs of the small rivals at the time of the antitrust complaints were due to the "disadvantaged small rival" hypothesis, we might expect negative ACARs for the small rivals at the time of the merger announcements. Negative ACARs for the small rivals at this time would also point to the mergers having important procompetitive effects. Table 8 presents the ACARs for the small rivals at the time of the original merger announcements. As indicated in Table 8, the ACARs for the entire sample of small firms are positive and significant. Within the three subsamples, the only major deviation from this general pattern is the Consent Cases, which has the ambiguous result indicating a positive and significant ACAR over the narrow 3-day window and insignificant ACARs over the 11-day and 21-day windows.

Although the results reported in Table 8 do not support the "disadvantaged small rival" hypothesis, they do not disprove it either. The losses created by this

Table 8
 Average Cumulative Abnormal Returns to Small Rivals
 At Time of Merger Announcements
 (FTC Cases 1981-1987)

Sample	Summary Statistic	Period Relative to Announcement (Day 0)		
		(1,-1)	(-5,5)	(-10,10)
Total Sample (22 Cases)	ACAR Z-Statistic	1.35% (2.81)**	0.92% (1.45)	2.38% (2.16)**
P.I. Cases (13 Cases)	ACAR Z-Statistic	0.97% (1.68)*	1.65% (1.57)	3.20% (1.92)*
Litigated Cases - No P.I. Authorized (3 Cases)	ACAR Z-Statistic	1.46% (1.09)	1.58% (0.97)	3.95% (1.72)*
Consent Cases - No P.I. Authorized (6 Cases)	ACAR Z-Statistic	2.10% (2.27)**	-1.00% (-0.16)	0.17% (0.47)

** Significant at .05 level

* Significant at .1 level

Note: P.I. refers to a preliminary injunction to block an acquisition. Cases classified as "Litigated Cases - No P.I. Authorized" are cases settled through administrative hearings following the issuance of an administrative complaint, but not authorization to file a P.I. Cases classified as "Consent Cases - No P.I. Authorized" are cases in which complaints were settled by consent agreements rather than through administrative hearings.

effect could be exceeded by gains created through expected anticompetitive effects of the mergers. Thus, Table 8 presents the interesting result that, if small firms benefit from antitrust complaints because the complaints protect them from efficiencies only available to larger rivals, the evidence indicates that the challenged mergers were, at least on average, anticompetitive.

To help further distinguish between the two alternative interpretations of the gains to small rivals resulting from the antitrust complaints, we examined the ACARs of those small rivals that were not subsequently acquired. The "small rival in play" hypothesis suggests that the abnormal returns earned by small rivals that did not subsequently become targets for takeover should dissipate over time as investors come to realize that these firms are not "in play." The alternative "disadvantaged small rival" hypothesis suggests that these gains should persist for some time since the antitrust complaints signal that future mergers between large rivals will not be allowed in the industries.

To determine which of the rivals subsequently became targets for takeover, we searched the Wall Street Journal Index for three years following each challenge. In a number of cases, firms identified as rivals in agency documents were subsidiaries of parent corporations. In these cases, rivals were classified as targets if the subsidiary was purchased from the parent corporation or if the parent corporation in its entirety was taken over. In three cases, the rival firms restructured specifically to avoid takeover. Since the effects of such restructuring often mimic the effects of takeover and since these restructurings were executed specifically to avoid takeover, these firms were also classified as targets.

Of the 48 firms classified as small rivals, 12 were acquired (or restructured) within three years of the antitrust challenges.²² Figure 10 plots ACARs of the 36

²² Of the 97 rivals that could be unambiguously assigned market shares, 23 were acquired within 3 years of the antitrust challenges. Thus, the rivals that became targets were roughly evenly distributed between the small rivals and the large rivals. This fact taken alone tends to weaken the case for a "small rival in-play" effect; however, as in the case of the small

small rivals that were not subsequently acquired. The graph extends over the period beginning 25 business days before the announcement of the challenges and ending 250 business days (approximately one year) after this announcement. The pattern of the ACARs is consistent with the hypothesis that the antitrust challenges put the small firms "in play." The nonacquired small rivals earn positive and significant abnormal returns during the thirty-day period immediately following the antitrust challenges, but these gains fall to zero within six months as expectations of future acquisition dissipate.

In summary, the evidence presented in this section indicates quite strongly that although the values of rivals as a whole are, on average, unaffected by an antitrust complaint (as indicated in Table 5), the values of small rivals increase significantly. This result implies that the challenged mergers signalled potential efficiency gains through consolidation;

rivals' ACARs, this "test" cannot take into account the significant effect of changes in market concentration.

however, the pattern of abnormal returns implied by this result is also consistent with the challenged mergers lessening industry competition. The effects of the antitrust complaints on small rivals that were not later taken over supports the hypothesis that an antitrust complaint, by signalling that large rivals within an industry will not be allowed to merge, increases the probability that small rivals will be subsequently acquired.

ACARS FOR SMALL RIVALS NOT SUBSEQUENTLY ACQUIRED

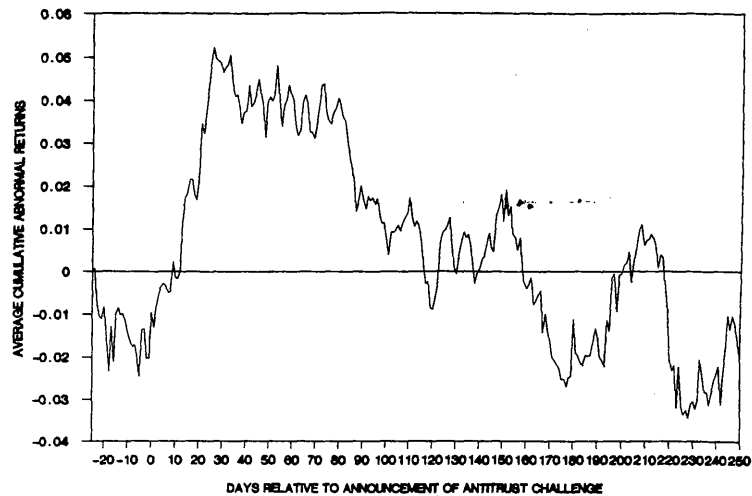


Figure 10

VI. Summary and Conclusions

This report has examined the stock market reaction of rival firms to the announcements and subsequent antitrust challenges of horizontal mergers opposed by the Federal Trade Commission from 1981 through 1987. In part, this report updates earlier studies by Eckbo and Eckbo and Wier (EW). To this end, the results may be viewed as somewhat surprising. Despite the common perception that the nature of antitrust enforcement has differed during this period from that of earlier years, the patterns of abnormal returns exhibited by rival firms have remained remarkably similar to those reported in the earlier studies. Over intervals encompassing the announcements of the mergers, rivals earn, on average, significant positive abnormal returns; over intervals encompassing the announcements of antitrust challenges, rivals earn, on average, insignificant abnormal returns.

To the extent that the earlier studies concluded that patterns of rivals' returns similar to those reported here indicate that the acquisitions challenged

on antitrust grounds actually enhanced competition, these results could be troubling. However, further analysis of these results indicate that such a conclusion may not be warranted.

This report examines the differential effects of an antitrust challenge on rivals of different size. The empirical evidence indicates that although the values of rivals as a whole are unaffected on average by an antitrust complaint, the values of small rivals increase significantly.

Substantial evidence reported in earlier studies indicates that larger firms within industries tend to use more capital intensive production technologies than smaller firms to achieve economies of scale. If a merger between relatively large firms in an industry signals that efficiencies can be achieved through consolidation, these efficiencies may not be attainable through the acquisition of small rivals, or they may be attainable to a much smaller degree. In the former case, an antitrust challenge may increase the value of small rivals by protecting them from the efficiencies

that their larger rivals would otherwise be able to obtain. This effect is designated as the "disadvantaged small rival" hypothesis. In the latter case, an antitrust challenge may increase the value of small rivals by increasing the probability that they will be subsequently acquired. This effect is designated as the "small rival in play" hypothesis.

The evidence presented in Section V tends to weakly support the "small rival in play" hypothesis. Under the "disadvantaged small rival" hypothesis, we would expect that the original merger announcement would lower the value of small rivals since they could not achieve the efficiencies attainable by their larger rivals. We find, however, that the small rivals earn positive abnormal returns on average at the time of the merger announcement. This result indicates that either the small rivals can achieve some efficiencies through acquisition or that the challenged mergers would have increased the value of small rivals by lessening competition within the industries.

Somewhat stronger support for the "small rival in

play" hypothesis is provided by the abnormal returns of small rivals that were not subsequently acquired. If the gains to small rivals at the time of the antitrust complaints are due to the increased probability that they will be subsequently acquired, the abnormal returns of small rivals that are not subsequently acquired should disappear over time as investors come to the realization that these firms will not be taken over. If the antitrust complaints merely act to protect small rivals from the efficiencies that only their larger rivals can achieve, then the gains to the small rivals at the time of the complaints should persist since the complaints signal that future acquisitions of large firms within the industries will be challenged. We find that the small rivals that are not subsequently acquired earn significant average abnormal returns in the weeks immediately following an antitrust complaint, but these abnormal returns vanish over the course of the year following the complaints.

The gains to small rivals from an antitrust complaint could explain the pattern of abnormal returns

reported in Eckbo, EW, and Table 5 regardless of the actual competitive effects of the challenged mergers. If an acquisition were anticompetitive, the impact of the announcement of the acquisition resulting from its effects on competition would increase the value of rival firms. The competitive impact of a challenge to the acquisition on antitrust grounds would reduce the value of rival firms. Yet, if the antitrust challenge were to make smaller rivals, rivals whose combination would not raise antitrust concerns, more likely to be subsequently acquired, or protect small rivals from efficiencies available only through the merger of larger rivals, the challenge would tend to increase the value of these firms. If this "information effect" tended to offset the competitive effect, the challenge could have no effect on the value of all rivals, on average. Thus, as long as it is possible that a merger could raise prices by lessening competition and, at the same time, create efficiencies, the pattern of abnormal returns that we find can be consistent with the challenged mergers being anticompetitive.

If an acquisition enhanced competition, as concluded by Eckbo and EW, it could be possible that by signalling to rivals that they too can become more efficient, the net effect of the merger announcement could result in an increase in the value of the rivals on average. Again, the differential effects of an antitrust complaint on rivals of different size could result in insignificant average abnormal returns at the time of an antitrust complaint. Thus, if an antitrust complaint benefits smaller, less efficient rivals at the expense of larger rivals, such an effect could explain the pattern of rivals' abnormal returns for either the case in which the challenged mergers enhanced or diminished competition. To the extent this is the case, we are left to conclude that the study of the stock market reaction of rival firms to an antitrust complaint, as well as the pattern of abnormal returns reported in Eckbo, EW, and Table 5, can tell us nothing about the competitive effects of the challenged mergers.

It is important to emphasize that the gains to small rivals afforded by an antitrust complaint make

sense only if the original challenged acquisition signals that industry consolidation may increase efficiency, as concluded by Eckbo and EW. If this were not the case, then small rivals would be neither protected nor put "in play" by an antitrust complaint. However, as noted above, the results are not inconsistent with the challenged mergers being, in fact, anticompetitive. In light of the evidence presented in this study, one cannot conclude, as Jensen has, that the proposition that mergers may create monopoly power is nothing more than folklore.

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