

Economics Research at the FTC: Information, Retrospectives, and Retailing

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Abstract:

Individual Federal Trade Commission (FTC) cases invariably raise broad questions about consumers, markets, and effective enforcement policy. Recent consumer protection cases raise questions about information regulation. Horizontal merger enforcement has recently focused on retrospective analysis of mergers and the role of the retail sector in predicting the effects of manufacturer mergers. In this paper, we describe research by the FTC's Bureau of Economics that addresses these three areas. We argue that such research is well worth the agency's relatively small resource investment because it demonstrably contributes to more thoughtful policy analysis and better policy outcomes.

Keywords: consumer protection, FTC, information, marketing, mergers, retailing

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I. Introduction

The primary role of the Bureau of Economics is supporting the Federal Trade Commission's (FTC) dual missions of promoting competition (antitrust) and protecting consumers. On the antitrust front, the past year was marked by two cases seeking the breakup of consummated mergers,¹ and major investigations of two mergers among branded consumer goods producers.² On the consumer protection side, the FTC battled an assortment of fraudulent products, like weight-loss devices, and deceptive financial practices cases, including deceptive lending, injurious mortgage loan servicing, deceptive credit counseling, and pyramid schemes disguised as business opportunities.³

In merger cases, FTC economists develop theories to describe how a particular transaction affects market power, and then develop evidence (documentary and/or empirical) to test these theories. Consumer protection investigations often focus on evaluating how consumers and firms respond to information.

¹ An administrative law judge ruled in favor of the FTC that the acquisition of the Water Division and the Engineered Construction Division of Pitt-Des Moines Inc. (manufacturers of specialized storage tanks) violated section 7 of the Clayton Act and Section 5 of the Federal Trade Commission Act (see FTC press release, June 27, 2003; the case is currently under appeal before the FTC). On February 10, 2004, the FTC filed suit challenging the consummated acquisition of Highland Park Hospital by the Evanston North-western Healthcare Corporation (both hospitals operate in suburban Chicago). This case is scheduled to be heard before an administrative law judge in the Fall of 2004.

² The cases were Nestle's 2003 acquisition of Dreyer's ice cream business (where the Commission required a divestiture of Dreyer's super premium ice cream brands and Nestle's ice cream distribution business), and the 2004 merger of RJR and Brown and Williams U.S. cigarette businesses (which was allowed to proceed unchallenged).

³ Stewart Finance deceptively sold personal loans, (<http://www.ftc.gov/opa/2003/10/stewart.htm>), Fairbanks Capital Corporation misrepresented balances and improperly serviced home mortgages (<http://www.ftc.gov/opa/2003/11/fairbanks.htm>), AmeriDebt misrepresented its debt counseling services (<http://www.ftc.gov/opa/2003/11/ameridebt.htm>), and NexGen3000 sold pyramid schemes disguised as Internet business opportunities (<http://www.ftc.gov/opa/2003/07/nexgen.htm>).

Economists also estimate consumer injury from deceptive practices, often leading to substantial monetary settlements.⁴

Economists often find, however, that individual cases raise more questions than they can answer based on current theory and research. This year's crop of cases is no exception. For the consummated merger cases, rather than trying to predict whether a proposed merger will be anticompetitive, we instead had to determine whether a consummated merger was anticompetitive. The branded goods mergers raised methodological questions about how competition among upstream producers manifests itself in data filtered through various retail distribution channels – e.g., supermarkets, convenience stores, club stores, and mass-merchandisers. Our deceptive lending cases raised questions about the role of current marketing practices and information regulations, such as mandated disclosures, on consumer understanding and loan choice.

While economists exert influence on policy through their work on individual cases, their primary influence often results from their research. The influence of FTC research might be felt soon after a study is published (as illustrated by the FTC's recent study on mortgage broker compensation disclosures) or a decade later (as illustrated by FTC research on health claims in advertising).

The two previous contributions to this Review's "Antitrust and Regulatory Update" from the FTC's chief economist focused on the role of economists in law enforcement investigations. This year we focus instead on three lines of research conducted by the Bureau in response to broad questions raised by prior cases. We begin by discussing the Bureau of Economics' longstanding research and advocacy efforts in the area of information, highlighting health claims research and the more recent research program on mortgage disclosures. Both the health claims research and mortgage research have led to recent policy directives that promote consumer welfare. Next, we consider issues raised by consummated mergers. This research agenda includes broad studies that are largely descriptive, e.g., characterizing existing policy in terms of the characteristics of mergers investigated by the agency, as well as detailed case studies quantifying the effects of specific mergers. Finally, we discuss research directed toward questions raised

⁴ This year, economists provided extensive support for the case against Fairbanks Capital Corporation, leading to over \$40 million in consumer redress. Economist support was also influential in a deceptive lending case against one of the nation's largest subprime lenders, Associates First Capital Corporation, owned by Citigroup, which resulted in a \$215 million redress settlement in September 2002, the largest consumer protection settlement in FTC history (<http://www.ftc.gov/opa/2002/09/associates.htm>).

in cases involving retail distribution channels. The importance of the retail channel in understanding manufacturer mergers is relatively unstudied, but potentially quite important.

II. Consumer Protection

1. ADVERTISING HEALTH CLAIMS

Markets generally work better when consumers have better information about goods and services. Whether, and how consumers receive such information is often dictated by government policies invoked in the name of consumer protection. The FTC's consumer protection mission, which is based on the agency's broad mandate to prohibit "unfair or deceptive acts or practices," provides fertile ground for anyone interested in the economics of information. FTC economists have estimated the effects of food, cigarette, and dietary supplement advertising. They have evaluated the effects of disclosures in experimental settings and conducted econometric studies of credit discrimination and predatory lending. They have conducted surveys of industry practices (McKernan et al., 2003), assessed privacy policies, and examined how changes in market institutions, such as so-called "negative option" plans,⁵ would affect consumers. Some of this work is conducted as part of case investigations or litigations. While all of these activities are important to the development of sound consumer protection policies, in this article we highlight the role of research on the regulation of health claims and mortgage disclosures because this research illustrates the potential effect of information research on recent policy outcomes.

Today, information on the health consequences of various dietary choices can be found on many food labels. The back panel of a box of *Honey Nut Cheerios* explains, for example, that too much cholesterol "... can put you at risk of heart disease" and that "lowering cholesterol can have a big impact on health." The panel further explains that "Soluble fiber from whole grain oat foods, like *Honey Nut Cheerios*, has the irresistible taste of golden honey and nuts AND soluble fiber to help keep your heart healthy." Food labels can provide valuable information to consumers, particularly young consumers who may not know

⁵ A negative option is a marketing program that requires consumers actively to refuse to receive future products.

much about the link between diet and health. Twenty years ago, however, the Food and Drug Administration (FDA) prohibited such information on food labels. Only after decades of debate and research has the government adopted policies that allow any explicit health advice on food labels. Economists at the FTC played a significant role in the policy change.

To appreciate the magnitude of the shift in health claim policy it is helpful to recount the history of the health claims debate. In 1984 the Kellogg Company challenged the FDA's restrictions on health information in marketing by incorporating dietary recommendations from the National Cancer Institute (NCI) into its labeling and advertising for All-Bran cereal.⁶ FDA staff reportedly responded to the campaign by stating that "... the claims make the product a drug and in any event are misleading" (Calfee and Pappalardo, 1989, p. 9). This view reflected a belief that consumers are best served by a system that requires doctors to be health information "gatekeepers" and a fear that consumers would be harmed by disease information that is not dispensed by a knowledgeable professional who can explain potentially critical nuances of the dietary advice. A formal response by the FDA was complicated, however, by the fact that the National Cancer Institute had helped to develop the All-Bran campaign, and by support for the campaign from the FTC's Director of the Bureau of Consumer Protection (Crawford, 1984).

After three years of debate, the FDA published a notice of proposed rulemaking to allow health advice in food labeling in 1987. The proposal would have allowed truthful and nonmisleading health claims that were "... supported by valid, reliable, publicly available scientific evidence ...". Despite the stringency of this standard, a *New York Times* editorial lamented that "Just when knowledge has been gained of how proper diet can reduce heart disease and cancer, the Administration proposes to let industry unleash a babble of misleading claims that will let bad foods masquerade as good" (Calfee and Pappalardo, 1989, p.17). FTC staff submitted an advocacy comment generally supporting the FDA's proposal, but also cautioning that consumers would likely be even better off under a more flexible substantiation standard, similar to the standard used by the FTC for all types of advertising claims.⁷ The FTC staff comment was controversial, even within the Commission.⁸

⁶ For a detailed description of the policy debate see Calfee and Pappalardo (1989) and the cites therein.

⁷ FTC staff has long advocated that other government entities consider the effects of their policies on competition and consumer welfare. (See Paul Pautler's Bureau of Economics' Bureau Director's Conference presentation, "The Role of Economists in Competition and Consumer Advocacy," September 4, 2003, <http://www.ftc.gov/be/workshops/directorsconference/docs/pautlerslides.pdf>. Throughout the health claims debate

Recognizing the potential importance of the health claim debate for consumers, the Bureau of Economics conducted a body of research on this topic. Two studies were released in 1989. One study advocated a benefit-cost standard for health claims (Calfée and Pappalardo, 1989). The authors argued that the FDA should evaluate health claims about potentially uncertain relationships between diet and disease using a flexible expected value rule balancing the potential harm from allowing too much information against the harm from allowing too little. A case-study of evidence for claims about fats, serum cholesterol, and heart disease illustrated how the rule could be implemented and showed that longstanding regulations likely harmed consumers. The second report estimated how the sales of high fiber cereals and breads had responded to changes in health claim regulations (Ippolito and Mathios, 1989). Despite growing evidence of a link between high fiber diets and reductions in cancer risks, a shift toward high fiber cereals was not detected until health claims linking fiber to cancer appeared in advertisements.⁹ The research also showed that advertising was especially effective at providing health information to nonwhite women and women in female-headed households.

While the FDA debated how to respond to 500 formal comments it received in reference to the 1987 proposal, Congress passed the Nutrition Education and Labeling Act of 1990 (NLEA). Under the regulations implementing the NLEA some health claims would be allowed, although many claims about promising scientific findings would be prohibited, even when the downside risk from consuming foods based on the claims was negligible and the manufacturer accurately portrayed the level of scientific support for the claims.

FTC staff filed numerous advocacy comments on evolving regulatory proposals. In the past year, health information comments were filed on prescription drug advertising, health claims for food and dietary supplements, and the possible links between obesity. (see “Fulfilling the Original Vision: The FTC at 90”, Federal Trade Commission”, April 2004, pp. 31–33 and 36–37, <http://www.ftc.gov/os/2004/04/040402abafinal.pdf>).

⁸ FTC Staff (1987). The comment that was voted out 3–2 with Commissioners Bailey and Strenio dissenting. According to the document “Commissioners Bailey and Strenio do not disapprove of FDA’s proposed rule but wish to disassociate themselves from the reasoning set forth in the Commission staff’s comment”.

⁹ The authors did not find a shift toward high-fiber cereal during 1978–1984, despite publication of a number of scientific studies linking fiber and cancer and the recommendations of public health officials that consumers increase their fiber consumption. During the period when fiber-cancer claims began to appear in the marketing of food products (1985–1987), however, the fiber content of cereals increased by 7%.

The Bureau continued to conduct research following implementation of the NLEA. In 1996 the Bureau released a study showing that consumption of unhealthy fats fell faster when health information was relatively easy for manufacturers to convey (between 1985 and 1990) than during prior years when regulations were more restrictive (between 1977 and 1984) (Ippolito and Mathios, 1996). In 1998 the FTC issued a study testing the effects of various advertising claims on consumer understanding using advertising copy-tests.¹⁰¹⁰ In one set of tests the authors examined whether respondents could distinguish among health claims supported by different claimed levels of scientific proof – an issue central to the debate over the value of allowing claims about promising scientific findings. The authors found that disclaimers could effectively communicate that the underlying science was moderately uncertain and that some differentiation between different levels of scientific substantiation was possible. In addition, the study demonstrates that research is often needed to test whether information problems exist and whether remedies will work as intended.

The Bureau also supported research to examine how regulation affects advertising content. One study investigated the relationship between information regulations and food advertising content prior to the NLEA (Pappalardo and Ringold, 2000). The authors collected 40 years of data on the science on fats and heart disease, popular press coverage of this relationship, and the content of advertising for margarine and cooking oil prior to the NLEA. The authors found that FDA regulations stifled the flow of health information to consumers while similar information appeared in advertising to doctors and nutritionists (those in the best position to judge the advertising's validity). In 2002 the Bureau released a broader study of advertising content (Ippolito and Pappalardo, 2002). The authors analyzed 11,647 food advertisements that appeared in popular magazines published during 1977–1997. The data also showed that the NLEA resulted in significantly less information about nutrition and health attributes in advertising. By 1997, for example, heart and serum cholesterol claims appeared in 58% fewer ads than at their 1989 peak level, and once vigorous competition among fat sources based on differential health attributes disappeared following implementation of the NLEA. Overall, the content analyses demonstrate that advertising is more than just

¹⁰ See Murphy et al. (1998). Copy-tests are often conducted by market researchers to investigate the effectiveness of alternative advertisements. Many of these tests employ a control condition, such a measure of typical advertising effectiveness, as a benchmark. Consumer policy analysts have long advocated controlled copy-tests to determine if advertisements are deceptive and to assess the effect of possible remedies (see, e.g., Craswell, 1997; Pappalardo, 1997).

a general signal of quality – food advertisements have been a source of extensive information for decades and, if allowed, food manufacturers would compete on the basis of diet and health.

Has the FTC research affected policy? The FDA continues to assess its information policies, and is slowly moving toward a policy that puts more weight on the potential harm from prohibiting claims that could benefit consumers. At least two signals suggest that Bureau research may have contributed to this positive movement. The first signal appears in a district court opinion. The second appears in an FDA policy statement. The FDA’s post-NLEA regulations were challenged in court by dietary supplement manufacturers, who believed that the FDA’s health claim regulations violated the First Amendment.¹¹ Although the district court ruled in favor of the FDA in 1998, the U.S. Court of Appeals for the D.C. Circuit reversed the lower court in 1999. More specifically, “The appeals court held that, on the administrative record compiled in the challenged rulemakings, the First Amendment does not permit FDA to reject health claims that the agency determines to be potentially misleading unless the agency also reasonably determines that no disclaimer would eliminate the potential deception”.¹² The court cited a 1989 Bureau study as support for the proposition that information on a food label can benefit consumers by lowering search costs.¹³

This decision, in turn, pressured the FDA to adjust its health claims policy. By 2002 the FDA moved closer to the flexible substantiation standard employed by the FTC as indicated in the FDA’s “Guidance for Industry: Qualified Health Claims in the Labeling of Conventional Foods and Dietary Supplements”. The Guidance prominently cites the 2002 Bureau study on the effect of regulatory policy on the content of food advertisements:

Conventional food manufacturers and distributors are more likely to include specific health claims in labeling if FDA makes clear their entitlement under the law to engage in such communications with consumers. There is evidence, reviewed by the FTC Bureau of

¹¹ Pearson v. Shalala, 164 F. 3d 650, (D.C. Cir. 1999).

¹² See FDA “Guidance for Industry: Qualified Health Claims in the Labeling of Conventional Foods and Dietary Supplements,” December 2002, <http://www.cfsan.fda.gov/~dms/hclmgui2.html>, superseded by “Interim Procedures for Qualified Health Claims in the Labeling Conventional Human Food and Human Dietary Supplements,” July 2003, <http://www.cfsan.fda.gov/~dms/hclmgui3.html>, which further defines the FDA’s position.

¹³ Pearson v. Shalala, supra note 7.

Economics Staff ... that the content of food promotional messages responds to changes in applicable legal and regulatory requirements. As the FTC report stated, “the evidence is consistent with the hypothesis that a more open environment leads to competitive pressures that induce producers to reveal information on more nutrient dimensions in advertising.” By making clear the lawfulness of conventional foods labeled with truthful and non-misleading health claims, FDA believes this guidance will precipitate greater communication of the health benefits of consuming particular foods, thereby enhancing public health.¹⁴

Even though significant progress has been made, there is more to do. Although the FDA currently allows more health information in marketing than it did prior to the 1984 Kellogg’s All-Bran campaign, claims about the relative health benefits of many foods are still prohibited. For example, cooking oils cannot compete on the basis of the heart benefits of a healthful ratio of polyunsaturated to saturated fat.

2. RESEARCH ON DISCLOSURE STATEMENTS

Regulators have recently focused much attention on information disclosure issues. The Bureau recently initiated a mortgage disclosure research program, which utilizes many of the same methodologies used to evaluate health claims. Given the complexity of mortgages, and the high financial stakes, government regulators have mandated numerous information disclosures to help protect consumers. However, there is very little research on the effect of mandated disclosures on consumer loan choices or mortgage market competition. Moreover, despite a host of mortgage disclosure requirements, many consumers still fall prey to deceptive lending practices. In many ways, the state of mortgage disclosure research today is similar to the state of health claims research 15 years ago – research is largely nonexistent and in its infancy at best.

Bureau staff applied its consumer behavior expertise to an analysis of new mortgage disclosures proposed by the Department of Housing and Urban Development (HUD) (FTC Staff, 2002). In 2002, HUD proposed a rule to (1) revise the Good Faith Estimate disclosures of settlement costs; (2) remove regulatory barriers that may discourage the bundling of settlement services; (3) increase the

¹⁴ See U. S. FDA Guidance at <http://www.cfsan.fda.gov/~dms/hclmgui2.html>

certainty of settlement cost estimates. FTC comments supported most of the proposed changes but raised concerns about a proposed disclosure of payments from lenders to brokers for loans with above-par interest rates. One concern was that the new disclosure would inappropriately focus consumer attention away from the bottom line: confusing consumers about the relative prices of different loans. Another concern arose because the new disclosure would be required for mortgage brokers, but not for direct lenders.

In early 2004 the Bureau released a report describing a controlled experiment with more than 500 recent mortgage customers that was designed to test HUD's proposed compensation disclosure (Lacko and Pappalardo, 2004). Participants were shown cost disclosure forms for two loans – one from a broker and one from a direct lender – and asked which was less expensive. The findings were striking. When the broker loan was less expensive than the lender loan, approximately 90% of respondents in the control groups (who did not view the new disclosure) correctly identified the less expensive loan. In contrast, when respondents were shown the new disclosure, only about two-thirds of consumers correctly identified the less expensive loan. The results were even more dramatic when the broker loan and direct lender loan cost the same. In this set of experiments the new broker disclosure reduced correct cost comparisons by roughly 44% points. Moreover, when these respondents were asked which mortgage they would choose, they revealed a significant bias against mortgages generated by brokers. Overall, the authors concluded that “If the disclosure requirement has an impact similar to the magnitude found in one of the hypothetical loan cost scenarios examined in the study, the disclosures would lead mortgage customers to incur additional costs of hundreds of millions of dollars per year”. HUD recently withdrew its RESPA reform proposal, which had been sent to OMB for final regulatory approval. Following the withdrawal, OMB advised HUD to address several concerns if it re-proposed the rule, including the concerns raised in the Bureau staff study about the potential adverse effects of the compensation disclosure on consumers and competition (Graham, 2004).

Bureau staff are currently designing additional studies of the mortgage market, including a study of how consumers shop for mortgages and the role of required mortgage disclosures in the mortgage choice process. The study will also attempt to develop and test possible new disclosures that may better inform consumers of mortgage costs, allowing them to shop more easily for less-expensive loans, and more easily protect themselves against the deceptive lending practices seen in recent FTC cases. Bureau staff are also investigating the relationship between the acquisition of sub-prime mortgages and household financial well being.

III. Antitrust Retrospectives

1. ENFORCEMENT DATA

In contrast to other areas where the government intervenes in markets,¹⁵ there is relatively little retrospective analysis of U.S. merger policy. With the exception of the small minority of mergers that were litigated, until earlier this year, antitrust experts did not have information sufficient to determine the levels of market concentration of proposed mergers investigated by the FTC. In part, this dearth of research can be explained by a lack of publicly available data.¹⁶ In an attempt to fill the research gap, since the early 1980s the FTC has devoted significant resources to the analysis of horizontal merger outcomes.¹⁷ Currently, Bureau staff are conducting retrospective analyses of both general merger policies and specific merger cases. These studies fall into two groups. The first set of studies are largely descriptive of previous government activity. The second set of studies estimates either the competitive effects or efficiencies of specific mergers. Below we briefly describe one of the descriptive studies, the *Horizontal Merger Investigation Data, Fiscal Year 1996–2003*, and two case studies (*FTC Bureau of Economics Working Papers 269 and 270*).

The FTC challenges mergers that it believes are likely to lead to a substantial lessening of competition. Those outside the enforcement agencies often complain about the paucity of information regarding the factors that cause a specific merger to be investigated or challenged. Market concentration is one such factor.¹⁸ Those outside of the agency rarely know market concentration estimates in mergers

¹⁵ There are literally thousands of studies analyzing government actions on labor market outcomes – e.g., the impact of minimum wage laws on employment, the effect of unemployment insurance on the duration of unemployment, and the efficacy of job training programs.

¹⁶ Not surprisingly, most of the studies estimating the competitive effects of mergers focuses on historically regulated industries where some data are publicly reported, e.g., hospitals, airlines, and banking. See Pautler (2003) for a survey of this literature.

¹⁷ See, e.g., Barton and Sherman (1984), Schumann et al. (1992), Saltzman et al. (1999), and Vita and Sacher (2001).

¹⁸ The process used to evaluate horizontal mergers is described at length in the FTC/Department of Justice's 1992 Horizontal Merger Guidelines (available at www.ftc.gov).

investigated by the FTC because the Hart-Scott-Rodino Act (HSR) places very strict confidentiality protections on the information that the FTC can report about consummated, blocked and abandoned mergers. As part of the FTC's efforts to make antitrust enforcement more transparent, on February 2, 2004, the FTC published its report: *Horizontal Merger Investigation Data, Fiscal Year 1996–2003*. This report describes the market concentration of horizontal mergers investigated by the FTC. Merger numbers are reported generally and separately for several key industries, including grocery stores, oil, pharmaceuticals, and chemicals.

< insert figure 1 here >

Figure 1 exemplifies the type of information that appears in the report. This figure illustrates the relationship between the number of market participants following a merger and whether or not the FTC took some type of enforcement action.¹⁹ For example, when a proposed merger would have resulted in duopoly, the FTC took enforcement actions in 156 of the 184 markets investigated. In addition, the study describes how key data, such as customer complaints and “hot documents”, were associated with the concentration level of cases investigated and/or challenged. This study is one of the first to characterize FTC enforcement policy.

2. MERGER RETROSPECTIVES

Efficiencies are the driving force behind most mergers.²⁰ When analyzing horizontal mergers with significant overlaps the antitrust agencies: “will not challenge a merger if cognizable efficiencies are of a character and magnitude such that the merger is not likely to be

¹⁹ The figure contains information from all of the horizontal mergers investigated by the FTC between Fiscal Years 1996 and 2003 for which data were available to count market participants. There are more markets than mergers because many investigated mergers, e.g., grocery store mergers, involved multiple markets. The information used to construct the figure comes from the report's Table 4.1.

²⁰ The overwhelming majority of mergers present no competitive issues and are thus presumably (ex ante) efficiency enhancing. In the 1990s only about 3% of reported mergers were investigated by either the FTC or DOJ (see FTC annual reports, 1991–2000).

anticompetitive in any relevant market”.²¹ It is extraordinarily difficult for the agencies to determine how big and whether efficiencies claimed by merging parties are credible and merger specific.²² In contrast, it is relatively straightforward to determine whether two merging firms are important competitors with each other. By studying consummated mergers, we hope to develop a better understanding of merger efficiencies and how to include them in a prospective merger analysis. FTC economist Denis Breen’s (2004) working paper, “The Union Pacific/Southern Pacific Rail Merger: A Retrospective on Merger Benefits,” provides a careful analysis of the efficiencies resulting from a major rail merger. The Union Pacific/Southern Pacific (consummated in September 1996) merger was controversial, largely because of severe problems associated with integrating the two railroads and a number of major service disruptions that occurred in mid-1997 to 1998. Breen finds, however, that many of the efficiencies claimed by the merging parties were realized. Further, his analysis suggests that the efficiencies generated by integrating the duplicative parts of the competing rail networks would not have occurred but for the merger. While only a single case study,²³ Breen’s paper suggests that the efficiency benefits of mergers can be substantial and that alternative mechanisms short of a merger, such as a contract or joint venture, would be unlikely to generate similar cost savings.

A recent paper by FTC staff economists, Taylor and Hosken (2004), estimates the price effects of a major consolidation in the refining, distribution, and retailing of gasoline in the U.S. Midwest: the Marathon/Ashland joint venture (MAP). This was an interesting transaction to study because it was one of the first of the recent wave of mergers in the oil industry, and because it was not challenged by the

²¹ See Department of Justice/FT 1992 Horizontal Merger Guidelines, Section 4.

²² Firms are prohibited, under the HSR rules, from sharing most competitive information before consummating a merger. Thus, by law, those business executives most knowledgeable about their businesses are unable to access much of the key information needed to generate credible efficiency estimates. In contrast, the merging parties’ counsel (and litigation consultants) can access both merging parties’ information to conduct an efficiency analysis. Unfortunately, the value of an efficiency analysis generated for litigation by those unfamiliar with the industry seems quite limited.

²³ Focarelli and Panetta (2003) also find evidence of significant efficiencies resulting from a series of Italian banking mergers.

government.²⁴ In fact, the change in concentration resulting from the MAP joint venture in the Midwest was *larger* than that for many petroleum mergers subsequently challenged by the government. Using wholesale quantity data for all gasoline sold in the state of Kentucky, the market concentration, as measured by the HHI, increased by about 800 points to 2263 following the merger.²⁵ The study examines the retail and wholesale (rack) prices of gasoline in the market arguably most likely to experience a price increase following the merger: Louisville, Kentucky. Louisville appeared to be a good candidate for a post-merger anticompetitive price increase because Marathon and Ashland were both major market participants, the market was concentrated, and the Louisville metropolitan area used a somewhat unique “reformulated” gasoline not used by nearby regions. Thus, refiners and distributors operating nearby (selling conventional, not reformulated, gasoline) may not have been able to discipline an anticompetitive price increase in Louisville.

< insert Figure 2 here >

Figure 2 graphically summarizes the results of the study. It is a plot of the difference in Louisville’s and Chicago’s rack (wholesale) and retail gasoline prices (and implied retail margin) pre-and post-merger.²⁶ Taylor and Hosken find no change in retail prices following the transaction. Roughly 15 months following the joint venture, however, the relative wholesale (rack) price of gasoline increased roughly three to five cents a gallon in Louisville. The wholesale price increase appeared to be the result of a supply shock for the production of the reformulated gasoline consumed in Louisville rather than of the

²⁴ MAP was consummated on January 1, 1998. According to industry publications, the joint venture was reviewed by the FTC; however, the FTC took no action to modify the transaction (see Taylor and Hosken, 2004, pp. 7–10 for a description of the transaction).

²⁵ Ideally, concentration would be measured using retail and wholesale market share data for the region being studied, Louisville, Kentucky. Unfortunately, the Department of Energy’s, Energy Information Administration only has quantity data to calculate HHIs at the state level for wholesale (prime supplier) sales of all gasoline (conventional and reformulated) sold in a given state. This is the measure reported above.

²⁶ Two data points corresponding to the weeks preceding and including the Thanksgiving holiday in 1999 for the retail price and retail margin series presented in Figure 2 are missing because retail prices were not reported in those weeks.

joint venture.²⁷ Interestingly, the wholesale price increase was not passed through at retail: gasoline retailers paying the rack price absorbed most of the price increase in the form of lower retail margins. Rack-supplied stations were probably unable to pass through their wholesale price increase because they competed with other stations in Louisville that did not experience a wholesale price increase (roughly 30% of gasoline sold in Louisville was sold by company-owned stations that paid a “dealertank-wagon” wholesale price that did not increase) and with stations in the Indiana suburbs of Louisville selling conventional gasoline (that did not experience a wholesale price increase). This study illustrates the importance of examining both wholesale and retail prices in estimating the price effects of gasoline mergers. An examination of only wholesale prices would have suggested that the merger raised consumer prices. More generally, the paper shows the importance of incorporating institutional factors into studies analyzing the competitive effects of mergers.

IV. The Role of the Retail Sector

Merger investigations must be completed within the statutory deadlines of the law, which are quite short. As a consequence, in most merger investigations, economists rely on qualitative data, like marketing documents and testimonial evidence from customers, company executives, and competitors. While quite useful, such information can only yield very rough estimates of the extent to which products compete with one another. But recently, quantitative data are increasingly used to measure more precisely the competition lost following a merger.

The computer revolution has dramatically increased the quantity and availability of data that firms use and maintain during the ordinary course of business. In particular, manufacturers of consumer products sold through supermarkets, drugstores, and mass-merchandisers now have access to detailed information on consumer purchasing behavior. Firms commonly collect and use records of purchases at retail outlets, called “scanner data.” Most manufacturers use these data to track market share and measure salesperson

²⁷ The relative rack price increase is coincident with St. Louis’s entry into the federal reformulated gasoline program. St. Louis and Louisville used the same type of reformulated gasoline (reformulated with MTBE) and likely received supply from the same sources. If refiners had difficulties in modifying their refineries to produce more reformulated gasoline in response to St. Louis’s switch to reformulated gasoline, supply may have been unexpectedly restricted (see Taylor and Hosken, 2004, p. 28–32) for more details.

and retailer performance. In some cases, manufacturers (or marketing consultants working for manufacturers) use scanner data to estimate demand systems to develop pricing strategies for manufacturers.²⁸

Not surprisingly, antitrust economists also use scanner data to estimate demand systems. The output from these demand systems (matrices of own-and cross-price elasticities) are often used as inputs for structural game theoretic models of competition to predict the price effects of mergers. In almost every consumer products merger reviewed by FTC staff in the last decade, some type of demand estimation and merger simulation exercise has been conducted by the merging parties' economists. While in some cases these studies have been useful, in many cases the findings were not credible.

Learning how best to improve merger analysis has been a major focus of the Bureau (Werden et al., 2004). Recent empirical and theoretical research, including contributions by Bureau staff, show that the predictions from simple models can be misleading. Below we describe two lines of the Bureau's recent research on retail markets. The first line of research focuses on the process generating retail price variation. The second line of research focuses on how the relationships between manufacturers and retailers affect retail pricing.

1. RETAIL PRICE VARIATION

Retail price variation in supermarkets is much larger than can be explained by variation in wholesale prices or by shifts in consumer demand. Understanding the source of this variation is important for understanding how competition works in the industry. Varian (1980) examines the pricing behavior of retailers that compete to attract price sensitive consumers. In equilibrium, he finds that retailers play a mixed-price strategy in retail prices; that is, retail prices change every period. Sobel (1984) and Conlisk et al. (1984) show how retailers can change prices over time as a means of price discrimination. In these models, retailers charge high prices most of the time (paid by impatient high-value consumers), but periodically offer large discounts to sell to low-value consumers. Hosken and Reiffen (2001) combine elements of both models to examine the

²⁸ Both Information Resources Incorporated (IRI) and A.C. Nielsen, the leading providers of supermarket scanner data, sell consulting services that use this type of data to estimate demand systems.

pricing behavior of multi-product retailers that sell two types of goods: goods for which price discrimination over time is feasible (goods that can be stored for future consumption), and goods that must be consumed in the current period. Their model confirms some of the intuition of existing papers, but also better describes real-world pricing behavior.

Recent empirical work suggests that retail prices change much more frequently than can be explained by fundamental shifts in cost or long-run changes in demand.²⁹ The reasons for large persistent changes in retail prices are likely *endogenous*, in ways that complicate demand estimation. As noted above, retailers (and manufacturers) face incentives to price discriminate over time for those products that consumers can store, and recent empirical evidence suggests consumer inventory behavior is important for such goods.³⁰ This finding suggests that static demand models likely overestimate demand elasticities.³¹ In addition, retailers discount more popular products (those in more consumers' bundles) more often than less popular items. This likely results because low prices on popular items are more likely to bring consumers into the store (so called "loss-leaders"). Relatedly, products are more likely to go on sale during periods of peak demand when the standard static model predicts prices should increase.³²

Taken together, these empirical and theoretical results suggest that competition between retailers is much more subtle and complex than can be captured with simple price-setting models of competition. Supermarkets compete for consumers by offering discounted prices on a bundle of products, where the set of prices discounted changes from week to week. Consumers generally purchase bundles of products at a single store (to economize on shopping costs). In addition, because consumers shop for bundles of

²⁹ See, e.g., MacDonald (2000), Chevalier et al. (2003), and Hosken and Reiffen (2004a, b).

³⁰ Hendel and Nevo (2002) and Pesendorfer (2002) find strong empirical evidence that consumers buy products on "sale" and take them into consumer inventory.

³¹ When prices are lower than they are expected to be in the future, consumers may purchase for both current and future consumption. The standard demand model measures a purchasing elasticity (how purchases respond given a change in relative prices) rather than a consumption elasticity (how consumer consumption responds to a change in relative prices). The consumption elasticity is what is relevant to welfare analysis.

³² This finding is supported by recent empirical research, (see Chevalier et al., 2003; Hosken and Reiffen, 2004b).

products, estimating demand for any single product may be omitting important multi-product considerations.

2. RETAILER-MANUFACTURER RELATIONSHIPS

Retailers do not play the passive role usually assigned to them in studies examining consumer goods manufacturing mergers – i.e., simply marking up the wholesale price of goods to cover their costs.³³ Retailers engage in “branding”, develop quality reputations, and engage in very complex pricing strategies. How does the retail (and more generally distribution) sector of the economy affect the analysis of manufacturer mergers? We begin with the simple question of how changes in manufacturers’ prices are passed through to consumers.

In simple merger models, it is sometimes assumed that the estimated retail elasticities are the same as those facing manufacturers. While this result holds in some special cases,³⁴ more generally the relationship between wholesale and retail elasticities depends on demand, costs, and the nature of the bargaining that occurs between retailers and manufacturers. Most conventional approaches would find that wholesale elasticities would be smaller than retail elasticities – e.g., assuming a standard demand relationship (linear or AIDS)³⁵ and constant marginal cost. However, it is possible to construct examples where the wholesale elasticity exceeds the retail elasticity.³⁶ In any case, one has to be very careful when drawing inferences about upstream manufacturing merger effects from downstream retail elasticities.

³³ Robert Steiner has long argued that the bargaining between retailers and manufacturers plays a very important role in equilibrium pricing and product placement. (see, e.g., Steiner, 1993).

³⁴ We are aware of two cases when the retail sector is “transparent” or passes along upstream merger effects to downstream consumers: when it marks up wholesale prices by a constant percentage; or when it lacks bargaining power against its upstream suppliers and uses two part pricing. (see Froeb et al., 2000; Hosken et al., 2002, esp. pp. 21–25; O’Brien and Schaffer, (forthcoming)).

³⁵ Almost Ideal Demand System.

³⁶ See Hosken et al. (2002).

Bargaining between manufacturers and retailers and the existence of non-linear contracts further complicates the problem of drawing inferences about the effects of upstream manufacturing mergers. A recent Bureau working paper, O'Brien and Shaffer (forthcoming), examines a merger between manufacturers selling competing differentiated products to a monopoly retailer. In their model they find that if manufacturers can offer retailers non-linear contracts and bundle the merging firms' products, the merger leads to lower retailer profits while having *no effect* on consumer welfare. The only effect of the merger is to transfer rents from retailers to manufacturers. Their paper is particularly interesting in that it shows that an upstream manufacturing merger can harm retailers without harming consumers. While their paper is highly stylized, it shows how bargaining between manufacturers and retailers with market power through non-linear contracts can have an important effect on the ultimate impact of a merger on consumers.

Thus far our discussion of retailing has focused on unresolved questions about the role of price competition and bargaining between upstream and downstream firms. There are many open questions about retailing and consumer behavior whose resolution could improve policy. For example, there is little economic research examining the importance of manufacturer competition for retailer's shelf space and promotional activities.³⁷ Furthermore, empirical work, particularly in the marketing literature, shows that in-store promotion (e.g., end-of-aisle displays or special racks) has a dramatic effect on the sales of an item in a given week. Manufacturer representatives and food distributors also understand the importance of getting a product distributed broadly and, where carried, getting good placement within a store; e.g., having a product positioned at eye-level, rather than near the floor, is very important to a product's success. Research by FTC economists – e.g., Tenn (2003) – show that ignoring these factors can bias demand estimates.

Non-price aspects of competition are important to manufacturers for reasons that are not well understood in economics. Antitrust policy might be improved by considering more seriously how to incorporate non-price variables, such as preference variables,³⁸ information variables, and time variables into demand

³⁷ See Klein (forthcoming) for an exception.

³⁸ Psychologists and marketing researchers often use survey and other consumer research methods to obtain measures of consumer tastes and preferences. We believe that such measures can and should be incorporated into demand analyses.

models. For example, the Bureau’s work on health claims emphasizes the role of advertising as information. Yet, there are many questions about the role that strategic choices of price, quantity of marketing, type of marketing (in-store promotion, national advertising campaign, promotions in local newspapers, new labels), and marketing message (price message, taste message, health message, reminder message) play in demand estimation and merger prediction. For example, much advertising for consumer products takes place while items are being offered at a low-price. Post merger, if retailers *raise* their prices, will this lead to a change in advertising or promotional levels (Froeb et al., 2004).

V. Conclusion

Economic research on matters affecting antitrust and consumer protection policy is essential to effective government policy. Research by Bureau economists has played a crucial role in improving government policy. Fifteen years ago the American Bar Association recommended that the FTC devote “...more resources to basic research on consumer protection issues” (ABA Reprint, 1989, p. 435) and recognized that

It is important for economists at the FTC to learn how retail markets for consumer goods actually work. It is also important for consumer protection attorneys to learn, or be reminded, how seemingly sensible remedies in these markets may have unexpected costs and drawbacks.

Properly harnessed, economic analysis has the potential to shape consumer protection policy in much the same fashion as it has influenced antitrust. (ABA Reprint, 1989, p. 435).

Did the FTC succeed in conducting the research necessary to move consumer protection policy forward during the intervening years? In the case of at least one area – the regulation of health information in food marketing – we believe that the answer is “yes”. And we have evidence that our early research on mortgage disclosures is also shaping policy outcomes. However, resources are limited, and there are many more questions than FTC economists can answer – such as, the potential benefits of health claims for foods that do not meet the FDA’s “good food” thresholds to qualify for such claims, and the possible role of advertising on obesity. We invite inquiries from academic researchers who are looking for research topics relevant to policy.

The contributions of economic research to the antitrust mission are more subtle. Rather than affecting broad new rules, Bureau research aids economists and lawyers in conducting antitrust investigations. For example, consistent with the ABA's recommendation, the Bureau is actively studying retail markets for consumer goods. Many economists have ignored the retail sector in analyzing manufacturer mergers. Recent academic research, both empirical and theoretical, suggests that retailers play an important role in bringing goods to market that may affect how the FTC analyzes manufacturer mergers. For instance, interactions between retailers and manufacturers affect the way wholesale price increases are passed through at retail. This has implications for how demand elasticities that are estimated using retail data relate to the demand elasticities facing manufacturers and, more importantly, how an upstream merger generating market power affects the prices consumers pay. More broadly, retrospective studies of consummated mergers allow us to sharpen our understanding of which mergers are likely (and unlikely) to be anticompetitive. This information, in turn, will assist the government in increasing the quality of its decision making.

Finally, our review of Bureau studies illustrates that when it comes to policy research, the whole is often greater than the sum of its parts. The FTC's dual mission leads to a unique opportunity for the cross-fertilization of microeconomic research ideas. Consumer protection findings suggest that information and consumer taste variables should be incorporated into demand models used for antitrust analysis. Antitrust research indicates that consumer protection regulations ought to be evaluated for possible effects on competition. In this way, expertise derived from the antitrust mission spills over to the consumer protection mission, and *vice-versa*.

Figures and Tables

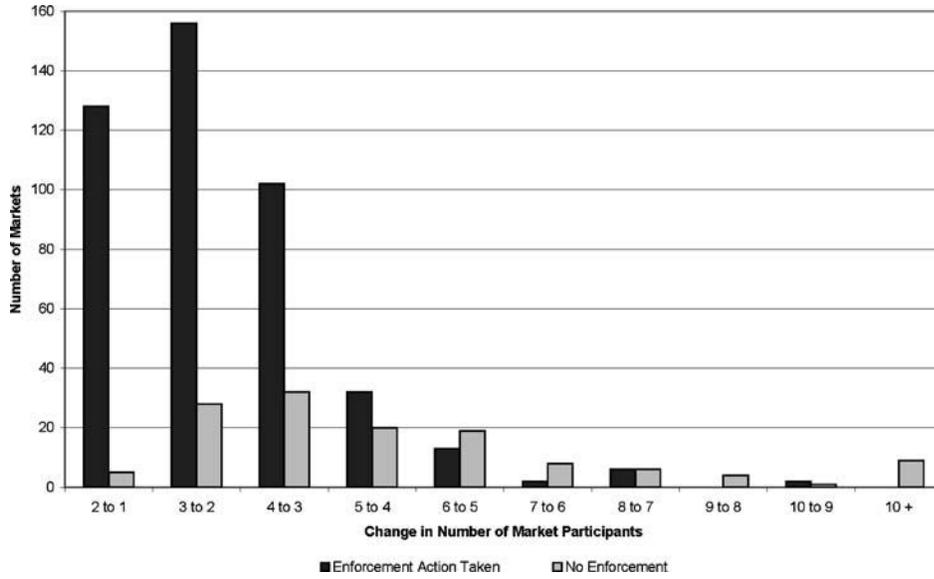


Figure 1: TC merger enforcement data: 1996–2003.

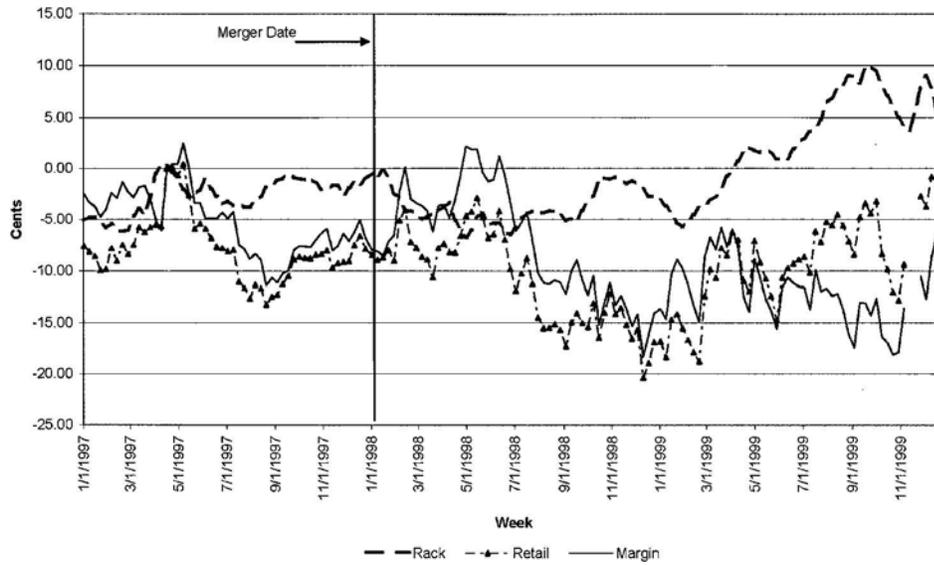


Figure 2: Marathon/Ashland merger retrospective difference in Louisville and Chicago rack price, retail price, and retail margin.

References

- American Bar Association (1990) 'Report of the American Bar Association Section of Antitrust Law Special Committee to Study the Role of the Federal Trade Commission', Reprinted from *Antitrust & Trade Regulation Report*, Vol. 56 No. 1410, Special Supplement, pp. S-1-S-53 (April 6, 1989) in P. E. Murphy and W. L. Wilkie, (eds.), *Marketing and Advertising Regulation: The Federal Trade Commission in the 1990s*, Notre Dame, IN: University of Notre Dame Press, pp. 412-462.
- Barton, D., and R. Sherman (1984) 'The Price and Profit Effects of Horizontal Merger: A Case Study', *Journal of Industrial Economics*, **33**, 165-177.
- Breen, D. (2004) 'The Union Pacific/Southern Pacific Rail Merger: A Retrospective of Merger Benefits', Bureau of Economics Working Paper #269, Federal Trade Commission.
- Calfee, J. E., and J. K. Pappalardo (1989), 'How Should Health Claims for Foods Be Regulated? An Economic Perspective', Bureau of Economics Issues Paper, Federal Trade Commission.
- Chevalier, J., A. Kashyap, and P. Rossi (2003) 'Why Don't Prices Rise during Periods of Peak Demand? Evidence from Scanner Data', *American Economic Review*, **93**, 15-37. Conlisk, J., E.
- Gerstner, and J. Sobel (1984) 'Cyclic Pricing by a Durable Goods Monopolist', *Quarterly Journal of Economics*, **99**, 489-505.
- Craswell, R. (1997) "'Compared to What?'" The Use of Control Tests in Deceptive Advertising Litigation', *Antitrust Law Journal*, **65**, 757-791.
- Crawford, C. (1984) 'Remarks of Carol T. Crawford, Director of the Bureau of Consumer Protection, Federal Trade Commission, before the American Advertising Federation', December 4.
- Federal Trade Commission (2004) *Horizontal Merger Investigation Data, Fiscal Year 1996-2003*, February 2.
- Federal Trade Commission, Staff of the Bureaus of Competition, Consumer Protection, and Economics (1987) 'Comments Submitted to the Food and Drug Administration Department of Health and Human Services In Response to a Request for Comments on its Proposal to Amend the Rules Governing Health Messages on Food Labels and Labeling', Docket No. 85N-0061.
- Federal Trade Commission, Staff of the Bureau of Economics, Bureau of Consumer Protection, and Office of Policy Planning (2002) 'Comment on the Proposed Amendments to the Regulations Implementing the Real Estate Settlement Procedures Act', Docket No. FR-4727-P-01.
- Focarelli, D., and F. Panetta (2003) 'Are Mergers Beneficial to Consumers: Evidence from the Market for Bank Deposits', *American Economic Review*, **93**, 1152-1172.
- Froeb, L., S. Tenn, and S. Tschantz (2004) 'Mergers when Firms Compete by Choosing both Price and Promotion', manuscript.
- Froeb, L., S. Tschantz, and G. Werden (2002) 'Vertical Restraints and the Effects of Upstream Horizontal Mergers', manuscript.
- Graham, J. (2004) 'Letter from John D. Graham, Ph.D., Administrator, Office of Information and Regulatory Affairs, Executive Office of the President, Office of Management and Budget to

- The Honorable Alphonso Jackson, Acting Secretary, Department of Housing and Urban Development', March 22.
- Hendel, I., and A. Nevo (2002) 'Sales and Consumer Inventory', *NBER* working paper 9048.
- Hosken, D., and D. Reiffen (2001) 'Pricing Behavior of Multiproduct Retailers', Bureau of Economics. Federal Trade Commission, Working paper #225, revised.
- Hosken, D., and D. Reiffen (2004a) 'Patterns of Retail Price Variation', *Rand Journal of Economics*, **35**, 128–146.
- Hosken, D., and D. Reiffen (2004b) 'How Retailers Determine Which Products Go on Sale: Evidence from Store-Level Data', *Journal of Consumer Policy*, **27**, 141–177.
- Hosken, D., D. O'Brien, D. Scheffman, and M. Vita (2002) 'Demand System Estimation and its Application to Horizontal Merger Analysis', Bureau of Economics Federal Trade Commission, Working paper #246.
- Ippolito, P. M., and A. D. Mathios (1989) 'Health Claims in Advertising and Labeling: A Study of the Cereal Market', Bureau of Economics Staff Report, Federal Trade Commission.
- Ippolito, P. M., and A. D. Mathios (1996) 'Information and Advertising Policy: A Study of Fat and Cholesterol Consumption in the United States, 1977–1990', Bureau of Economics Staff Report, Federal Trade Commission.
- Ippolito, P. M., and J. K. Pappalardo (2002) 'Advertising Nutrition & Health: Evidence from Food Advertising, Bureau of Economics Staff Report, Federal Trade Commission. 1977–1997.
- Klein, B. (forthcoming) 'Exclusive Dealing as Competition for Distribution "On the Merits"', *George Mason Law Review*.
- Lacko, J. M., and J. K. Pappalardo (2004) 'The Effect of Mortgage Broker Compensation Disclosures on Consumers and Competition: A Controlled Experiment', Bureau of Economics Staff Report, Federal Trade Commission.
- MacDonald, J. (2000) 'Demand, Information, and Competition: Why Do Food Prices Fall At Seasonal Demand Peaks?' *Journal of Industrial Economics*, **48**, 27–45.
- McKernan, S. M., J. M. Lacko, and M. Hastak (2003) 'Empirical Evidence on the Determinants of Rent-to-Own Use and Purchase Behavior', *Economic Development Quarterly*, **17**, 33–52.
- Murphy, D., T. H. Hoppock, and M.K. Rusk (1998) 'Generic Copy Test of Food Health Claims in Advertising', Joint Staff Report of the Bureaus of Economics and Consumer Protection, Federal Trade Commission.
- O'Brien, D., and G. Schaffer (forthcoming) 'Bargaining Bundling and the Portfolio Effects of Mergers', *RAND Journal of Economics*.
- Pappalardo, J. K. (1997) 'The Role of Consumer Research in Evaluating Deception: An Economist's Perspective', *Antitrust Law Journal*, **65**, 793–812.
- Pappalardo, J. K., and D. J. Ringold (2000) 'Regulating Commercial Speech in a Dynamic Environment: Forty Years of Margarine and Oil Advertising Before the NLEA', *Journal of Public Policy and Marketing*, **19**, 74–92.
- Pautler, P. (2003) 'Evidence on Mergers and Acquisitions', *Antitrust Bulletin*, **48**, 119–221.
- Pearson v. Shalala*, 164 F. 3d 650, (D.C. Cir. 1999).
- Pesendorfer, M. (2002) 'Retail Sales: A Study of Pricing Behavior in Super Markets', *Journal of Business*, **75**, 33–66.

- Saltzman, H., R. Levy, and J. Hilke (1999) 'Transformation and Continuity: The U.S. Carbonated Soft Drink Bottling Industry and Antitrust Policy Since 1980', Bureau of Economics, Federal Trade Commission.
- Schumann, L., R. Rogers, and J. Reitzes (1992) *Case Studies of the Price Effects of Horizontal Mergers*. Washington, DC: Bureau of Economics, Federal Trade Commission. Sobel, J. (1984) 'The Timing of Sales', *Review of Economic Studies*, **51**, 353–368.
- Steiner, R. (1993) 'The Inverse Association between the Margins of Manufacturers and Retailers', *Review of Industrial Organization*, **8**, 717–740.
- Taylor, C., and D. Hosken (2004) 'The Economic Effects of the Marathon-Ashland Joint Venture: The Importance of Industry Supply Shocks and Vertical Market Structure', Bureau of Economics Working Paper 270, Federal Trade Commission.
- Tenn, S. (2003) 'Estimating Promotional Effects with Retailer-Level Scanner Data', Bureau of Economics Working Paper 264, Federal Trade Commission.
- U. S. Department of Justice and Federal Trade Commission (1992) *Horizontal Merger Guidelines*, April 7.
- U. S. Food and Drug Administration (2002) 'Guidance for Industry: Qualified Health Claims in the Labeling of Conventional Foods and Dietary Supplements (superceded by Interim Procedures for Qualified Health Claims in the Labeling of Conventional Human Food and Human Dietary Supplements and Interim Evidence-Based Ranking System for Scientific Data (July 10, 2003))', Center for Food Safety and Applied Nutrition (December), at www.cfsan.fda.gov/~dms/hclmgui2.html
- U. S. Food and Drug Administration (2003) 'Guidance for Industry and FDA: Interim Procedures for Qualified Health Claims in the Labeling of Conventional Human Food and Human dietary Supplements', Center for Food Safety and Applied Nutrition, July, at www.cfsan.fda.gov/~dms/hclmgui3.html
- Varian, H. R. (1980) 'A Model of Sales', *American Economic Review*, **70**, 651–659.
- Vita, M., and S. Sacher (2001) 'The Competitive Effects of Not-for-Profit Hospital Mergers: A Case Study', *Journal of Industrial Economics*, **49**, 63–84.
- Werden, G., L. Froeb, and D. Scheffman (2004) 'A Daubert Discipline for Merger Simulation', *Antitrust Magazine* (Summer).