

**EVIDENCE ON
MERGERS AND ACQUISITIONS**

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when it is the most profitable means of enhancing capacity, obtaining new knowledge or skills,² entering new product or geographic areas, or reallocating assets into the control of the most effective managers/owners. Thus, many of the same factors that influence major investment decisions would also influence merger activity.³ This view of mergers as a special case of business investment is not universally accepted, however. For example, Scheffman argues that managers seldom consider static cost reductions or price increases in making merger decisions. Rather, decisions to merge are party.0ego

² For evidence that in certain high technology industries, acquisition activity may be a substitute for R&D activity, see Blonigen & Taylor, *R&D Activity and Acquisitions in High Technology Industries: Evidence from the U.S. Electronic and Electrical Equipment Industries*, 48 JOURNAL OF INDUSTRIAL ECONOMICS 47 (March 2000).

³ For a longer list of more specific factors that might influence merger intensity across industries, see WESTON, CHUNG & HOAG, *MERGERS, RESTRUCTURING & CORPORATE CONTROL* (1990) or Bittlingmayer, *Merger as a Form of Investment*, 49 KYKLOS 127 (1996).

⁴ Scheffman, *Making Sense of Mergers*, 4 THE ANTITRUST BULLETIN 715 (Fall 1993).

⁵ Andrade & Stafford, *Investigating the Economic Role of Mergers* (mimeo, Harvard Business School, 1999).

⁶ Andrade, Mitchell & Stafford, *New Evidence and Perspectives on Mergers*, 15 JOURNAL OF ECONOMIC PERSPECTIVES 103 (Spring 2001).

⁷ Economies of scale refer to the long-run reduction in the per unit cost of making a product as the volume of production rises, allowing all inputs to be varied optimally.

production economies of scope,⁸ consumption economies of scope,⁹ improved resource allocation (e.g., more resources in the hands of better managers), moving to an alternative less costly production technology or asset configuration, improved use of information and expertise, improved focus on core skills of the firm, a more effective combination of assets, improvements in the use of brand name capital, and reductions in transportation and transaction costs. It may be that mergers or acquisitions are the quickest, cheapest, or only way to attain these benefits.¹⁰

The gains from mergers and acquisitions are not, however, limited to narrowly considered gains to the firms (and ultimately to consumers). The ability of one firm to merge with another firm or acquire its assets also creates a market for corporate control.¹¹ Many economists consider an active market for corporate control an important safeguard against inefficient management.¹² An active market for corporate assets can also provide benefits in the form of more efficient reallocation of resources from relatively inefficient to efficient firms during periods of industry contraction or industry turmoil.¹³

⁸ Production economies of scope refer to the reduction in overall costs from the joint production of complementary products.

⁹ Consumption economies of scope refer to the increased consumer welfare from the joint consumption of complementary products.

¹⁰ For a discussion of conditions under which various efficiencies might (or might not) be attributed directly to merger activity, see Farrell & Shapiro *Scale Economies and Synergies in Horizontal Merger Analysis*, 68 ANTITRUST LAW JOURNAL 685 (2001).

¹¹ Prior to 1900 most firms were closely held by owners who also ran the firm. Over time, as the corporate form of organization grew, the tie between ownership and control became more tenuous. BERLE & MEANS, *THE MODERN CORPORATION* (New York, 1932) were the first to extensively study the separation of control from management. Manne, "Mergers and the Market for Corporate Control," 73 JOURNAL OF POLITICAL ECONOMY 110 (April 1965), studied the role that mergers might play in facilitating a market for whole corporations. Chandler, *The Competitive Performance of U.S. Industrial Enterprises Since the Second World War*, 68 BUSINESS HISTORY REVIEW 1 (Spring 1994) discusses the advent of the modern market for corporate control during the 1970s and 1980s.

¹² If a firm is poorly managed, its market value will be less than its potential value if the same firm were well managed. The market for corporate control allows more efficient management teams to profitably takeover such firms. Barber, Palmer & Wallace, *Determinants of Conglomerate and Predatory Acquisitions: Evidence from the 1960s*, 1 JOURNAL OF CORPORATE FINANCE 283 (1995) find that this management discipline motive was central to the hostile takeovers during the 1960s. Mitchell and Lehn suggest that disciplining incumbent management was one explanation for the "bust-up" acquisitions of the 1980s, where heavily diversified firms were purchased and the parts resold to firms specializing in each industry. See Mitchell & Lehn, *Do Bad Bidders Become Good Targets?* 98 JOURNAL OF POLITICAL ECONOMY 372 (April 1990). Also see Jensen, *Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers*, 76 AMERICAN ECONOMIC REVIEW 323 (1986). More generally, Romano reviews the economics/finance literature and finds the operating efficiency and management control explanations for mergers to be consistent with the evidence. See Romano, *A Guide to Takeovers: Theory, Evidence, and Regulation*, 9 YALE JOURNAL OF REGULATION 119 (1992).

¹³ Mitchell & Mulherin, *The Impact of Industry Shocks on Takeover and Restructuring Activity*, 41 JOURNAL OF FINANCIAL ECONOMICS 193 (1996), focus on mergers as a means of reacting to industry-specific shocks such as
(continued...)

¹⁷(...continued)

short-lived, affecting the timing of mergers, but not the long-run number of mergers .

¹⁸ Stigler,

²² Morck, Shleifer & Vishny, *Do Managerial Objectives Drive Bad Acquisitions?* 45 JOURNAL OF FINANCE 31 (March 1990). Blair also provides evidence that during the latter half of the 1980s managers used excess earnings to inefficiently pursue takeovers. See (Blair ed. 1993) THE DEAL DECADE: WHAT TAKEOVERS AND LEVERAGED BUYOUTS MEAN FOR CORPORATE GOVERNANCE.

²³ For example, Avery, Chevalier & Schaefer, *Why Do Managers Undertake Acquisitions? An Analysis of Internal and External Rewards for Acquisitiveness*, JOURNAL OF LAW ECONOMICS & ORGANIZATION 24 (April 1998), find evidence from the mid-1980s that CEOs may pursue acquisitions to enhance their prestige and status in the business community.

²⁴ See Mitchell & Lehn, *supra* note at 12.

²⁵ Matsusaka, *Takeover Motives During the Conglomerate Merger Wave*, 24 RAND JOURNAL OF ECONOMICS 357 (Autumn 1993).

²⁶ More recently, Hou, Olsson & Robinson, *Does Takeover Increase Stockholder Value?* (mimeo, University of Chicago, 2000) confirmed that diversifying mergers were value enhancing during the 1963 to 1995 period using observation periods from 4 months to 3 years following the mergers. Barber, Palmer & Wallace, *Determinants of Conglomerate and Predatory Acquisitions: Evidence from the 1960s* 1 JOURNAL OF CORPORATE FINANCE 283 (April 1995) find that the motives underlying conglomerate mergers of the 1960s were as economically sound as those underlying the non-conglomerate mergers. In a related vein, Maloney, McCormick & Mitchell, *Managerial Decision Making and Capital Structure*, 66 JOURNAL OF BUSINESS 189 (April 1993) examined over 950 mergers and acquisitions finding that increased leverage may be one way to minimize costs of managerial discretion. Increased debt seemed to improve decision-making. Mueller & Reardon, *Rates of Return on Corporate Investment*, 60 SOUTHERN ECONOMIC JOURNAL 430 (October 1993), at 443 also find that result.

²⁸ Indeed, Roll, *The Hubris Hypothesis of Corporate Takeovers*, 59 JOURNAL OF BUSINESS 197 (April 1986), argues that "hubris" may induce the management of an acquiring firm to overbid for its target. For a discussion of evidence related to the hubris hypothesis, see Romano, *supra* note 12, at 150-152.

²⁹ For some evidence regarding the stock market's apparent preference for cash-based acquisitions, see Andrade, Mitchell & Stafford, *New Evidence and Perspectives on Mergers*, 15 JOURNAL OF ECONOMIC PERSPECTIVES, 103 (Spring 2001); and Hou, Olsson & Robinson, *Does Takeover Increase Stockholder Value?* (mimeo, University of Chicago, 2000).

³⁰ Shleifer & Summers,

³³(...continued)

expropriation question. Peoples, Hekmat & Moini, *Corporate Mergers and Union Wage Premiums*, 17 JOURNAL OF ECONOMICS AND FINANCE 65 (Summer 1993) find that greater merger activity in an industry is associated with a lower wage for unionized workers, but no difference in wages for nonunion workers. Another recent study of 120 hostile takeovers occurring between 1979 and 1989 found that the likelihood of being a hostile takeover target was unrelated to the wage structure of the industry. Thus, firms paying wages above the norm did not appear to be more likely to become targets. These results imply that takeovers during the 1980s were not likely motivated by a desire to inefficiently redistribute income from workers to owners. See Neumark & ...

studies may focus on accounting rates of return, profit margins, cash flow returns,

IV. STOCK MARKET STUDIES OF MERGER EVENTS

While the recent larger scale studies of mergers have used stock market event analysis as one part of their investigations, there are other studies that have focused principally on that technique. These studies can be divided into many categories. In this section we review those studies that attempt to determine the effects of mergers on the merging firms and on the market as a whole. In a second section, we examine a set of studies that tries to answer the question "Does the merger lead to market power?"

A. Stock Price Effects

1. Target Firms

Stock market studies using the capital asset pricing model consistently show that target companies' stockholders enjoy significant abnormal returns. Jarrell and Poulsen³⁵ examine 663 successful tender offers from 1962 through 1985 and find that takeover premiums averaged 19 percent in the sixties, 35 percent in the seventies, and 30 percent in the first half of the eighties. Similarly, Jensen and Ruback³⁶ who surveyed 13 studies of pre-1980 stock market data, find positive returns of between 16 percent and 30 percent to the targets of successful mergers and tender offers. Andrade, Mitchell, and Stafford report remarkably stable target firm returns of 23 to 25 percent for completed mergers spanning decades in the 1973 to 1998 period.³⁷

Additionally, Bradley, Desai and Kim³⁸ find that target firm stockholders realize significant positive abnormal returns upon the announcement of a takeover offer even if the takeover does not go through. The authors conclude that these gains are primarily due to stock market anticipation of a future successful acquisition bid for the target. However, targets who defeat a hostile takeover bid ultimately see their stock value return to approximately the pre-takeover level if no takeover occurs.

These stock market studies consistently find that lower returns tend to be associated with negotiated mergers, the higher returns with tender offer takeovers. The same phenomenon may be driving the result that the returns forthcoming from transactions that are paid for in cash are

³⁵ Jarrell & Poulsen, *The Returns to Acquiring Firms in Tender Offers: Evidence from Three Decades*, 12 FINANCIAL MANAGEMENT 18 (1989).

³⁶ Jensen & Ruback, *The Market for Corporate Control: The Scientific Evidence*, 11 JOURNAL OF FINANCIAL ECONOMICS 5 (April 1983).

³⁷ Andrade, Mitchell & Stafford, *New Evidence and Perspectives on Mergers*, 15 JOURNAL OF ECONOMIC PERSPECTIVES 103 (Spring 2001).

³⁸ Bradley, Desai & Kim, *The Rationale Behind Interfirm Tender Offers: Information or Synergy?* 11 JOURNAL OF FINANCIAL ECONOMICS 183 (April 1983).

³⁹ See Hou, Olsson & Robinson, Does Takeover Increase Stockholder Value? (mimeo, University of Chicago, 2000).

⁴⁰ Jensen, *Takeovers: Their Causes and Consequences*, 2 JOURNAL OF ECONOMIC PERSPECTIVES 21 (Winter 1988).

⁴¹ See Jarrell & Poulsen, *supra* note 35.

⁴⁶ In a related vein, Stein argues that if firm efficiency can be signaled only by current earnings, then temporarily low earnings may lead to undervalued stock, causing managers to fear unwarranted takeovers. See Stein, *Takeover Threats and Managerial Myopia*, 96 JOURNAL OF POLITICAL ECONOMY 61 (1988). Meulbroek *et al.* have argued, however, that Stein's hypothesis is inconsistent with their evidence showing that firms' relative R&D spending falls after the firms are insulated from takeovers by antitakeover amendments. See Meulbroek, Mitchell, Mulherin, Netter & Poulsen, *Shark Repellants and Managerial Myopia: An Empirical Test*, 98 JOURNAL OF POLITICAL ECONOMY 1108 (October 1990).

⁴⁷ Ravenscraft & Pascoe, *Can the Stock Market Predict Merger Success?* (mimeo, University of North Carolina and Center for Economic Studies, Bureau of the Census, July 1989).

⁴⁸ Healy, Palepu & Ruback, *Does Corporate Performance Improve after Mergers?* 31 JOURNAL OF FINANCIAL ECONOMICS 135 (1992).

⁴⁹ Kaplan & Weisbach, *The Success of Acquisitions: Evidence from Divestitures*, 47 JOURNAL OF FINANCE 1078 (March 1992).

⁵⁰ MERGERS AND PRODUCTIVITY, (Kaplan ed.), National Bureau of Economic Research Conference, University of Chicago (2000), see esp. p. 6.

⁵³ Hou, Olsson & Robinson, Does Takeover Increase Stockholder Value? (mimeo, University of Chicago, 2000). The authors examine monthly average returns over several horizons ranging from 4 months to 3 years following the event dates using an estimation technique that adjusts for autocorrelation and heteroskedasticity in the error term. The authors use a three-factor model to derive a benchmark for normal returns. The factors include: (1) the return relative to the market, (2) an adjustment for firm capitalization size, and (3) whether the acquirer is categorized as a “growth” versus “value” firm. Both value-weighted and unweighted portfolios are estimated, with the unweighted results being much larger (e.g., 2.5 percent per month versus 0.70 percent). The authors focus on the weighted results. The use of the long time horizon results is controversial in the finance literature, because it relies critically on the accuracy of the underlying model of

Most of the studies of this issue, beginning with Eckbo,⁵⁵ find that shareholders of rivals to firms involved in horizontal mergers earned significant positive abnormal returns, on average, when the mergers were first announced.⁵⁶ However, the rival firms had positive, but insignificant, abnormal returns when the antitrust complaints against these mergers were announced.⁵⁷ The interpretation of these results has been the subject of some controversy.

Based on the results, Eckbo rejects the market

⁵⁵ Eckbo, *Horizontal Mergers, Collusion, and Stockholder Wealth*, 11 JOURNAL OF FINANCIAL ECONOMICS 241 (1983).

⁵⁶ See Schumann, 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 (Bureau of Economics, Federal Trade Commission 1989); *Patterns of Abnormal Returns and the Competitive Effects of Horizontal Mergers*, REVIEW OF INDUSTRIAL ORGANIZATION (forthcoming 1993); Eckbo, *Mergers and the Market Concentration Doctrine: Evidence from the Capital Market*, 58 JOURNAL OF BUSINESS 325 (July 1985); Eckbo & Weir, *Antimerger Policy Under the Hart-Scott-Rodino Act: A Reexamination of the Market Power Hypothesis*, 28 JOURNAL OF LAW AND ECONOMICS 119 (1985); and Knapp, *Event Analysis of Air Carrier Mergers and Acquisitions*, 72 REVIEW OF ECONOMICS AND STATISTICS 703 (November 1990). Exceptions to this pattern of results are reported by Slovin *et al.* who find that for 42 airline merger announcements rival firms did not attain positive stock returns following deregulation of the industry. See Slovin, Sushka & Hudson, *Deregulation, Contestability, and Airline Acquisitions*, 30 JOURNAL OF FINANCIAL ECONOMICS 231 (1991). In addition, Banerjee and Eckhard found negative returns to rivals around the time of "trust" formation at the 20th century. See Banerjee & Eckard, *Are Mega-Mergers Anticompetitive? Evidence From the First Great Merger Wave*, 29 RAND JOURNAL OF ECONOMICS 803 (Winter 1998). Eckbo, *Mergers and the Value of Antitrust Deterrence*, 47 JOURNAL OF FINANCE 1005 (July 1992) also found negative returns to rivals in reviewing 205 Canadian mergers from 1964 to 1982, but positive returns to rivals for his 266 merger sample for the U.S. from 1963 to 1981.

⁵⁷ This pattern of insignificant rival gains at the time of a merger challenge was not found in one study. Prager examined the case of the Northern Securities railway merger in 1901 finding that rivals gained when the merger was announced, and lost at the time of the announcement that governments (U.S. and Minnesota) had successfully challenged the merger. The closest rival firms also gained when the Supreme Court allowed a stock distribution plan that effectively let the shareholders of the two firms commonly own the merging entities (in effect, the distribution plan allowed the shareholders to complete the merger that had been found illegal). See Prager, *The Effects of Horizontal Mergers on Competition: The Case of the Northern Securities Company*, 23 RAND JOURNAL OF ECONOMICS 123 (Spring 1992).

⁵⁸ For a discussion of Eckbo's work criticizing both the conceptual framework and the application of the method, see Werden & Williams, *The Role of Stock Market Studies in Formulating Antitrust Policy Toward Horizontal Mergers* 28 QUARTERLY JOURNAL OF BUSINESS AND ECONOMICS 3 (1989). For a second installment to the debate, in which Eckbo addresses some of the critiques and compares the U.S. and Canadian antimerger enforcement regimes, see Eckbo, *Mergers and the Value of Antitrust Deterrence*, 47 JOURNAL OF FINANCE 1005 (July 1992).

⁵⁹ See Schumann, *supra* note 56.

⁶⁰ In the case where the government blocks an efficient merger, the small rivals may benefit by the protection from competition. In the case where the government blocks an anticompetitive merger that also signals potential efficiencies, the small rivals may gain because they may become more likely takeover targets since their small size makes them less troublesome to antitrust authorities.

⁶¹ McGuckin, Warren-Boulton & Waldstein,

⁷⁰ Accounting data, for example, may not reveal the true economic rate of return for a firm. Fisher & McGowan, *On the Misuses of Accounting Rates of Return to Infer Monopoly Profits*, 73 AMERICAN ECONOMIC REVIEW 82 (March 1983), convincingly demonstrate that because accounting depreciation schedules do not

⁷⁵ A similar result has been found for UK mergers from 1948 to 1977. Dickerson *et al.* examined pre-merger and post-merger profitability for 2,941 acquiring firms relative to those for nonacquirors. Looking at several years before and after the mergers, they find lower annual returns for acquiring firms (13.5 percent versus 16.4 percent return on net assets for nonacquirors) after controlling for firm size class, financial leverage, internal growth rates, company fixed effects, and time. They note that the results are not sensitive to the choice of accounting profit measure. Dickerson, Gibson & Tsakalotos, *The Impact of Acquisitions on Company Performance: Evidence from a Large Panel of UK Firms*, 49 OXFORD ECONOMIC PAPERS 344 (1997).

⁷⁶ This result differs from the bulk of the stock market event literature which consistently finds that the market more often approves of hostile cash bids than friendly stock-based acquisitions. Perhaps the difference in vintage of the mergers studied is one explanation for the difference in findings, apart from the difference in research approach.

⁷⁷ These authors also found (pp. 69, 101-103) that target companies purchased via tender offers had pre-tender accounting profit rates that were about one percentage point (eight percent) below a control group norm. Thus, the companies acquired via tender offers were marginal underperformers. Following the tenders, the acquired lines of business that were associated with those companies produced profits that were 3.1 points below the norm. Most of the

literature. Diversifying acquisitions were sold off at a greater rate than were related acquisitions (the firm was 42% more likely to divest a diversifying acquisition than a related acquisition), but the reasons seemed to stem from refocusing of the firm rather than from systematic failure of the diversifying acquisitions.⁸⁶ Kaplan and Weisbach also make use of stock market event analysis around the time of the acquisition to determine whether the stock price movements are correlated with their ex

⁸⁶ Acquisitions were defined as "related" if the firms listed a common 3 or 4 digit industry as one of their top 4 lines of endeavor.

⁸⁷ Mueller, *Mergers and Market Share*, 67 REVIEW OF ECONOMICS AND STATISTICS 259 (1985).

⁸⁸ McGuckin also examined the post-merger market share change in 133 horizontal mergers that occurred between 1972 to 1982. Using 5-digit census categories to define markets, he finds that the combined market share of the firms declined in the first 5 years after the merger, but then the combined firm's shares rose above premerger levels during the next 5 years. He reports some evidence that price-cost margins rose more after the mergers in those industries that had slightly higher concentration levels. McGuckin did not, however, use control groups or industry averages to control for industry-wide or economy-wide effects in either the market share or price-cost margin comparisons. See McGuckin, *Merger Enforcement: Out of the Courtroom After 75 Years* 35 ANTITRUST BULLETIN 677 (Fall 1990).

⁸⁹ Stewart & Kim, *Price Changes and Mergers in U.S. Manufacturing 1985-86*, in EMPIRICAL STUDIES IN INDUSTRIAL ORGANIZATION: ESSAYS IN HONOR OF LEONARD W. WEISS 77-96 (1992).

price increases were reduced from a predicted 3.2% to 2.5%.⁹⁰

Mergers and acquisitions descriptive results are that anywhere from 3% to 6% majority of asset transfers appeared to be (ber 20-44(iency enha)-46(roller)TT 0.06 Tc 0.06 -28.26 Td (00.gd0.2 characteristics. particularly those that do not increase the firms' (segments) TJa 0.36 Tc 0.6 Td 265.92 0 Td [(ca)-52(pa)-56(ci)-58(ly.)]TJ 0 Tc -es in productivity.

⁹⁰ In general, the effects of both horizontal and nonhorizontal merger intensity seemed to be most pronounced in the "moderately concentrated" industries, in which four-firm concentration ranged between 25% and 60%. This study is carried out at a relatively high level of aggregation, so individual industry factors could not be examined in detail. In addition, the products examined are likely to be nonhomogeneous, making price and output indices less meaningful than they are in studies that are more industry specific such as those discussed in section VI.

⁹¹ McGuckin & Nguyen, *On Productivity and Plant Ownership Change: New Evidence from the Longitudinal Research Database* 26 RAND JOURNAL OF ECONOMICS 257 (Summer 1995).

⁹² Maksimovic & Phillips, *The Market for Corporate Assets: Who Engages in Mergers and Asset Sales and are There Efficiency Gains?* JOURNAL OF FINANCE (December 2001 forthcoming).

⁹³ One might expect that these kinds of deals would eventually get undone by an efficient market process.

⁹⁹(...continued)

(February 1997), esp. 98-105. The recent consensus seems to be that: (1) bank mergers have the potential to lower costs (based on the cost function characteristics), but that does not appear to have actually happened; (2) prices paid to depositors are slightly lower following mergers; thus there is a market power effect even in the set of mergers allowed by the regulatory authorities, and (3) mergers have allowed banks to better allocate resources to obtain higher revenues for a given price and cost structure.

¹⁰⁰ Peristiani, *Do Mergers Improve the X-Efficiency and Scale Efficiency of U.S. Banks? Evidence from the 1980s*, 29 JOURNAL OF MONEY, CREDIT, AND BANKING 326 (August 1997).

¹⁰¹ They used the same large merger data set as Berger & Humphrey, *Megamergers in Banking and the Use of Cost Efficiency as a Defense*, 37 THE ANTITRUST BULLETIN 541 (Fall 1992).

¹⁰² It is surprising that the model can predict the source of 80 percent of post-merger gains. One would not expect bank managements to fail to observe such large consistent profit opportunities.

¹⁰³ Prager & Hannan, *Do Substantial Horizontal Mergers Generate Significant Price Effects? Evidence from the Banking Industry*, 46 JOURNAL OF INDUSTRIAL ECONOMICS 433 (December 1998).

particularly reliable.¹⁰⁹ In addition to examining the effects of mergers, the authors also looked at changes in cross-section results over time and found that although increased competition was associated with increased costs in 1986, by 1994 this relationship had altered significantly such that more competitive areas were associated with lower prices and costs. They attributed this change to the growth of managed care over the period.

Quite different results were found by Krishnan who studied the price effects of hospital mergers that occurred in Ohio and California during 1994 to 1995.¹¹⁰ He found significant price increases following mergers even when the market structure was not altered due to the acquisition. The twenty-two mergers that occurred in Ohio during that period tended to alter market structure as local hospitals combined. By contrast, the fifteen mergers that occurred during that period in California were mainly chains buying individual hospitals - transactions that did not alter local market structure. The pricing of individual diagnosis related groups (DRGs) is examined in markets defined by hospital-level patient flow statistics. Analyses of the Ohio mergers indicate that post-merger percentage price increases by the merging hospitals are substantial and that they are greater where DRG market shares rose substantially as a result of the merger. A similar result was obtained for the price effects of concentration changes. A regression analysis using data for 23 high-volume DRGs is also undertaken. The author models post-merger relative price changes as a function of the level of (and post-merger changes in) market share of the hospital in the DRG, market concentration, length of stay, managed care percentage, hospital size (based on discharges), a residual from a pre-merger price regression, and fixed effects dummies for each DRG and hospital. Indicator variables are also included for whether the hospital was involved directly in a merger, and whether the hospital was located in a market where a merger occurred. Patient level data are not available in Ohio, so the author could control for hospital characteristics, but not severity of illness, which is included in the California regression analysis. The regression results imply that higher post-merger market share of the merging firms is associated with larger relative post-merger price increases than in otherwise comparable DRG markets. The authors find that in Ohio, merging firms raised prices per patient 16.5 percentage points more than did nonmerging hospitals. In California (where market structure was not affected by the mergers), acquired hospitals raised prices 12 percentage points more than did non-acquired hospitals. Although market share changes appeared to matter, concentration changes did not affect relative pricing in the regression analyses.¹¹¹

Rather than asking about post-merger prices or costs, Ho and Hamilton ask whether M&A

¹⁰⁹ In both studies the HSA market concentration levels may not have been correctly calculated due to a lack of complete data on ownership of the various hospitals in the AHA data set (*see Connor et al.* 1998, p. 164). The authors argue that their concentration data are likely to be correlated with correctly calculated concentration, however.

¹¹⁰ Krishnan, *Market Restructuring and Pricing in the Hospital Industry*, 20 JOURNAL OF HEALTH ECONOMICS 213 (March 2001).

¹¹¹ Krishnan's results raise several questions: why do nonmerging firms in the merger markets not raise price very much post-merger (the Ohio result). Do mergers purely invest the merging firms with greater unilateral market power or does quality also improve? Also, why would prices rise so much in instances where the structure of the market was not affected (the California result)?

¹¹² Ho & Hamilton, *Hospital Mergers and Acquisitions: Does*

*et al.*¹¹⁵ use a unique data set and regression techniques to examine the effects of various 1980 to 1991 transactions on both the prices and quantities of carbonated soft drinks sold in local markets. They find that horizontal combinations of brands at a particular bottler (*e.g.*, the local Coke bottler buying the rights to bottle Dr Pepper) are associated with 3 to 12 percent higher soft drink prices and lower output, while vertical events (*e.g.*, parent Coke buying the local Coke bottler) are associated with 4 percent lower prices (but a melange of output results). Consolidation of “third bottlers” (non-Coke or

¹¹⁵ SALTZMAN, LEVY & HILKE, TRANSFORMATION AND CONTINUITY: THE U.S. CARBONATED SOFT DRINK BOTTLING INDUSTRY AND ANTITRUST POLICY SINCE 1980, (Bureau of Economics, Federal Trade Commission, 1999).

mergers. The best studies use objective data and multiple approaches to control for factors that might have affected the firms' performance in the absence of the merger or acquisition.¹¹⁶ In this section, we report on some case study evidence for several industries focusing on airlines, hospitals, and banking. These industries have produced most of the studies not only because a significant amount of consolidation occurred there, but because publicly available data exist on cost and pricing in the industries.

Airline Industry Merger Case Studies

Several case studies have focused on mergers in the airline industry. Werden *et al.*¹¹⁷ examine two mergers in the airline industry (Northwest/Republic and TWA/Ozark) and find that these mergers resulted in higher prices and worse service. The authors estimated equations for revenue per passenger for several hundred city-pairs both before and after the merger. The equations adjusted for cost and demand variables as well as concentration levels. They used the premerger data from city-pairs that were not affected by the merger as a control group to compare with the affected markets. The Northwest/Republic merger led to significant overall fare increases (5 to 6 percent) and service reductions. Although the TWA/Ozark merger led to only a small overall fare increase (1.5 percent), there was a significant service reduction.¹¹⁸

These same mergers were reviewed by Brueckner, Dyer, and Spiller¹¹⁹ who applied their model of airline pricing to simulate the price effects of the mergers. Their model of pricing was designed to examine the potential for additional network efficiencies as the merger allows more effective use of a hub-and-spoke system. Thus, the authors focus on 4-segment flights that go through a hub, but do not originate or end at a hub. They find that weighted average fares for 4-segment flights would fall by about 1 to 3 percent after the merger due to the network efficiency effects of the merger. However, in those city pairs where the merger partners had previously competed, the merger would tend to raise fares by as much as 6.5 percent. Thus, the effects of a loss of competition appear to overwhelm the

¹¹⁶ For a discussion of some early merger case studies that tended to be done with less objective data, see Fisher & Lande, *Efficiency Considerations in Merger Enforcement*, 71 CALIFORNIA LAW REVIEW 1580 (December 1983) at 1619. The best case studies use control groups and models of expected outcomes to allow the researcher to have more confidence that any observed effects are truly due to the event of interest.

¹¹⁷ Werden, Joskow & Johnson, *The Effects of Mergers on Economic Performance: Two Case Studies from the Airline Industry*, 12 MANAGERIAL AND DECISION ECONOMICS (1991).

¹¹⁸ Borenstein, *Airline Mergers, Airport Dominance, and Market Power*, 80 AMERICAN ECONOMIC REVIEW 400 (May 1990), studies the same airline mergers and finds that following the Northwest/Republic merger in 1986, the merging firms' fares rose relative to industry averages, the market share of the merged firms rose, and service quality fell relative to the average. Borenstein found no such effects for the TWA/Ozark merger. He attributes the lack of effects to the general weakness of traffic in the St. Louis market after the merger.

¹¹⁹ Brueckner, Dyer & Spiller, *Fare Determination in Airline Hub-and-Spoke Networks*, 23 RAND JOURNAL OF ECONOMICS 309 (1992).

¹²⁰ Other stock market event evidence regarding these cases is listed in section IV. B.

¹²¹ Kim & Singal, *Mergers and Market Power: Evidence from the Airline Industry*

¹²⁴ Slovin *et al.* is unique among airline merger event studies in that they found that airline mergers did not lead to market power effects in the deregulated airline industry. Singal suggests that the differing results may be due to: (1) different baselines for comparison (Singal uses close rivals in city-pair markets, whereas Slovin *et al.* use all other U.S. airlines as rivals in a national airline market), and (2) Slovin examines merger attempts, not just successful mergers; perhaps introducing unnecessary noise into the model. See Slovin, Sushka & Hudson, *Deregulation, Contestability, and Airline Acquisitions*, 30 JOURNAL OF FINANCIAL ECONOMICS 231 (1991).

¹²⁵ Morrison, *Airline Mergers: A Longer View*, JOURNAL OF TRANSPORT ECONOMICS AND POLICY 237 (September 1996). Morrison (p. 239) intentionally

USAir management spread an inflated pay structure to the newly acquired employees. One commentator opined that the virtual absence of airline mergers during the 1990s might have been caused by a recognition of the types of irreversible integration problems discovered by Kole and Lehn.¹²⁷

Hospital Merger Case Studies

Bogue *et al.*¹²⁸ used a survey of surviving firms to examine the after-effects of 60 hospital mergers that occurred between 1983 and 1988. Survey respondents were asked about pre-merger and post-merger characteristics of the acquired and acquiring hospitals and the markets they served and the post-merger use of the assets (in particular whether the hospital campuses both offered acute care after the transaction). American Hospital Association data were also used to track the hospital characteristics. The authors find that 42% of the time both hospitals retained acute care use post-merger and that another 41% of the time the acquired assets were converted to alternative inpatient uses such as psychiatric or long-term care. The facilities were closed 17 percent of the time. There was a much higher probability of post-merger closure or conversion if the hospitals had been directly competitive prior to purchase and if the market generally was considered competitive. In cases where both hospitals retained acute care services after the transaction, respondents were much less likely to say that the hospitals were directly competitive or that the market overall was highly competitive. The authors caution against drawing anything more than tentative conclusions from their exploratory study, but they argue that the early evidence indicates that mergers represent a means of profitably reconfiguring and consolidating assets, whether the strategy is one of system expansion or competitor elimination.

The consolidation of several hospitals in St. Louis and Philadelphia during the mid-1990s was examined by Wicks *et al.*¹²⁹ who, like Bogue, relied heavily on a survey approach, interviewing fifteen to twenty participants in each of the health care markets a few years after the consolidation began. In addition to the survey information, the authors also compared time series data for several measures of revenues (prices), output, efficiency, and capacity utilization for the hospitals in the two cities. The authors argued that if mergers were the reason for any improvements in performance, then such improvement should have occurred in St. Louis before it occurred in Philadelphia because the merger activity began there a year earlier. The merger activity in both cities led to the formation of hospital systems of various sizes, some including 12 campuses, others as few as two or three. The authors find that most of the trends that existed prior to the mergers continued and the mergers did not appear to

¹²⁷ Airline merger discussions reappeared, however, in 2000 with proposals for a United/USAir merger and an American/TWA deal, among others. The United/USAir transaction was withdrawn by the parties in July 2001 after opposition from the Justice Department.

¹²⁸ Bogue, Shortell, Sohn, Manheim, Bazzoli & Chan, *Hospital Reorganization After Merger*, 33 MEDICAL CARE 676 (1995).

¹²⁹ Wicks, Meyer & Carlyn, *Assessing the Early Impact of Hospital Mergers: An Analysis of the St. Louis and Philadelphia Markets*, Economic and Social Research Institute (January 1998).

¹³⁰ Barro & Cutler, *Consolidation in the Medical Marketplace in Massachusetts*, in (Kaplan ed.) *MERGERS AND*

¹³² Vita & Sacher, *The Competitive Effects of Not-for-Profit Hospital Mergers: A Case Study*, 49 JOURNAL OF INDUSTRIAL ECONOMICS 63

the results indicated the opposite. Nor did Prager find a significant reduction in transaction growth for the merging networks. Thus, the ATM network mergers captured by this survey did not appear to lead to customer losses.

Case Studies of Mergers in Other Industries

Empirically-oriented cases studies exist in a few other industries. One of the first systematic case studies of a merger involved examination of the post-merger market performance in the Federal Trade Commission's Xidex case.¹³⁷ Xidex produced two types of "nonsilver duplicating microfilm": diazo and vesicular. Xidex acquired a horizontal rival in each of the competing product lines; Scott Graphics (diazo) in 1976 and Kalvar Corp. (vesicular) in 1979. Each of the acquisitions raised Xidex's market share by about 10 percentage points in the overall nonsilver duplicating microfilm product market. The authors find that these acquisitions caused diazo and vesicular microfilm prices to rise more than they would have absent the merger. The Kalvar acquisition had a larger effect, possibly because that acquisition left Xidex with a near monopoly in vesicular microfilm. (The authors control for cost fluctuations by examining the relative winning competitive bids from GSA contracts for the two types of microfilm, which use similar inputs.) In addition, they find that the supra-competitive profits gained were sufficient to recoup the purchase price of the assets in two years.

In one of the first studies to use econometric techniques to control for non-merger effects, Schumann *et al.*,¹³⁸ estimated the effects of mergers in titanium dioxide, cement, and corrugated paperboard using an econometric model to control for cost and demand variations. The authors use time series data for each market to discern the effects of the various mergers. Using generalized reduced-form price equations, the authors find surprisingly large price effects. The merger of the 2nd and 4th largest U.S. producers (G+W/SCM) in the titanium dioxide industry may have led to a price increase on the order of 25 percent.¹³⁹ In the case of the Hawaiian cement merger, prices may have fallen 23 percent following the merger of Hawaii's only two cement producers. Even though the merger led to a "monopoly" in Hawaii, the post-merger price reduction may reflect efficiencies achieved by the merger that were not offset by anticompetitive effects because the ease of importing cement to the islands kept Hawaii from being a separate market for cement. The study of the paperboard merger (Weyerhaeuser purchased Menasha's west coast assets) indicates that a temporary "hold separate" remedy used in conjunction with the acquisition of one corrugating medium mill may have failed because it deterred vertical efficiencies while allowing any adverse horizontal effect of the merger. Prices rose 14 percent following the merger, but fell to preacquisition levels following removal of the hold-separate agreement.

¹³⁷ Barton & Sherman, *The Price and Profit Effects of Horizontal Merger: A Case Study*, 33 JOURNAL OF INDUSTRIAL ECONOMICS 165 (December 1984).

¹³⁸ SCHUMANN, ROGERS & REITZES, CASE STUDIES OF THE PRICE EFFECTS OF HORIZONTAL MERGERS (Bureau of Economics, Federal Trade Commission, January 1992).

¹³⁹ The size and statistical significance of the effect of this merger in titanium dioxide appears to be sensitive to the way in which a demand factor, GNP, is entered into the equation that estimates the price of titanium dioxide.

Examining a transaction in the computer industry, Lys and Vincent use stock market event analysis to examine AT&T's purchase of NCR.¹⁴⁰ The authors examine the stock market reaction to 25 different "events" that were connected with the 1991 transaction. At the time of the merger, the market predicted that the deal would be a loser for AT&T shareholders and the market appears to have been correct in this instance. The authors conclude that the 1991 deal resulted in value reduction on the order of \$4 to \$6 billion. One major focus of the paper is on the question of accounting conventions used in conjunction with mergers. The authors believe that AT&T thought their accounting choice would fool investors and thus AT&T management paid a hefty premium to be able to use pooling of interests as opposed to purchase accounting when undertaking the transaction.

A transaction in the railroad industry has also been examined. Park, *et al.* compare the prices of grain before and after two mergers in the railroad industry - the September 1995 Burlington Northern/Santa Fe merger and the July 1996 Union Pacific/Southern Pacific merger.¹⁴¹ Because contract data on rail prices do not exist, the authors use two approaches to estimate the price effect of the mergers. First, they use simulations to calculate the lowest network cost of shipments and to calculate the equilibrium prices that would occur if rival firms price at variable cost (the cost data exist from ICC records). They find that due to efficiencies from the use of more direct routes in the post-merger situation, costs would often fall as would prices (although the mergers would not always result in lower price-cost margins). As a more direct test, the authors also examine the price spreads for wheat in Houston and various locations in Kansas and find that the difference between the prices (which presumably represents the transportation cost component) fell after the mergers in 44 of 52 instances.¹⁴² Based on their work and some previous literature, the authors conclude that competitive

¹⁴⁰ Lys & Vincent, *An Analysis of Value Destruction in AT&T's Acquisition of NCR*, 39 JOURNAL OF FINANCIAL ECONOMICS 353 (1995).

¹⁴¹ Park, Babcock & Lemke, *The Impact of Railroad Mergers on Grain Transportation Markets: A Kansas Case Study*, 35 TRANSPORTATION RESEARCH 269 (1999).

¹⁴² The authors do not have access to negotiated prices, but rather use 1994 and 1998 data on list prices of wheat at various locations. They do not adjust for anything else that might have happened over the 1990s that would have led to price or cost changes even if the mergers had never occurred. Thus, the link between the price reductions and the mergers is tenuous.

¹⁴³ This conclusion seems quite inconsistent with reports of major service disruptions and train crashes that occurred following the UP/SP merger. Perhaps the disruptions occurred outside the market for wheat or were only short-run logistics problems that were eventually solved, but the reports indicate problems that lasted over at least two years. For critiques of the merger, see Machalaba, *Ties That Bind: After Crippling Chaos, Union Pacific Can See The Proverbial Light*, *Wall Street Journal*, August 25, 1999, A-1; Pittman, *Train Wreck: A Lesson on Megamergers* at www.antitrust.org, 8-4-99; Kwoka & White, *Manifest Destiny? The Union Pacific and Southern Pacific Railroad Merger*, pp. 64-88, esp. pp. 84-86 in (Kwoka & White eds.) *THE ANTITRUST REVOLUTION, ECONOMICS, COMPETITION, AND POLICY* 3rd ed. (1999); and three different customer-industry trade press reports of early 1998 problems in Conrath & Widnell, *Efficiency Claims in Merger Analysis: Hostility or Humility*, 7 GEORGE MASON LAW REV. 685 (1999).

Kaplan provides case studies of mergers in several additional industries.¹⁴⁴ Many of the studies contained in the volume are mentioned elsewhere in this paper because they deal with hospitals, airlines, or banking - industries with a tradition of merger studies. The conference volume, however, covers even more ground. The various authors look in depth at over 20 recent (1985 - 1995 vintage) mergers in hospitals in Massachusetts, tires, banks, oil field services, tile, airlines, and prescription drugs. The goal is to look closely at a few mergers in the hope that insights obtained will help explain results from the large sample work done on mergers and takeovers during the past 20 years.¹⁴⁵ As with older style case studies, the work is potentially subject to author bias, and many of the studies do little to compare the post-merger performance with a benchmark of control firms or with an econometric model that would allow one to predict what would have happened “but for” the merger. On the other hand, the authors appear to bring objective data to bear on the issues when possible, pulling together stock market data, accounting information, interviews with business decision-makers to construct a coherent story of what happened before and after the mergers. Their main concern is with determining whether the transactions worked for shareholders (were they profitable endeavors?) and why they did or did not work. Many of the case studies provide examples of long term industry responses to changing environments or 0.60 Td [(ol ind)isc,yrs 2uhe sdw -453r (nchmark ois po16 Tw 144.84g

¹⁴⁴ MERGERS AND PRODUCTIVITY, (Kaplan, ed.), National Bureau of Economic Research Conference Report, University of Chicago (2000). Many of these merger case studies were done with more objective data than were available to the authors of the previous generation of case studies.

¹⁴⁵ The authors call these case studies “clinical” studies and many of the authors previously produced the larger sample evidence on mergers.

¹⁴⁶ Cooper Industries had reportedly successfully undertaken several acquisitions and had effectively imposed its management practices on the acquired firms. When Cooper acquired Cameron Iron Works, however, the attempted “Cooperization” failed.

¹⁴⁷ For those interested in the antitrust implications of the deals, no one seemed to find a merger that raised prices to customers, although the cases were not selected to provide examples of that effect and the authors were not mainly interested in finding such effects. (One commentator saw the drug mergers as anticompetitive, but the authors did not).

¹⁴⁸ This debate and the pre-1982 evidence are reviewed in Pautler, *The Economic Basis for Broad Based Horizontal Merger Policy*, 28 ANTITRUST BULLETIN 571 (Fall 1983). For a more recent review, see Schmalensee, *Inter-Industry Studies of Structure and Performance*

¹⁴⁸(...continued)

some reputable economists arguing that the traditional SCP evidence based on accounting profits may be close to useless. See Bothwell, Cooley & Hall, *A New View of the Market Structure-Performance Debate*, 32 JOURNAL OF INDUSTRIAL

¹⁵³ The models allow for "fixed" effects from three different sources: the firm, the firm's market share in the industry, and the industry itself. That is, if a firm sold 25 different products in 25 different industries, one might ask whether the firm's profit in industry y was due to special characteristics of the firm itself, the firm's market share in industry y , or simply to the fact that it was in industry y .

¹⁵⁴ Froeb & Amel, *Do Firms Differ Much?*, 39 JOURNAL OF INDUSTRIAL ECONOMICS 23 (March 1991).

¹⁵⁵ There has been a relatively recent revival of price-cost margin studies on the macroeconomic front. Researchers interested in determining whether profit margins are pro-cyclical or counter-cyclical have undertaken studies to estimate price-cost margins across many industries. Those margins are not measured directly, but rather, are inferred from theoretical

¹⁵⁶(...continued)

studies to be subject to simultaneous equations bias similar to that plaguing profit/concentration studies. *See* Evans, Froeb & Werden *Endogeneity in the Concentration-Price Relationship: Causes, Consequences, and Cures*, 41 JOURNAL OF INDUSTRIAL ECONOMICS 431 (December 1993). For general arguments indicating that feedback should exist from the "toughness" of price competition to market structure, *see* SUTTON, SUNK COSTS AND MARKET STRUCTURE: PRICE COMPETITION, ADVERTISING, AND THE EVOLUTION OF CONCENTRATION (1991).

¹⁵⁷ WEISS, CONCENTRATION AND PRICES (1989).

¹⁵⁸ Brannman, Klein & Weiss, *The Price Effects of Increased Competition in Auction Markets*, 69 REVIEW OF ECONOMICS AND STATISTICS 24 (February 1987).

¹⁵⁹ Neumark & Sharpe, *Market Structure and the Nature of Price Rigidity: Evidence from the Market for Consumer Deposits*

¹⁶³(...continued)

and monotonic, however, but rather change over the range of concentration, sometimes in surprising ways.

¹⁶⁴ See Berger, Demsetz & Strahan, *The Consolidation of the Financial Services Industry: Causes, Consequences, and Implications for the Future*, 23 JOURNAL OF BANKING & FINANCE 135 (1999).

¹⁶⁵ See Borenstein, *supra* note 118.

¹⁶⁶ Morrison & Winston, *The Dynamics of Airline Pricing and Competition*, 80 AMERICAN ECONOMIC REVIEW 389 (May 1990).

¹⁶⁷ See Brueckner, Dyer & Spiller, *supra* note 119.

¹⁶⁸ Kim & Singal, *Mergers and Market Power: Evidence from the Airline Industry*, 83 AMERICAN ECONOMIC REVIEW 549 (June 1993).

¹⁶⁹ Singal, *Airline Mergers* 168

¹⁷³ CLYDE & REITZES, THE EFFECTIVENESS OF COLLUSION UNDER ANTITRUST IMMUNITY - THE CASE OF LINER SHIPPING CONFERENCES (Bureau of Economics, Federal Trade Commission, December 1995).

¹⁷⁴ Rosenbaum, *Efficiency v. Collusion: Evidence Cast in Cement*, 9 REVIEW OF INDUSTRIAL ORGANIZATION 379 (1994).

¹⁷⁵ These cement industry results seem very

bread by bakeries,¹⁸⁰ and Newmark finds that the relationship between price and concentration in cement may be due to an error in specifying transportation costs rather than to avoidable concentration.¹⁸¹ In addition, Anderson¹⁸² and Newmark¹⁸³ review the literature on the relationship between concentration and price in the grocery retailing industry. Neither author finds that the relationship has been convincingly demonstrated.¹⁸⁴

In a unique study of market structure and implied profit margins, Bresnahan and Reiss¹⁸⁵ examine the relationships between the numbers of firms, market size, and competition in five retail and professional industries that tend to be concentrated in localized markets. The data apply to isolated towns in the Western U.S. and the industries include doctors, dentists, druggists, tire dealers, and plumbers. They find that competitive conduct changes quickly and substantially when entry occurs, with the main effects occurring after the entry of the second or third firm. Further entry is less eventful, and three to five firms appears sufficient to reach an equilibrium. This result is generally consistent with that found in the experimental economics literature. The study is a very inventive use of cross-section data on market structures, population, and income in small markets to derive

¹⁷⁸(...continued)

Tremblay & Tremblay, *The Determinants of Horizontal Acquisitions: Evidence from the U.S. Brewing Industry*, 37 JOURNAL OF INDUSTRIAL ECONOMICS 21 (September 1988).

¹⁷⁹ Dunne & Roberts, *Costs, Demand, and Imperfect Competition as Determinants of Plant-Level Output Prices*, (Audresch & Siegfried eds.) EMPIRICAL STUDIES IN INDUSTRIAL ORGANIZATION: ESSAYS IN HONOR OF LEONARD W. WEISS 13-33 (1992).

¹⁸⁰ Dunne and Roberts do find a close relationship between prices and average costs, leading them to conclude that the market is competitive and that profits have not simply been eroded by entry as might occur in a model of monopolistic competition. They suggest that markets for bakery bread are so easy to enter that the number of rivals is never likely to matter.

¹⁸¹ Newmark, *Price and Seller Concentration in Cement: Effective Oligopoly or Misspecified Transportation Costs?* 60 ECONOMIC LETTERS 243 (1998).

¹⁸² ANDERSON, *A REVIEW OF STRUCTURE PERFORMANCE STUDIES IN GROCERY RETAILING* (Bureau of Economics, Federal Trade Commission, 1990).

¹⁸³ Newmark, *A New Bottle for the Profits-Concentration Wine: A Look at Prices and Concentration in Grocery Retailing* (Raleigh, North Carolina: North Carolina State, September 1989).

¹⁸⁴ Cotterill, *A Response to the Federal Trade Commission/Anderson Critique of Structure-Performance Studies in Grocery Retailing* in (Cotterill, ed.) *COMPETITIVE STRATEGY IN THE FOOD SYSTEM* (Westview Press, 1993) provides a response to Anderson's review. Also see, Marion, *Competition in Grocery Retailing: The Impact of a New Strategic Group on BLS Price Increases*, 13 REVIEW OF INDUSTRIAL ORGANIZATION 381 (1998), who finds a positive correlation between changes in price and changes in concentration using 1977 to 1992 data for 25 cities after adjusting for cost changes and service quality. Similarly, in a later study Cotterill finds a positive correlation between price and concentration in 34 Southwestern cities in 1982. See Cotterill, *Market Power and the Demsetz Quality Critique: An Evaluation for Food Retailing*, 15 AGRIBUSINESS 101 (1999).

¹⁸⁵ Bresnahan & Reiss, *Entry and Competition in Concentrated Markets*, 99 JOURNAL OF POLITICAL ECONOMY 977 (1991).

¹⁸⁶ Bresnahan and Reiss would ideally like to examine the decline in accurately calculated price/cost margins as entry occurs in well-defined markets. Because they do not have such time series data (and are not sure it could be calculated), they combine cross-section data on numbers of firms, and potential demand (based on population and area demographics) with inventive use of theory to derive implications about price/cost margins and entry patterns.

¹⁸⁷ MUELLER, THE DETERMINANTS OF PERSISTENT PROFITS (Bureau of Economics, Federal Trade Commission, 1983).

¹⁸⁸ MUELLER, PROFITS IN THE LONG RUN (Cambridge: Cambridge University Press, 1986).

¹⁸⁹ Pakes, *Mueller's Profits in the Long Run*, 18 RAND JOURNAL OF ECONOMICS 319 (Summer 1987). Mueller's work was done with the FTC's 1950 and 1972 Corporate Patterns data. A firm's market share was an amalgam of several lines of business and the models used did not control for many factors that might affect profits or market shares over time. Mueller did, however, use control groups to attempt to account for such changes.

¹⁹⁰ McGahan & Porter, *The Persistence of Shocks to Profitability*, 81 REVIEW OF ECONOMICS AND STATISTICS 143 (February 1999).

¹⁹¹ CAVES & BARTON, EFFICIENCY IN U.S. MANUFACTURING INDUSTRIES (1990).

¹⁹² CAVES *et al.*, INDUSTRIAL EFFICIENCY IN SIX NATIONS (1992).

¹⁹³ Although market concentration appears to be important across the six nations as a group, Caves & Barton, *supra* note

¹⁹⁶ This banking evidence may not be very good indirect evidence of the effects of mergers because during the period when banking mergers were common, local market concentration tended to fall. This occurred because many mergers were not horizontal in nature, but rather were market extension mergers.

¹⁹⁷ Fernandez & Marin, *Market Power and Multimarket Contact: Some Evidence from the Spanish Hotel Industry*, 46 JOURNAL OF INDUSTRIAL ECONOMICS 301 (March 1998).

¹⁹⁸ Evans & Kessides, *Living by the Golden Rule: Multimarket Contact in the U.S. Airline Industry* 109 QUARTERLY JOURNAL OF ECONOMICS 341 (1994); Jans & Rosenbaum, *Multimarket Contact and Pricing: Evidence from the U.S. Cement Industry*

¹⁹⁹ For broader reviews, *see* Plott, *An Updated Review of Industrial Organization: Applications of Experimental*

"signals" are sent between rival firms strictly through their pricing moves.²⁰⁴

This result leads us to one other general finding in experimental markets: the amount and timing of information seems to matter. Different types of signals can lead to differing outcomes and the outcomes are fairly sensitive to minor alterations in the design of the experiment. For example, Binger, *et al.*²⁰⁵ find that explicit discussions among competitors about price facilitates collusion in some types of laboratory markets, while Holt and Davis suggest that nonbinding trade-press announcements of expected prices do not tend to lead to price increases.²⁰⁶ The only conclusion coming from this line of research is that complete information tends to lead to collusive outcomes while incomplete information leads more readily to competitive (or noncooperative) outcomes.²⁰⁷ If these common results could be extended to naturally occurring markets, one would be most concerned about monopoly outcomes in posted-price markets, where the number of sellers was small and the information among the sellers was perfect. In other markets, one would tend to be less concerned about extreme monopoly outcomes.

One final piece of relevant experimental literature directly examines mergers. Wellford²⁰⁸ examined the effects of horizontal mergers in both concentrated and unconcentrated markets. The author examined markets with eleven firms in which the post-merger Herfindahl-Hirschman Index was 1150 and markets with five firms in which the post-merger HHI was 2800. The experiment allowed for scale economies in some markets and not in others, so the merger could lead to cost reductions in the scale economies treatment.²⁰⁹ The author found no significant evidence of price increasing effects from the merger even in the concentrated markets where no cost savings resulted from the merger. The results also indicated that in both market structures any cost savings arising from mergers are

²⁰⁴ The impact of increased concentration on market performance is not as significant as the effect from increased market power (i.e., market dominance). At this point, it is unclear whether Davis & Holt's, *supra* note 208, result is due to the market power of one firm or whether it is due to the fact that no excess capacity exists at the equilibrium in their experiment. Various experimental outcomes appear to be sensitive to the existence of (or lack of) excess capacity in the experimental market equilibrium.

²⁰⁵ Binger, Hoffman, Libecap & Shachat, *An Experimental Study of the Cournot Model*, (University of Arizona, Working Paper 92-13, 1992).

²⁰⁶ Holt & Davis, *The Effects of Non-Binding Price Announcements on Posted-Offer Markets*, 34 *ECONOMIC LETTERS* 307-310 (1990).

²⁰⁷ Complete information in the laboratory generally refers to having information on the incentives of the buyers and sellers (their payout functions) and information about the previous decisions of both the buyers and sellers.

²⁰⁸ Wellford, *Horizontal Mergers: Concentration and Performance*, TAKEOVERS AND HORIZONTAL MERGERS: POLICY AND PERFORMANCE (Ph. D. Dissertation, University of Arizona, 1990). Also *see* Wellford, *Antitrust: Results from the Laboratory*, in Special Volume on MARKET POWER IN THE LABORATORY, RESEARCH IN EXPERIMENTAL ECONOMICS Vol. 9, (Isaac & Holt eds.) (forthcoming, 2001).

²⁰⁹ The experimental design begins with Cournot quantity choice markets with homogeneous products where entry and antitrust enforcement are absent. The results imply that four firms is enough to reach a competitive outcome even without the threat of entry or antitrust to discipline the market.

passed on to consumers. Thus, these experiments imply that efficiencies would tend to dominate any potential anticompetitive effects of increased concentration.

Although the economic laboratory cannot replicate the broad range of factors that exist in the business world, it does provide an innovative setting in which to examine antitrust issues. As the evidence continues to accumulate, it will help build a rigorous empirical foundation for our understanding of markets that can then be applied to the study of naturally occurring markets and perhaps to merger policy.

IX. CONCLUSION

The empirical literature in economics provides a variety of approaches to the study of mergers and acquisitions. The direct approaches include: (1) studies that use stock market data to determine the effects of an acquisition event on the merging firms and their rivals with an eye toward ultimately determining the welfare effects of the transaction (such studies may involve individual transactions or combine the analysis of many deals across industries); (2) large, multi-industry studies that review the accounting/finance performance measures of firms before and after the mergers adjusting for industry-wide or economy-wide effects; (3) studies of one or several mergers using a mixture of stock market returns, executive interviews, financial ratios, and pre-merger and post-merger accounting analysis to determine the effects of the mergers (particularly on shareholders); (4) studies of one or several mergers in a particular industry using econometric techniques to identify the changes in market price, output, and product quality that occurred as a result of the merger; and (5) studies of the effects of leveraged buy-outs on labor, investment, and other factors of interest.

Stock market studies consistently show significant gains to target firm shareholders and little or no gain to acquiring firm shareholders around the time that the mergers and acquisitions occur. The net effect on shareholder value appears to be positive, but small; being somewhat larger for hostile mergers financed with cash than for friendly mergers financed with stock.

Event studies using stock market data to focus on the market power aspects of mergers typically show gains to the shareholders of rival firms when mergers are announced, but no significant losses to the same shareholders when these mergers are challenged. In the mid-1980s, many economists interpreted this pattern of returns as evidence of the efficiency of the challenged mergers. More recent research, however, has provided alternative explanations for that pattern of returns, implying that the earlier interpretations may have been premature.

Large scale studies of mergers based on pre-merger and post-merger accounting/finance measures have not provided clear answers to questions about the efficiency and market power effects of mergers and acquisitions. The large scale multi-industry studies tend to show that many mergers

grocery retailing, that did not alter the structure of the local markets, still lead to higher prices.²¹¹ Other work on bank mergers has found effects of the firm buying other banks even where the structure of the banking market did not change. Similar results

²¹¹ LBO activity by the Haft family in certain grocery markets may have caused competition to become “softer” after the LBO occurred. See Chevalier, *Capital Structure and Product-Market Competition: Empirical Evidence from the Supermarket Industry*, AMERICAN ECONOMIC REVIEW 415 (June 1995).

²¹² Merger activity may have been greater in the period around 1900, when industrial consolidation occurred without the current constraints imposed by federal and state governments.

²¹³ Andrade & Stafford, Investigating the Economic Role of Mergers (mimeo, Harvard Business School, 1999) note that the industries in which mergers occurred over the past twenty five years changed markedly from period to period. Mergers in the 1970s and 1980s were associated with excess capacity in an industry, whereas this relationship reversed in the 1990s when mergers tended to occur more often in industries where demand was growing quickly. Jovanovic & Rousseau, Mergers and Technological Change: 1885-1998 (mimeo, University of Chicago, 2001), focus on technology shifts as the key factor causing merger activity to change across firms and industries.

²¹⁴ This Table is an updated version of Table 5 found in Eckard, *The Impact of the 1980's Merger Movement on U.S. Industrial*

key threshold was raised to \$50 million and indexed to inflation. Table 5 lists certain annual data on merger activity and merger enforcement actions and the monthly merger counts collected under this program are depicted in Figure 3.

The monthly data in Figure 3 reveal the previously mentioned waves and obvious local spikes in monthly transactions in November 1986 (494 transactions) and November 1989 (371 transactions). The November 1986 peak can most readily be explained by the passage of the 1986 Tax Act that repealed the "General Utilities" doctrine. This action returned firms to the pre-1935 regime in which shareholders were taxed twice on certain distributions from firms. Many deals may have been "hurried-up" to avoid the larger tax bite that would occur after 1986.²¹⁵

The other obvious local merger peak in November 1989 (and the subsequent decline in transactions for two years after the peak) is harder to explain. The decline may have been occasioned by a change in administrations, by the demise of "junk bond" and bank financing,²¹⁶ by alterations in the tax laws that further limited the interest deductibility of mergers, by a general decline in economic activity,²¹⁷ or by the end of a cycle driven by technology or cost and demand shocks.

As with the MergerStat data presented in Table 1, the HSR data show a marked growth in merger activity over the period, but not all of the increase is real. Because firms were required to file merger plans based on nominal value thresholds that were not adjusted for inflation, the merger series had an artificial and growing upward bias over time. While this inflation bias cannot account for all of the general upward drift in merger activity, it does account for a nontrivial part of it.²¹⁸ This characteristic is not, however, unique to the HSR merger counts - MergerStat also uses a fixed dollar

²¹⁵ For a discussion of the possible effects of the 1986 Tax Act, see Wood, *General Utilities Repeal: Injecting New Levies into M&A*, MERGERS AND ACQUISITIONS 44 (January/February 1987); Gleckman & Weiss, *How Tax Reform Will Cool Takeover Fever*, *Business Week*, September 22, 1986; Moore & Silvia, *The ABCs of the Capital Gains Tax*, 242 CATO POLICY ANALYSIS 19 (October 1995); and Auerbach & Slemrod, *The Economic Effects of the Tax Reform Act of 1986*, 35 JOURNAL OF ECONOMIC LITERATURE (June 1997) at p. 613.

²¹⁶ The demise of the junk bond market is recounted in Guillemain, *1989: A Turning Point in the Acquisitions Financing Market*, THE MERGER YEARBOOK (1990). The failure of two well-publicized leveraged buyouts involving Federated Department Stores and United Airlines occurred around this time.

²¹⁷ The recession, often associated with the Kuwait/Iraq Persian Gulf War, is dated from July 1990 to March 1991 (*Economic Report of the President*, February 1999, pp. 21, 258). Depending upon any lag in mergers, this recession may have occurred too late to be a plausible rationale for at least the first year of the merger decline. However, Auerbach & Slemrod, *The Economic Effects of the Tax Reform Act of 1986*, JOURNAL OF ECONOMIC LITERATURE (June 1997) at p. 613, speculate that macroeconomic conditions may have been the driving force behind mergers in the late 1980s because merger activity fell so suddenly in 1990 when macroeconomic conditions deteriorated.

²¹⁸ For example, a \$15 million transaction in 1978 would correspond to a \$38.3 million deal in 1999 based on the overall change in the Consumer Price Index. It appears that about 30 to 35 percent of HSR merger filings fell in the \$15 million to \$38 million range in recent years. Thus, the number of mergers recorded in 2000 is overstated by about 30 to 35 percent compared to the number that would have been recorded if 1978 real dollar thresholds had been used (the dollar value of reported mergers is also overstated but to a lesser extent because the "inappropriately" counted mergers are all relatively small in dollar value.)

threshold (\$1 million) for inclusion in its merger counts.

The data in Table 5 also indicate that in the early years of the HSR program (1981-82), the antitrust agencies would receive 1000 to 1500 filings annually and firms did not tend to uniformly request early termination of the HSR waiting period. Beginning in 1983, however, requests for early termination rose markedly and the Agencies began to routinely grant those requests for over three-fourths of reported mergers.

As noted in Table 5 and in Figures 4 and 5, the percentage of mergers that have been subject to intensive scrutiny (i.e., second requests for information) under the HSR reporting system has declined over the past twenty years. In the early years, second requests were issued by the two antitrust agencies in 9 percent of transactions; but this percentage quickly fell to the 3 to 4 percent range in the 1980s and fell further to the 2 to 3 percent range of transactions in recent years. The percentages of deals that were subjected to second requests does not, however, tell much of the story of anti-merger enforcement. The basic standard used for deciding which mergers to review will affect the transactions that firms attempt, and this will, in turn, affect the deals that the Agencies must review. The types of cases that arrived on the Agencies' doorstep differed a good bit across the years. In the early 1980s, the agencies were just beginning to allow certain horizontal mergers involving relatively small market shares (by today's standards) that had been largely verboten for the prior 30 years. But by the 1990s, more substantial horizontal and network-related mergers were forthcoming. The change in the types of mergers seen by the antitrust agencies was likely due to many factors, including changes in technologies, changes in regulation of industries, and a slow evolution of generalized merger review standards.

Table 1

Number of Mergers, Divestitures and Disclosed Value (1968-2000)

<i>Year</i>	<i>Net merger and acquisitions announcements</i>	<i>Number of transactions with purchase price disclosed</i>	<i>Total Divestitures</i>	<i>Divestitures as % of Total</i>	<i>Total dollar value paid (\$ billions)</i>	<i>Constant dollar value * (\$ billions)</i>
1968	4462	1514	557	12.5	43.60	119.1
1969	6107	2300	801	13.1	23.70	62.4
1970	5152	1671	1401	27.2	16.40	41.7
1971	4608	1707	1920	41.7	12.60	31.1
1972	4801	1930	1770	36.9	16.70	40.0
1973	4040	1574	1557	38.5		

Figure 1- Merger and Acquisition Activity (1968-2000)

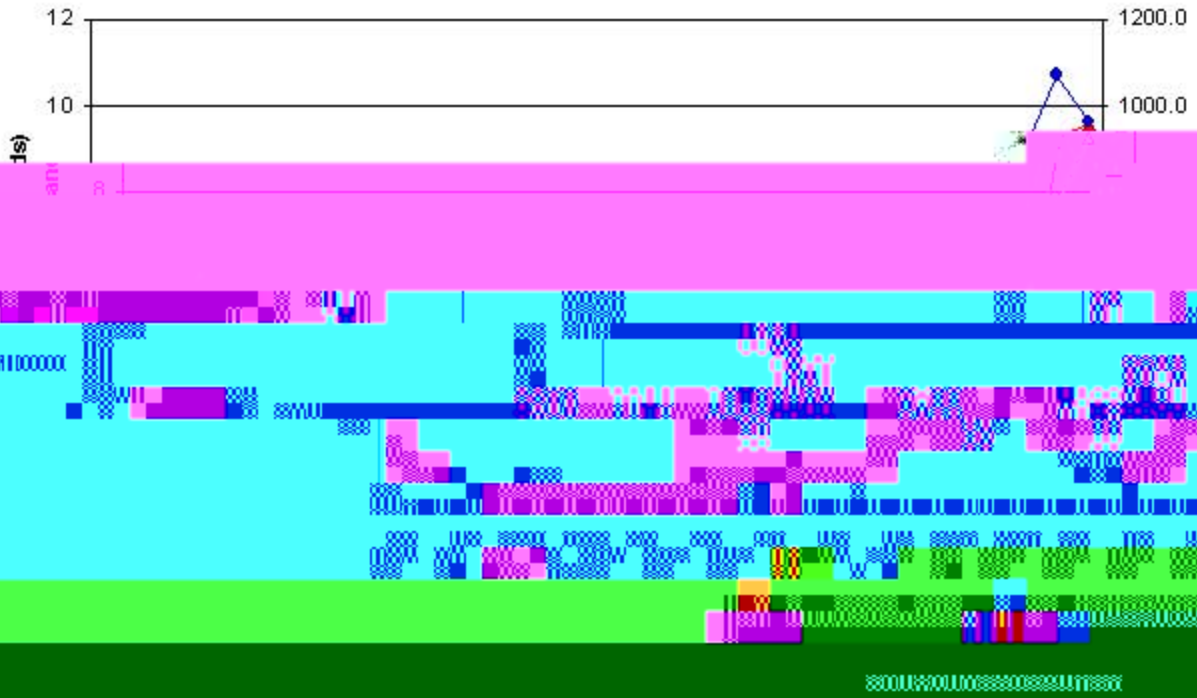


Figure 2 - Merger and Acquisition Dollar Value as a Percentage of GDP (1968-2000)



Table 2
 Mergerstat Review Full Year Merger Industry Analysis (1999-2000)

Industry Sector	Number of Transaction		Total dollar value paid* (millions of dollars)				Average ³ Premium paid over market*			
	1999	2000	1999	(base) ^f	2000	(base) ^f	1999	(base) ^g	2000	(base) ^g
Agricultural production	29	28	16,301.3	(10)	4,843.9	(7)	43.8	(2)	45.1	(2)
Manufacturing ⁴	2,444	2,443	405,041.0	(1,039)	491,294.9	(1,148)	43.2	(232)	49.2	(209)
Natural resources	96	113	40,778.1	(60)	68,057.3	(74)	36.9	(17)	34.3	(20)
Transportation	119	90	15,232.2	(51)	8,583.0	(35)	30.8	(11)	64.3	(8)
Communication & broadcasting	652	652	476,584.3	(271)	128,284.9	(305)	44.0	(32)	81.5	(17)
Utilities	218	154	86,385.7	(117)	53,980.7	(96)	36.0	(39)	45.1	(17)
Wholesale & distribu2)										

Table 3
 Merger Activity, Selected Industries (2000)

	<i>Number</i>	<i>Value</i>	<i>Percent</i>	<i>Percent of</i>
	<i>No.</i>	<i>(\$billion)</i>	<i>Percent of total</i>	<i>total value</i>
			<i>number</i>	
Computer Software, Supplies & Services	2531	144.6	26.5	10.9
Leisure Equipment	276	119.0	2.9	9.0
Banking & Finance	309	118.3	3.2	8.9
Electronics	233	99.0	2.4	7.5
Communications	467	85.1	4.9	6.4
Brokerage, Investment & Management Consulting	522	82.1	5.5	6.2
Food Processing	113	80.7	1.2	6.1
Oil & Gas	92	67.2	1.0	5.1
Electric, Gas, Water & Sanitary Services	154	54.0	1.6	4.1
Electrical Equipment	295	53.9	3.1	4.1
Aerospace, Aircraft & Defense	36	50.3	0.4	3.8
Broadcasting	185	43.1	1.9	3.3
Drugs, Medical Supplies & Equipment	227	31.1	2.4	2.3
Insurance	233	29.8	2.4	2.2
Paper & packaging	41	27.5	0.4	2.1
Printing & Publishing	235	25.7	2.5	1.9
Office Equipment	102	21.6	1.1	1.6
Instruments & Photographic Equipment	157	16.9	1.6	1.3
Wholesale & Distribution	363	14.8	3.8	1.1
Total, selected industries	6571	892.7	68.7	67.3
Total	9566	1325.7	100.0	100.0

SOURCE: Mergerstat® Review 2001, p. 72.

Table 4

Aggregate Concentration Trends: Percentage Share of Manufacturing Assets by the Top 100 and 200 Manufacturing Firms for Manufacturing Corporations (1974-1998)

	Asset Size Group	
	Top 100	Top 200
1974	44.4	56.7
1975	45.0	57.5
1976	45.5	58.0
1977	45.9	58.5
1978	45.5	58.3
1979	46.1	59.0
1980	46.8	59.9
1981	46.8	60.0
1982	47.7	60.9
1984	48.9	60.7
1985	49.1	61.0
1986	49.4	61.1
1987	50.0	61.8
1988	49.0	61.1
1989	49.4	61.6
1990	49.8	61.8
1991	49.5	61.6
1992	49.3	61.4
1993	49.1	61.0
1994	48.0	60.1
1995	47.1	59.3
1996	47.1	59.1
1997	47.3	59.0
1998	46.6	58.6

SOURCE: Calculated by Quarterly Financial Report, Bureau of Census, Department of Commerce for Bureau of Economics, Federal Trade Commission. Figures are for the fourth quarter of each year. Values for fourth quarter 1983 will not be calculated due to changes in the QFR administrative procedures.

Table 4A

Aggregate Concentration Trends: Percentage Share of Manufacturing Value Added by the Top 50, 100, 150, and 200 Manufacturing Firms (1977-1992)

	1977	1982	1987	1992
Top 50	24.4	23.9	24.9	23.7
Top 100	33.4	32.8	33.4	32.2
Top 150	39.5	38.7	39.0	37.7
Top 200	43.8	43.2	43.2	41.7

SOURCE: U.S. CENSUS OF MANUFACTURES, CONCENTRATION RATIOS IN MANUFACTURING Subject Series MC87-5-6, at table 2 (1992). 1992 data from MC92-S-2 at <http://www.census.gov/epcd/www/concentration.html>.

Table 5

Hart-Scott-Rodino Summary of Transactions, Fiscal Year (Oct.-Sept.), 1979-2000

Year	Transaction s Reported	Dollar Value (\$ billions)	Adjusted transactions in which a second request could have been issued ¹	Investigations in which second requests were issued	FTC ² second requests
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Figure 3 - Number of Mergers Reported to Government by Month (1978-2000)

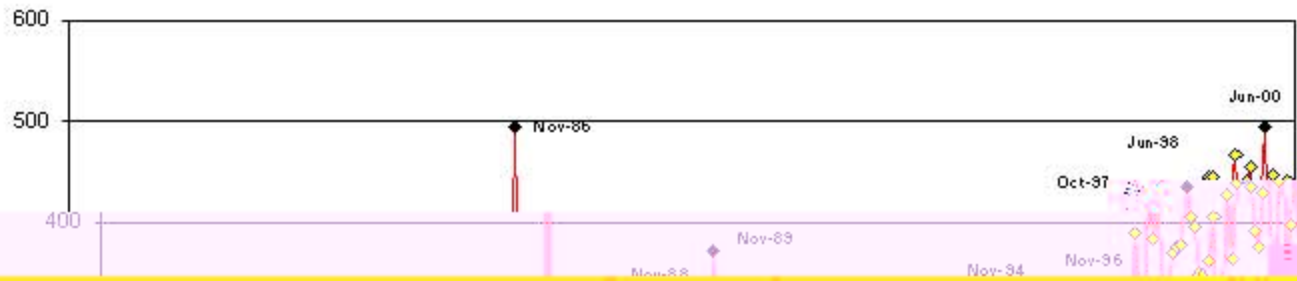


Figure 4 - Number of FTC and DOJ Second Request Investigations under Hart-Scott-Rodino (FY 1979-2000)

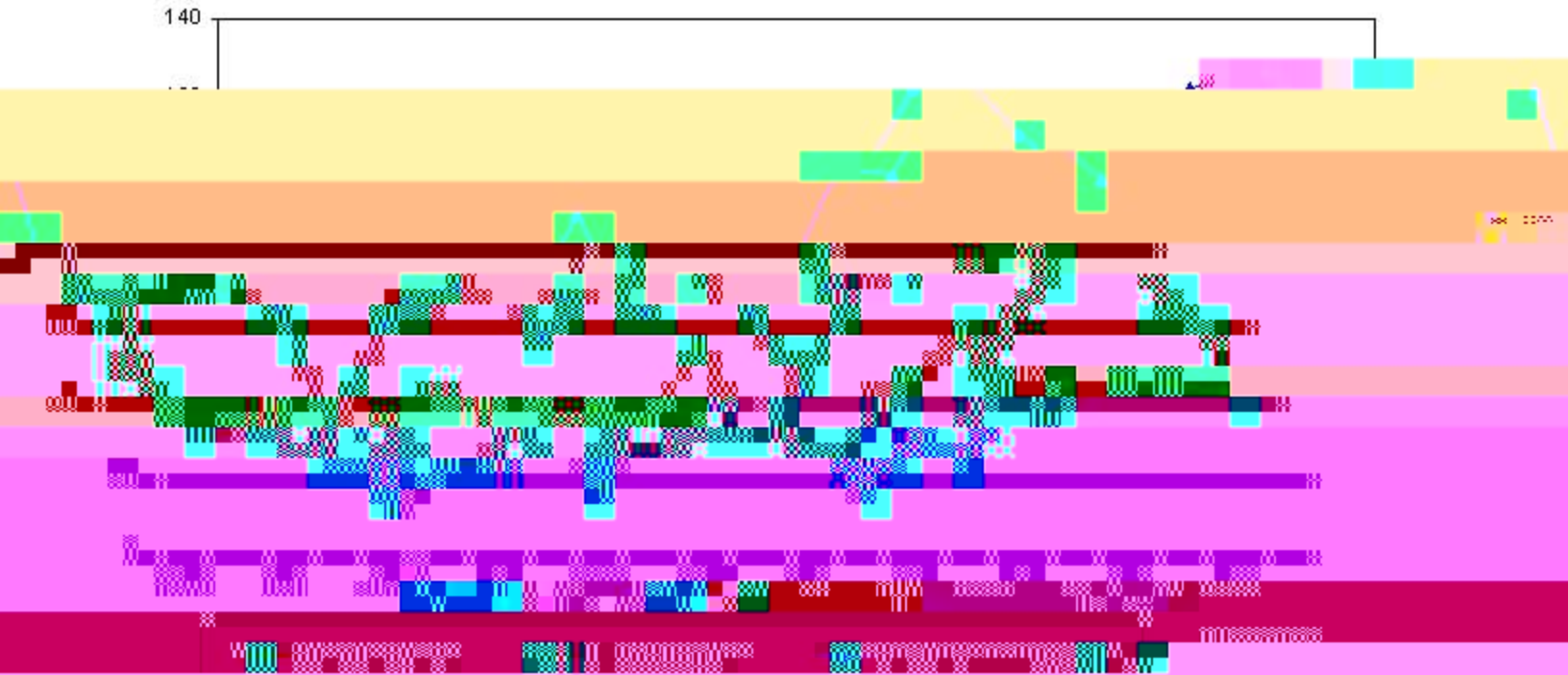
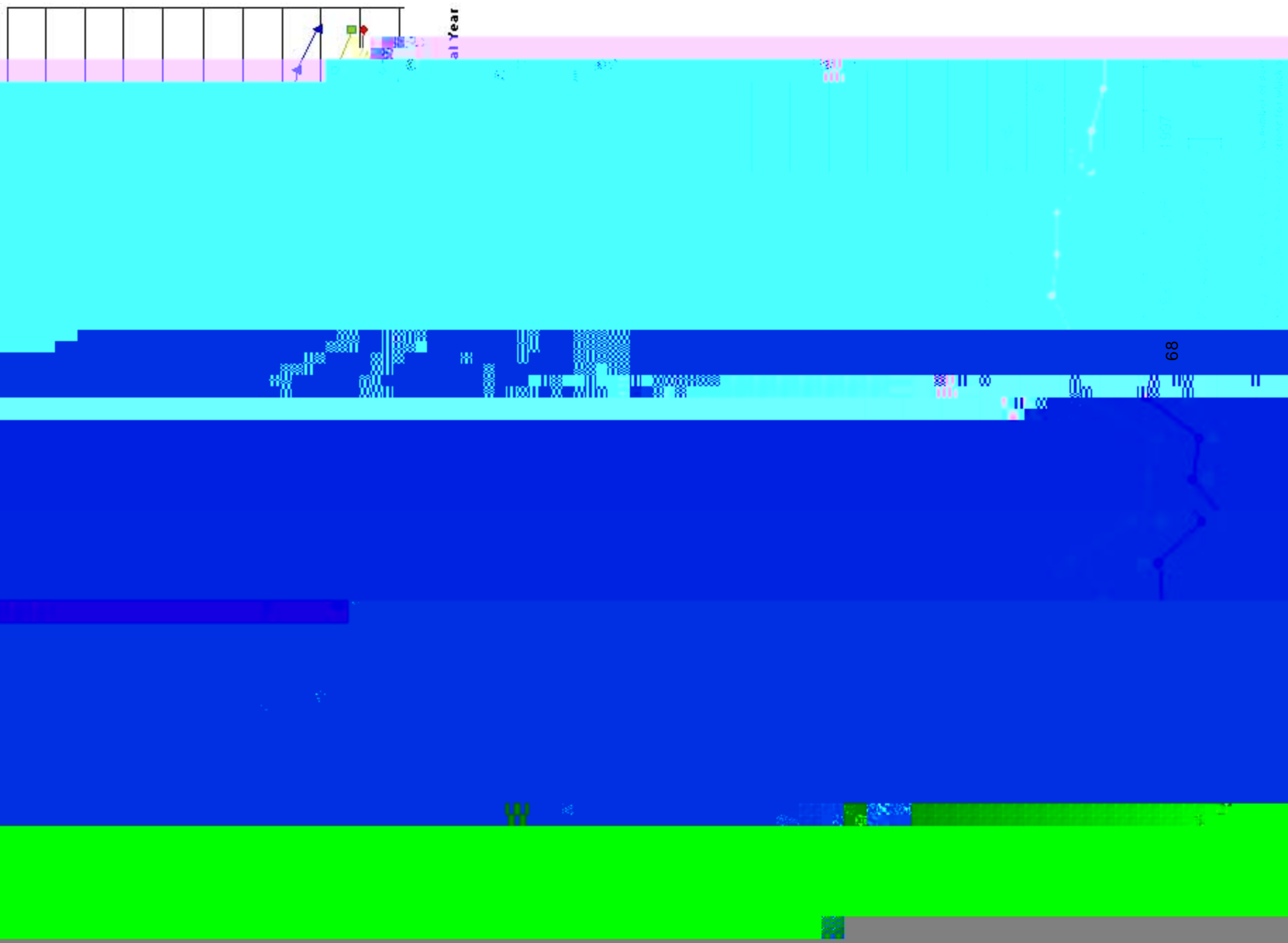


Figure 5 - Percentage of Mergers that Receive a Second Request for Information (FY 1981-2000)



BIBLIOGRAPHY

- Akhavein, Jalal D., Allen N. Berger, and David B. Humphrey, "The Effects of Megamergers on Efficiency and Prices: Evidence from a Bank Profit Function," Review of Industrial Organization 12 (February 1997), 95-139.
- Anderson, Keith B. A Review of Structure Performance Studies in Grocery Retailing, Washington, D.C.: Bureau of Economics, Federal Trade Commission (1990).
- Andrade, Gregor, Mark Mitchell, and Erik Stafford, "New Evidence and Perspectives on Mergers," Journal of Economic Perspectives 15:2 (Spring 2001), 103-120.
- Andrade, Gregor and Erik Stafford, "Investigating the Economic Role of Mergers," Harvard Business School, Mimeo, (August 1999).
- Armentano, Dominick, Antitrust and Monopoly: Anatomy of a Policy Failure 2nd ed. New York: John Wiley & Sons (1990).
- Asplund, Marcus and Rickard Sandin, "Competition in Interrelated Markets: An Empirical Study," International Journal of Industrial Organization 17 (1999), 353-69.
- Auerbach, Alan J. and David Reishus, "Taxes and the Merger Decision," in Coffee, J. and Louis Lowenstein eds., Takeovers and Contests for Corporate Control, Oxford: Oxford University Press (1987).
- Auerbach, Alan and Joel Slemrod, "The Economic Effects of the Tax Reform Act of 1986," Journal of Economic Literature 35 (June 1997), 589-632, 613.
- Avery, Christopher, Judith A. Chevalier, and Scott Schaefer, "Why Do Managers Undertake Acquisitions? An Analysis of Internal and External Rewards for Acquisitiveness," Journal of Law Economics & Organization (April 1998), 24-43.
- Banerjee, Ajeyo, and E. Woodrow Eckard, "Are Mega-Mergers Anticompetitive? Evidence From the First Great Merger Wave," RAND Journal of Economics 29:4 (Winter 1998), 803-827.
- Barber, Brad M., Donald Palmer, and James Wallace, "Determinants of Conglomerate and Predatory Acquisitions : Evidence from the 1960s," Journal of Corporate Finance 1:3 (April 1995), 283-318.
- Barro, Jason R. and David M. Cutler, "Consolidation in the Medical Marketplace in Massachusetts," in S. Kaplan ed., Mergers and Productivity, National Bureau of Economic Research Conference, University of Chicago (2000) 9-50.

Barton, David M. and Roger Sherman, "The Price and Profit Effects of Horizontal Merger: A Case Study,"

- Bogue, Richard J., Stephen M. Shortell, Min-Woong Sohn, Larry Manheim, Gloria Bazzoli, and Cheeling Chan, "Hospital Reorganization After Merger," Medical Care 33:7 (1995), 676-686.
- Boudreaux, Donald J. and Burton W. Folsom, "MicroSoft and Standard Oil: Radical Lessons for Antitrust Reform," Antitrust Bulletin (Fall 1999), 555-576.
- Bradley, Michael, Anand Desai, and E. Han Kim, "The Rationale Behind Interfirm Tender Offers: Information or Synergy?" Journal of Financial Economics 11 (April 1983), 183-206.
- Bradley, Michael, Anand Desai, and E. Han Kim, "Determinants of the Wealth Effects of Corporate Acquisitions," Working Paper, Ann Arbor: University of Michigan (1984).
- Brannman, Lance, Douglas Klein, and Leonard Weiss, "The Price Effects of Increased Competition in Auction Markets," Review of Economics and Statistics 69:1 (February 1987), 24-32.
- Breen, Denis A. The Potential for Tax Gain as a Merger Motive: A Survey of Current Knowledge and Research Opportunities, Washington, D.C.: Bureau of Economics, Federal Trade Commission (1987).
- Bresnahan, Timothy F. and Peter C. Reiss, "Entry and Competition in Concentrated Markets," Journal of Political Economy 99:5 (1991), 977-1009.
- Brooks, John M., Avi Dor, and Herbert S. Wong, "Hospital-Insurer Bargaining: An Empirical Investigation of Appendectomy Pricing," Journal of Health Economics 16 (1997), 417-434.
- Brozen, Yale, Concentration, Mergers, and Public Policy, New York: Macmillan (1982).
- Bueckner, Jan K., Nichola J. Dyer, and Pablo T. Spiller, "Fare Determination in Airline Hub-and-Spoke Networks," RAND Journal of Economics 23:3 (1992), 309-333.
- Calomiris, Charles W. "Gauging the Efficiency of Bank Consolidation During A Merger Wave," Journal of Banking & Finance 23 (1999), 615-621.
- Calomiris, Charles W. and Jason Karceski, "Is the Bank Merger Wave of the 1990s Efficient?" in Steven N. Kaplan ed., Mergers and Productivity, National Bureau of Economic Research, Chicago (2000), 93-161.
- Caves, Richard E. and David R. Barton, Efficiency in U.S. Manufacturing Industries, Cambridge, MA: MIT Press (1990).
- Caves, Richard E. et al. Industrial Efficiency in Six Nations, Cambridge, MA: MIT Press (1992).
- Chandler, Alfred D. Jr. "The Competitive Performance of U.S. Industrial Enterprises Since the Second World War," Business History Review 68 (Spring 1994), 1-72.

- Chevalier, Judith A. "Capital Structure and Product-Market Competition: Empirical Evidence from the Supermarket Industry," American Economic Review (June 1995), 415-435.
- Clyde Paul S. and James D. Reitzes, . The Effectiveness of Collusion under Antitrust Immunity - The Case of Liner Shipping Conferences, Washington, D.C.: Bureau of Economics, Federal Trade Commission (December 1995).
- Connor, Robert A., Roger D. Feldman and Bryan E. Dowd, "The Effects of Market Concentration and Horizontal Mergers on Hospital Costs and Prices," International Journal of the Economics of Business 5:2 (1998) 159-180.
- Connor, Robert A., Roger D. Feldman, Bryan E. Dowd, and Tiffany A. Radcliff, "Which Types of Hospital Mergers Save Consumers Money?" Health Affairs 16:6 (December 1997), 62-74.
- Conrath, Craig. W. and Nicholas A. Widnell, "Efficiency Claims in Merger Analysis: Hostility or Humility," George Mason Law Review 7:3 (1999), 685-705.
- Cornett, Marcia M. and Hassan Tehranian, "Changes in Corporate Performance Associated with Bank Acquisitions,"

- Dranove, David and Richard Ludwick, "Competition and Pricing by Nonprofit Hospitals: A Reassessment of Lynk's Analysis," Journal of Health Economics 18 (January 1999), 87-98.
- Dufwenberg, Martin, and Uri Gneezy, "Price Competition and Market Concentration: An Experimental Study," Journal of Industrial Organization 18 (2000), 7-22.
- Dunne, Timothy and Mark J. Roberts, "Costs, Demand, and Imperfect Competition as Determinants of Plant-Level Output Prices," in D. Audretsch and J. Siegfried eds., Empirical Studies in Industrial Organization: Essays in Honor of Leonard W. Weiss, Norwell, MA: Kluwer Academic Publishers (1992), 13-33.
- Eckard, E. Woodrow, "The Impact of the 1980's Merger Movement on U.S. Industrial Concentration," Antitrust Bulletin 40:2 (Summer 1995), 397-421.
- Eckbo, B. Espen, "Horizontal Mergers, Collusion, and Stockholder Wealth," Journal of Financial Economics 11 (1983), 241-274.
- Eckbo, B. Espen, "Mergers and the Market Concentration Doctrine: Evidence from the Capital Market," Journal of Business 58:3 (July 1985), 325-349.
- Eckbo, B. Espen, "Mergers and the Value of Antitrust Deterrence," Journal of Finance 47:3 (July 1992), 1005-1029.
- Eckbo, B. Espen and Peggy Wier, "Antimerger Policy Under the Hart-Scott-Rodino Act: A Reexamination of the Market Power Hypothesis," Journal of Law and Economics 28:1 (1985), 119-149.
- Eisenstadt, David & M. Klass, "The Relationship Between Non-Profit Hospital Market Structure and Economic Performance: Evidence from Pennsylvania and from Non-Profit Hospital Consolidations," unpublished mimeograph, ICF Consulting Associates (1988), 10-20.
- Evans, William N., Luke M. Froeb, and Gregory J. Werden, "Endogeneity in the Concentration-Price Relationship: Causes, Consequences, and Cures," Journal of Industrial Economics 41:4 (December 1993), 431-438.
- Evans, William, N. and Ioannis N. Kessides, "Localized Market Power in the U.S. Airline Industry," Review of Economics and Statistics 75:1 (February 1993), 66-75.
- Evans, William, N. and Ioannis N. Kessides, "Living by the Golden Rule: Multimarket Contact in the U.S. Airline Industry," Quarterly Journal of Economics 109 (1994), 341-366.
- Farrell, Joseph and Carl Shapiro, "Scale Economies and Synergies in Horizontal Merger Analysis," Antitrust Law Journal 68 (2001), 685-710.

- Fernandez, Nerea and Pedro L. Marin, "Market Power and Multimarket Contact: Some Evidence from the Spanish Hotel Industry," Journal of Industrial Economics 46 (March 1998), 301-315.
- Fisher, Alan A. and Robert H. Lande, "Efficiency Considerations in Merger Enforcement." California Law Review 71:6 (December 1983), 1580-1696.
- Fisher, Franklin M. "On the Misuse of the Profits-Sales Ratio to Infer Monopoly Power," RAND Journal of Economics 18:3 (Autumn 1987), 384-96.
- Fisher, Franklin M. and John J. McGowan, "On the Misuse of Accounting Rates of Return to Infer Monopoly Profits," American Economic Review 73:1 (March 1983), 82-97.
- Froeb, Luke and Dean Amel, "Do Firms Differ Much?" Journal of Industrial Economics 39 (March 1991), 23-31.
- Gaynor, Martin and Deborah Haas-Wilson, "Change, Consolidation and Competition in Health Care Markets," Journal of Economic Perspectives 13:1 (Winter 1999), 141-164.
- Ghosal, Vivek, "Product Market Competition and the Industry Price-Cost Markup Fluctuations: Role of Energy Price and Monetary Changes," International Journal of Industrial Organization 18 (2000), 415-444.
- Gilson, Ronald, J. and Reiner Kraakman, The Law and Finance of Corporate Acquisition, Supplement 1988, Westbury, CT: Foundation Press (1988).
- Ginsburg, Douglas H. "Rationalizing Antitrust: A Reply to Professor Armentano," Antitrust Bulletin 35:2 (Summer 1990), 329-45.
- Gleckman, Howard and Stuart Weiss, "How Tax Reform Will Cool Takeover Fever," Business Week, (September 22, 1986), 83-84.
- Guillemin, E. "1989: A Turning Point in the Acquisition Financing Market," The Merger Yearbook, Security Data Co., 1990.
- Hall, Bronwyn H. "The Impact of Corporate Restructuring on Industrial Development and Research," in Baily and Winston eds., Microeconomics 1990, Washington, D.C.: Brookings Institution (1990).
- Hannan, Timothy H. "The Functional Relationship Between Prices and Market Concentration: The Case of the Banking Industry," in D. Audretsch and J. Siegfried eds., Empirical Studies in Industrial Organization: Essays in Honor of Leonard W. Weiss, Norwell, MA: Kluwer Academic Publishers (1992), 35-59.

- Hannan, Timothy H. and J. Nellie Liang, "Inferring Market Power from Times-series Data: The Case of the Banking Firm," International Journal of Industrial Organization 11 (June 1993), 205-218.
- Healy, Paul M., Krishna G. Palepu, and Richard S. Ruback, "Does Corporate Performance Improve after Mergers?" Journal of Financial Economics 31 (1992), 135-175.
- Ho, Vivian and Barton H. Hamilton, "Hospital Mergers and Acquisitions: Does Market Consolidation Harm Patients?" Journal of Health Economics 19 (2000), 767-791.
- Holmstrom, Bengt and Steven N. Kaplan, "Corporate Governance and Merger Activity in the United States: Making Sense of the 1980s and 1990s," Journal of Economic Perspectives 15:2 (Spring 2001), 121-144.
- Holt, Charles and Douglas Davis, "The Effects of Non-Binding Price Announcements on Posted-Offer Markets," Economic Letters 34 (1990), 307-310.
- Hosken, Daniel and John David Simpson, "Have Supermarket Mergers Raised Prices? An Event Study Analysis," International Journal of the Economics of Business, (forthcoming 2001).
- Hou, Kewei, Per Olsson, and David Robinson, "Does Takeover Increase Stockholder Value?" mimeo, University of Chicago, (August 11, 2000).
- Jans, Ivette and David I. Rosenbaum, "Multimarket Contact and Pricing: Evidence from the U.S. Cement Industry," International Journal of Industrial Organization 15 (1996), 391-412.
- Jarrell, Gregg A., James A. Brickley, and Jeffrey M. Netter, "The Market for Corporate Control: The Empirical Evidence Since 1980," Journal of Economic Perspectives 2:1 (Winter 1988), 49-68.
- Jarrell, Gregg A., and Annette B. Poulsen, "Bidder Returns," Working Paper, Rochester, New York: University of Rochester (1987) [Later published as "The Returns to Acquiring Firms in Tender Offers: Evidence from Three Decades," Financial Management 12 (1989), 18-??].

Journal of Economic Perspectives

Kaplan, Steven N., ed., Mergers and Productivity, National Bureau of Economic Research Conference, University of Chicago (2000).

Kaplan, Steven N. and Jeremy C. Stein, "The Evolution of Buyout Pricing and Financial Structure in the 1980s," Quarterly Journal of Economics (May 1993), 313-57.

Kaplan, Steven N. and Michael S. Weisbach, "The Success of Acquisitions: Evidence from Divestitures," Journal of Finance 47:1 (March 1992), 107-138.

Keeler, Emmett B. Glenn Melnick, and Jack Zwanziger, "The Changing Effects of Competition on Non-profit and For-profit Hospital Pricing Behavior," Journal of Health Economic 18 (January 1999), 69-86.

Kelton, Christina M. "Price Changes from 1958-1982," in D. Audretsch and J. Siegfried eds., Empirical Studies in Industrial Organization: Essays in Honor of Leonard W. Weiss

Kwoka John E. Jr., and Lawrence J. White, "Manifest Destiny? The Union Pacific and Southern Pacific Railroad Merger," in Kwoka and White eds., The Antitrust Revolution, Economics, Competition, and Policy 3rd ed. (1999), 64-88.

Landes, R. and Richard Posner, "Market Power in Antitrust Cases," Harvard Law Review 94:5 (1981), 937-996.

Long, William F. and David J. Ravenscraft, "The Misuse of Accounting Rates of Return: Comment," American Economic Review 74:3 (June 1984), 494-500.

Long, William F. and David J. Ravenscraft, "Decade of Debt: Lessons from LBOs in the 1980s," in Margaret Blair ed., The Deal Decade, Washington D.C.: Brookings Press, (1993).

Loughran, Tim and Anand M. Vihh, "Do Long-Term Shareholders Benefit from Corporate Acquisitions?" Journal of Finance 52:5 (December 1997), 1765-1790.

McChesney, Fred S. and William F. Shughart II, The Causes and Consequences of Antitrust: The Public Choice Perspective, University of Chicago Press (1995).

McGahan, Anita M. and Michael E. Porter, "The Persistence of Shocks to Profitability," Review of Economics and Statistics

- Mueller, Dennis C., ed., The Determinants and Effects of Mergers: An International Comparison, Cambridge, MA: Oelgeschlager, Gunn, & Hain (1980).
- Mueller, Dennis C. The Determinants of Persistent Profits, Washington, D.C.: Bureau of Economics, Federal Trade Commission (1983).
- Mueller, Dennis C. "Mergers and Market Share," Review of Economics and Statistics 67:2 (1985), 259-267.
- Mueller, Dennis C. Profits in the Long Run, Cambridge: Cambridge University Press (1986).
- Mueller, Dennis C. and Elizabeth A. Reardon, "Rates of Return on Corporate Investment," Southern Economic Journal 60:2 (October 1993), 430-453.
- Mueller, Dennis C. "Merger Policy in the United States: A Reconsideration," Review of Industrial Organization 12 (1997), 655-685.
- Neumark, David, and Steven Sharpe. "Market Structure and the Nature of Price Rigidity: Evidence from the Market for Consumer Deposits," Quarterly Journal of Economics 107:2 (May 1992), 657-680.
- Neumark, David, and Steven A. Sharpe, "Hostile Takeovers and Expropriation of Extramarginal Wages: A Test," Discussion Series Paper #197, Federal Reserve Board, Finance and Economics, (May 1992).
- Neumark, David, and Steven A. Sharpe, "Rents and Quasi Rents in the Wage Structure: Evidence from Hostile Takeovers," Industrial Relations 35:2 (April 1996), 145-179.
- Newmark, Craig M. "A New Bottle for the Profits-Concentration Wine: A Look at Prices and Concentration in Grocery Retailing," Raleigh, NC: North Carolina State (September 1989).
- Newmark, Craig M. "Price and Seller Concentration in Cement: Effective Oligopoly or Misspecified Transportation Costs?" Economic Letters 60 (1998), 243-250.
- Pakes, Ariel, "Mueller's Profits in the Long Run," RAND Journal of Economics 18:2 (Summer 1987), 319-332.
- Park, Joon, J. Michael W. Babcock, and Kenneth Lemke, "The Impact of Railroad Mergers on Grain Transportation Markets: A Kansas Case Study,"

- Pautler, Paul A. "Recent Empirical Evidence on Mergers and Acquisitions," Antitrust Bulletin 38:4 (Winter 1993), 741-797.
- Peltzman, Sam, "The Gains and Losses from Industrial Concentration," Journal of Law and Economics 20 (October 1977), 229-263.
- Peltzman, Sam, "Comments on The Concentration-Margins Relationship Reconsidered," in Baily and Winston eds., Microeconomics 1990, Washington, D.C.: Brookings Institution (1990), 324-330.
- Peoples, James, Hekmat, Ali, and Moini, A. H. "Corporate Mergers and Union Wage Premiums," Journal of Economics and Finance 17:2 (Summer 1993), 65-75.
- Peristiani, Stavros, "Do Mergers Improve the X-Efficiency and Scale Efficiency of U.S. Banks? Evidence from the 1980s," Journal of Money, Credit, and Banking 29:3 (August 1997), 326-337.
- Pilloff, Steven J. "Multimarket Contact In Banking," Review of Industrial Organization 14 (1999), 163-182.
- Plott, Charles R. "An Updated Review of Industrial Organization: Applications of Experimental Methods," in Schmalensee and Willig eds., Handbook of Industrial Organization 2, New York: North-Holland (1989), 1111-1176.
- Plott, Charles R., Alexandre Borges Sugiyama, and Gilad Elbaz, "Scale, Natural Monopoly, and Imperfect Competition in an Experimental Market," Southern Economic Journal 61 (October 1994), 261-287.
- Prager, Robin A. "ATM Network Mergers and the Creation of Market Power," Antitrust Bulletin (Summer 1999), 349-363.
- Prager, Robin A. "The Effects of Horizontal Mergers on Competition: The Case of the Northern Securities Company," RAND Journal of Economics 23 (Spring 1992), 123-133.
- Prager, Robin A., and Timothy H. Hannan, "Do Substantial Horizontal Mergers Generate Significant Price Effects? Evidence from the Banking Industry," Journal of Industrial Economics 46:4 (December 1998), 433-452.
- Ravenscraft, David, J. "Structure-Profit Relationships at the Line of Business and Industry Level," Review of Economics and Statistics 65 (February 1983), 22-31.
- Ravenscraft, David J., and F. M. Scherer, Mergers, Sell-offs, and Economic Efficiency, Washington, D.C.: Brookings Institution (1987).

- Ravenscraft, David J., and George A. Pascoe, Jr. "Can the Stock Market Predict Merger Success?" mimeo, University of North Carolina and Center for Economic Studies, Bureau of the Census, (July 1989).
- Rhoades, Stephen A. "Efficiency Effects of Horizontal (in-market) Bank Mergers," Journal of Banking and Finance 17 (April 1993), 411-422.
- Rhoades, Stephen A. "The Efficiency Effects of Bank Mergers: An Overview of Case Studies of Nine Mergers," Journal of Banking and Finance 22 (1998), 273-291.
- Roll, Richard, "The Hubris Hypothesis of Corporate Takeovers," Journal of Business 59 (April 1986), 197-216.
- Romano, Roberta, "A Guide to Takeovers: Theory, Evidence, and Regulation," Yale Journal of Regulation 9 (1992), 119-180.
- Rosenbaum, D.I. "Efficiency v. Collusion: Evidence Cast in Cement," 9 Review of Industrial Organization (1994), 379-93.
- Salinger, Michael, "The Concentration-Margins Relationship Reconsidered," in Baily and Winston eds., Microeconomics 1990, Washington, D.C.: Brookings (1990), 287-335.
- Saltzman, Harold, Roy Levy, and John Hilke, "Transformation and Continuity: The U.S. Carbonated Soft Drink Bottling Industry and Antitrust Policy Since 1980," Bureau of Economics, Federal Trade Commission, (November 1999).
- Schipper, Katherine and Abbie Smith, "Effects of Management Buyouts on Corporate Interest and Depreciation Tax Deductions," Journal of Law and Economics 34 (1991), 295-329.
- Scheffman, David T. "Making Sense of Mergers," Antitrust Bulletin (Fall 1993), 715-40.
- Schmalensee, Richard, "Do Markets Differ Much?" American Economic Review 75:3 (June 1985), 341-51.
- Schmalensee, Richard, "Inter-Industry Studies of Structure and Performance," in Schmalensee and Willig eds. Handbook of Industrial Organization Volume II, New York: North Holland (1989).
- Schumann, Laurence, 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, Washington, D.C.: Bureau Of Economics, Federal Trade Commission (1989). [Review of Industrial Organization "Patterns of Abnormal Returns and the Competitive Effects of Horizontal Mergers," 1993].

- Schumann, Laurence, Robert P. Rogers, and James D. Reitzes, Case Studies of the Price Effects of Horizontal Mergers, Washington, D.C.: Bureau of Economics, Federal Trade Commission, (January 1992).
- Sharpe, Steven A. "Switching Costs, Market Concentration, and Prices: The Theory and its Empirical Implications in the Bank Deposit Market," draft mimeo, Federal Reserve Board, (September 1990).
- Shleifer, Andrei and Lawrence H. Summers, "Breach of Trust in Hostile Takeovers," in A. Auerbach ed., Corporate Takeovers and their Consequences, Chicago: University of Chicago Press (1988).
- Simpson, John David, "Geographic Markets in Hospital Mergers," Working Paper # 237, Bureau of Economics, Federal Trade Commission, (February 2001).
- Singal, Vijay, "Airline Mergers and Competition: An Integration of Stock and Product Price Effects," *Journal of Business*

Werden, Gregory J., Andrew S. Joskow, and Richard L. Johnson, "The Effects of Mergers on Economic Performance: Two Case Studies from the Airline Industry," Managerial and Decision Economics 12 (1991).

Werden, Gregory, J., and Michael A. Williams, "The Role of Stock Market Studies in Formulating Antitrust Policy Toward Horizontal Mergers," Quarterly Journal of Business and Economics 28 (1989), 3-21.

Wernerfelt, Birger and Cynthia A. Montgomery, "Tobin's Q and the Importance of Focus in Firm Performance," American Economic Review 78:1 (March 1988), 246-50.

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