CAN EVENT STUDIES DETECT ANTICOMPETITIVE MERGERS?

R. Preston McAFEE

University of Western Ontario, London, Ont., Canada N6A 3K7

Michael A. WILLIAMS *

US Department of Justice, Washington, DC 20001, USA

Using standard event study methodology, we examine a challenged horizontal merger known ex post to be anticompetitive. The event study shows no evidence that the merger was anticompetitive. This result casts doubt on the ability of event studies to detect anticompetitive mergers.

1. Introduction

A currently fashionable line of research uses stock prices to evaluate the welfare effects of challenged horizontal mergers [see Eckbo (1983), Eckbo and Wier (1985), McGuckin, Warren-Boulton and Waldstein (1988), and Salinger and Schumann (1988)]. The welfare effects are evaluated by examining how the stock prices of rival firms move in response to the announcement of a horizontal merger and the subsequent announcement of an antitrust complaint. If the rival firms' stock prices follow the pattern predicted by, for example, a market power hypothesis, then the merger is deemed to be anticompetitive (see table 1). Previous empirical work has found little evidence that challenged horizontal mergers were anticompetitive. Eckbo (1983) and Eckbo and Wier (1985) draw strong policy implications from these results: 'all but the 'most overwhelmingly large' mergers should be allowed to go forward' [Eckbo and Wier (1985, p. 140)]. We examine the power of event studies to detect anticompetitive horizontal mergers. We turn the event-study procedure around and ask whether rival firms' stock prices move in the predicted directions when a horizontal merger with ex post known anticompetitive effects is announced and subsequently challenged. We find that the answer is no. That is, an event study of a known anticompetitive horizontal merger fails to detect the fact that the merger is anticompetitive. Our results cast doubt on the ability of event studies to detect anticompetitive mergers and, hence, on the policy implications of such studies.

The validity of our study depends on finding a horizontal merger that is unambiguously anticompetitive. We use the 1979 merger of Xidex Corporation with Kalvar Corporation.

2. The Xidex–Kalvar merger

In March 1979, Xidex Corporation acquired Kalvar Corporation. Xidex and Kalvar both produced non-silver duplicate microfilm. [1] Xidex produced non-silver duplicate microfilm in its Sunnyvale, California and Holyoke, Massachusetts plants. Kalvar produced non-silver duplicate microfilm in its only plant in New Orleans, Louisiana. Three months after the merger, in June 1979, Xidex closed down Kalvar's New Orleans plant and fired all the production personnel.

As documented by the Federal Trade Commission (1981), Xidex and Kalvar were active rivals prior to their merger. Xidex produced both types of non-silver duplicate microfilm: diazo and vesicular. Kalvar produced only vesicular microfilm. [2] Xidex's 1969 entry into the production of vesicular microfilm was met with a patent infringment lawsuit by Kalvar. The Federal Trade Commission documented numerous instances where buyers used one of the two firm's prices to obtain a lower price from the rival.

The competitive effects of the Xidex–Kalvar merger have been studied by Barton and Sherman (1984). Barton and Sherman ask a simple question: did the price paid by the U.S. federal government for non-silver duplicate microfilm increase after the Xidex–Kalvar merger? Their answer is yes. In order to control for cost changes, Barton and Sherman study the price ratio of vesicular microfilm to diazo microfilm. They show that this price ratio increased approximately 25 percent following the Xidex–Kalvar merger.

Table 1
Abnormal returns to the merging firms and their rivals as predicted under the market power and efficiency hypotheses.

Theory predicting the source of the merger gains	Abnormal returns to merging firms	Abnormal returns to rival firms
A. Merger proposal		
Market power:		
Collusion or Cournot	Positive (monopoly rents)	Positive (monopoly rents)
Economic efficiency:		
Productivity increases	Positive (cost savings)	Negative (competitive disadvantage)
B. Antitrust complaint		
Market power:		
Collusion or Cournot	Negative (loss of monopoly rents)	Negative (loss of monopoly rents)
Economic efficiency:		
Productivity increases	NegativePositive (loss of cost savings)	(avoiding competitive disadvantage)

[1] For a complete discussion of the Xidex–Kalvar merger and the non-silver duplicate microfilm market see the Federal Trade Commission (1981).

[2] Diazo and vesicular microfilm are produced with essentially the same inputs, and their average production costs are approximately equal. The two products are (imperfect) substitutes. Whether or not diazo and vesicular microfilm constitute separate product markets is unclear. For this reason, we look at both (1) the portfolio of rival firms that produced diazo or vesicular microfilm and (2) the only rival that produced vesicular microfilm.

Barton and Sherman estimate that Xidex's supra-competitive profits in fiscal years 1980 and 1981 from its purchase of Kalvar were $7,869,000. Given that the purchase price of Kalvar was $6,029,892, Xidex's decision to purchase Kalvar and then close down its only plant and fire all the production personnel was clearly profitable. Xidex's decision to close down Kalvar's only plant is also evidence that the merger did not lead to any efficiency gains. Thus, no Williamsonian efficiency trade-off appears present in the merger.

The Federal Trade Commission challenged the Xidex–Kalvar merger in September 1980. The FTC and Xidex entered into a consent decree on July 1, 1983. The consent decree specified that, among other things, (1) Xidex was required for a seven year period to grant a non-exclusive license to produce and sell vesicular microfilm to any firm that intended to produce vesicular microfilm and sell some or all of its output in the United States; (2) Xidex was required within twelve months to sell all of Kalvar's books, records, patents, patent applications, and trade secrets; (3) Xidex was required within thirty days after the sale of Kalvar's patents and trade secrets to train employees of the acquiring firm to produce vesicular microfilm using Kalvar's technology; (4) Xidex was prevented from acquiring, without the prior approval of the FTC, more than 10 percent of any firm that produced either diazo or vesicular microfilm. The consent decree was designed to solve the problem that no simple divestiture could restore competition. Xidex had effectively destroyed Kalvar by firing the production employees and mothballing the plant.

3. Event study

3.1. Estimation

We use the same event study methodology as Eckbo and Wier (1985). Two sets of rival firms are examined. The first set consists of those rival firms (GAF Corp., Eastman Kodak Co., Teledyne Industries Inc., and 3M) that produced either diazo or vesicular microfilm. [3] The second set consists of the only firm (3M) other than Xidex and Kalvar that produced vesicular microfilm.

The abnormal returns to the rival firms are estimated with the following regression:

$$r_p = \alpha + \beta r_m + \gamma d + \epsilon,$$

where

r_p = the daily continuously compounded returns to the equal-weighted portfolio of rival firms,
r_m = the daily continuously compounded return to the value-weighted CRSP market index,
d = a dummy variable that takes on the value of one for days in the event window and zero otherwise,
ϵ = the daily random error, assumed to be independent of r_m, serially uncorrelated, and normally distributed.

The (OLS) estimated value of β represents the risk of the portfolio of rival firms' stocks relative to the risk of the market index. The estimated value of γ represents the average daily abnormal return to the portfolio of rival firms.

Two event days are examined. The first is February 8, 1979, the day news of the Xidex–Kalvar merger was first published in a newspaper (*New Orleans Times Picayune*). The second event day is

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[3] There are three other firms not on the Center for Research in Security Prices (CRSP) tape that produced diazo microfilm: AM International Inc., Arkwright Inc., and Keuffel and Esser Company.

Table 2

Average daily abnormal return to the portfolio of rival firms that produced either diazo or vesicular microfilm (estimated coefficients and t-statistics).

Event date	Days relative to newspaper announcement (day 0)				
	−20 to 10	−10 to 5	−3 to 3	−1 to 1	0
Merger proposal announcement	−0.0015 (−0.95)	−0.0016 (−0.77)	−0.0009 (−0.28)	−0.0024 (−0.50)	−0.0054 (−0.65)
Antitrust complaint announcement	−0.0005 (−0.24)	−0.0004 (−0.14)	0.0031 (0.74)	0.0147 (2.34)	0.0157 (1.45)

September 19, 1980, the day news of the FTC antitrust complaint was first published in a newspaper (*Wall Street Journal*).

The estimation period for the regressions is 200 trading days before an event date to ten trading days after an event date. An event date is defined as day zero. Several different event windows around day zero are used because (1) news of the merger or the antitrust complaint may have been public before the newspaper publication dates and (2) further relevant information may have become known shortly after the event days. The five event windows are given in tables 2 and 3. The dummy variable d takes on the value of zero for all five event windows for the comparison period (−200, −21). The dummy variable takes on the value of one for each day in an event window. For those four events windows that lie inside the period (−20, 10), the trading days in this period but not in the relevant event window are deleted. For example, for the event window (−10, 5), the trading days in the periods (−20, −11) and (6, 10) are deleted. These deletions are made for the four event windows that lie inside the period (−20, 10) so that the comparison period (−200, −21) is the same for all five event windows. These are the same five event windows used by Eckbo and Wier (1985).

3.2. Empirical results

The average daily abnormal return to the portfolio of rival firms that produced either diazo or vesicular microfilm is reported in table 2. From table 1, an anticompetitive merger should cause rivals' stock prices to increase on the day of the merger proposal announcement and decrease on the day of the antitrust complaint announcement. The empirical results in table 2 show absolutely no evidence of the fact that the Xidex–Kalvar merger was anticompetitive. The average daily abnormal return to the rival firm (3M) that produced vesicular microfilm is reported in table 3. Again, the empirical results show no evidence of the fact that the Xidex–Kalvar merger was anticompetitive.

Table 3

Average daily abnormal return to the rival firm (3M) that produced vesicular microfilm (estimated coefficients and t-statistics).

Event date	Days relative to newspaper announcement (day 0)				
	−20 to 10	−10 to 5	−3 to 3	−1 to 1	0
Merger proposal announcement	−0.0038 (−2.34)	−0.0046 (−2.05)	−0.0043 (−1.31)	−0.0053 (−1.06)	−0.0037 (−0.42)
Antitrust complaint announcement	−0.0016 (−0.72)	−0.0003 (−0.09)	0.0014 (0.33)	0.0085 (1.28)	0.0124 (1.08)

Indeed, the signs of the estimated coefficients in tables 2 and 3 are generally opposite their predicted values given that the Xidex–Kalvar merger was anticompetitive. The statistical results in tables 2 and 3 are, however, too insignificant to support the efficiency hypothesis.

Our event study of the Xidex–Kalvar merger fails to detect its anticompetitive nature. A likely cause of the failure is that the rivals were large, multiproduct firms that derive only a small fraction of their revenues from the affected market [see Werden and Williams (1987)]. For example, 3M had total revenues of $4.7 billion in 1978, but the total industry sales of diazo and vesicular microfilm in 1978 were only $59.5 million.

A logical question is whether this same problem plagues earlier such event studies. We collected four-digit SIC revenue data for 293 of the rivals used in Eckbo (1983). Only 15 percent of the rivals derived more than 75 percent of their revenues from the same four-digit SIC code as the target firm. Moreover, 32 percent of these rivals derived less than 25 percent of their revenues from the same four-digit SIC code as the target firm. Thus, even if some of the mergers studied in Eckbo (1983) actually lessened competition, the very nature of the data set makes it unlikely that the anticompetitive effects could be detected.

4. Conclusion

Our results cast doubt on the validity of attempting to detect anticompetitive mergers with event studies. In part because of the practical problem that rival firms usually derive only a small fraction of their revenues from the affected market, the power of event studies to detect anticompetitive mergers is low. Consequently, the antitrust policy implications of such event studies are problematic.

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