

Econometric Analysis in *FTC v. Staples*

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Econometric evidence played an important part in the litigation of the Federal Trade Commission's (FTC's) successful challenge to the proposed merger of Staples and Office Depot. In this article, the author describes the motivation and methods behind the FTC's econometric analyses of pricing. He also sets forth lessons for the process of relying on econometric evidence in merger investigations.

In mid-1997, a federal district court in Washington, DC, granted the Federal Trade Commission's (FTC's) request for a preliminary injunction blocking the proposed merger of Staples and Office Depot (*Federal Trade Commission v. Staples, Inc.* [hereafter, *Staples*] 1997a). The transaction would have combined two of the nation's three leading office superstore chains. The firms chose not to pursue the case further after the preliminary injunction was issued, thus giving up on their efforts to merge.

The Role of Econometric Evidence

The FTC presented extensive documentary evidence from the merging firms' files at the preliminary injunction hearing. These documents demonstrated that the two superstore chains charge lower prices for consumable office supplies in cities where they directly compete, relative to prices in cities where the merging firms do not face each other head to head. The documents also showed that superstore competition is the main reason for this pricing policy. For example,

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the merging superstore chains both moved stores into "price zones" with lower prices in response to entry by rival superstores but not in response to new competition by other retailers (*Staples* 1997a, pp. 1077-78). Thus, both firms place locations free from competition from other superstores in price zones termed "noncompetitive" without regard to whether other retailers nearby sell office supplies (*Staples* 1997a, pp. 1077, 1079). The court relied heavily on this documentary evidence in explaining its decision to grant the FTC's motion for a preliminary injunction.

Econometric evidence was also an important part of the case for both sides in the litigation. The FTC confirmed what the documents showed through a systematic empirical study of Staples's pricing, presented in court by Professor Orley Ashenfelter, the FTC's econometric expert. The FTC also presented an econometric study of the rate that Staples historically passed through cost savings to consumers in the form of lower prices. For their part, the merging firms offered alternative statistical analyses of pricing, as well as econometric studies of the determinants of Staples price-cost margins and the effect on revenues at Staples stores of nearby store openings by possible rivals. This article describes the motivation and methods behind the FTC's econometric analyses.

The Importance of the *Staples* Case

The federal antitrust enforcement agencies, the FTC and the Department of Justice, review thousands of mergers and acquisitions each year. In fiscal year 1998, for example, 4728 transactions were reported pursuant to the premerger notification requirements of the Hart-Scott-Rodino Antitrust Improvements Act. Compared with this figure, merger litigation is extremely rare. Only a small fraction of reported transactions is investigated in depth; many of these are not challenged, and most of the rest are allowed to proceed following a consent settlement requiring a limited divestiture. The two federal antitrust agencies together litigate only a handful of merger challenges annually, and private litigation or state enforcement actions are equally infrequent. In such circumstances, a single litigated decision can take on outsized importance as a signal of trends in antitrust.

To an investment banker, "[t]he 1997 challenge to the Staples-Office Depot merger was a particularly dramatic showstopper, a sign of the [government's] new assertive posture and of the courts' willingness to block a deal" (Wasserstein 1998, p. 748). Within the antitrust community, the *Staples* litigation was important because it put into play

the four main initiatives in merger analysis undertaken by the federal antitrust enforcement agencies during the past decade. First, to explain how the merger would harm competition, the FTC applied the unilateral competitive effects theory for mergers among sellers of differentiated products, as set forth in the *Horizontal Merger Guidelines* (Baker 1997a; U.S. Department of Justice and Federal Trade Commission 1997, §2.21). Second, the litigants proffered extensive econometric analyses, primarily assessing the importance of localized competition between the merging firms and the constraint they place on each other (Baker 1997b; Baker and Bresnahan 1992). Third, the extensive courtroom discussion of the significance of efficiencies alleged by the merging firms was conducted against the background of newly released revisions to the *Horizontal Merger Guidelines*, which set forth a new analytical approach to answering that question (U.S. Department of Justice and Federal Trade Commission 1997, §4). Fourth, the FTC and the merging firms contested whether new competition, particularly product line extension by firms other than office superstores selling office supplies, would solve the competitive problem from merger, thus implicating the "entry likelihood" analysis in the *Horizontal Merger Guidelines*, which some courts have misunderstood (Baker 1997c; Ordover and Baker 1992; U.S. Department of Justice and Federal Trade Commission 1997, §2.212 n. 23).

These four government initiatives emerged unscathed in Judge Thomas F. Hogan's opinion. Although they largely were not treated explicitly in the written decision, the opinion that, it might be said, hides behind the words Judge Hogan wrote bolsters each. (The reference to a "hidden opinion" is a rhetorical device for highlighting important aspects or implications of the decision not emphasized in Judge Hogan's opinion and is not employed to suggest that Judge Hogan meant anything other than what he wrote.) Other discussions of this case by senior FTC officials instead highlight the opinion's links with traditional legal approaches to merger analysis (Baer 1997; Pitofsky 1997).

First, though the court did not refer to the unilateral effects theory by name, Judge Hogan employed its logic in explaining why he found an office superstore submarket and why the merger would have harmed competition. In defining the product market, the opinion recognized that office superstore chains provide the primary competitive constraint on one another's pricing. "While it is clear to the Court that Staples and Office Depot do not ignore sellers such as warehouse clubs, Best Buy, or Wal-Mart, the evidence clearly shows that Staples and Office Depot each consider the other superstores as the primary competition" (*Staples* 1997a, pp. 1079-80). And in explaining why the merger would lead to adverse competitive effects, the court adopted the reasoning of the localized competition theory for mergers among sellers of differentiated products set forth in the *Horizontal Merger Guidelines* (U.S. Department of Justice and Federal Trade Commission 1997). Judge Hogan observed that "direct evidence shows that by eliminating Staples' most significant, and in many markets only, rival, this merger would allow Staples to increase prices or otherwise maintain prices at an anti-competitive level" (*Staples* 1997a, p. 1082). Thus, when the written opinion appeals to the "practical indicia" for defining submarkets

listed by the Supreme Court in *Brown Shoe* (*Brown Shoe Co. v. United States* 1962, p. 325; *Staples* 1997a, p. 1075), the hidden opinion treats this approach as a legal hook for reaching unilateral competitive effects from a merger among the sellers of close substitutes. With direct evidence of likely harm to competition, there is little need to specify the market's precise boundaries (Baker 1997d, pp. 185-89). Judge Hogan did not return to the past by defining a narrow market; he instead used the old construct of a submarket to help articulate a contemporary perspective.¹

Second, Judge Hogan's hidden opinion supports the government's use of econometric evidence, though the court did not trumpet doing so. The opinion never uses the term, presumably in a conscious effort to downplay novelty to avoid creating an issue for appeal, and does not discuss the extensive econometric evidence on pricing in the trial record. Yet Judge Hogan demonstrably relied on econometric evidence in one case, when he stated that, "in this case the defendants have projected a pass through rate of two-thirds of the savings while the evidence shows that, historically, Staples has passed through only 15-17%" (*Staples* 1997a, p. 1090). The sole basis in the record for the 15%-17% figure is the testimony of the FTC's econometric expert as to the conclusions of his statistical analysis of the pass-through rate.

Third, Judge Hogan approached efficiencies in a diffident way, by first pointing out that if old Supreme Court precedents remain authoritative, the efficiency defense may not be viable (*Staples* 1997a, p. 1088). But the opinion hidden behind this unassuming approach supports the government's methodology for reviewing claimed efficiencies. After nodding to the old Supreme Court cases, Judge Hogan examined efficiencies with an approach that tracks the recent *Horizontal Merger Guidelines* (U.S. Department of Justice and Federal Trade Commission 1997) revisions. The court refused to accept alleged cost savings when "the defendants did not accurately calculate which projected cost savings were merger specific and which were, in fact, not related to the merger" (*Staples* 1997a, p. 1090). Judge Hogan dismissed much of the defendants' projected cost savings on the grounds that they are "in large part unverified, or at least the defendants failed to produce the necessary documentation for verification" (*Staples* 1997a, p. 1089). In finding "that the defendants' projected pass through rate—the amount of the projected savings that the combined company expects to

¹For another example of a court using the submarket concept to reach unilateral competitive effects, see *Olin Corp. v. Federal Trade Commission* (1993), which recognized a market limited to dry swimming-pool sanitizing chemicals within a broader market of all pool sanitizers. Many of the "practical indicia" set forth as a basis for defining submarkets in *Brown Shoe* can be understood from a contemporary perspective as directly related to the question of whether localized competition within a broad market is important. These include industry or public recognition of the submarket as a separate economic entity, the product's peculiar characteristics and uses, distinct customers, and sensitivity to price changes.

It is worth noting that the *Brown Shoe* factors also anticipate another recent agency initiative in merger analysis—the idea of price discrimination markets, which define markets not just by the scope of the product and geographic region, but also by the identity of the targeted buyers to which a hypothetical monopolist would raise its price (U.S. Department of Justice and Federal Trade Commission 1997, §1.12). For example, *Avnet, Inc. v. Federal Trade Commission* (1975, pp. 78-79) upheld an FTC market definition of the sale of new components for automotive electrical units to production-line rebuilders rather than custom rebuilders (repair shops).

pass on to consumers in the form of lower prices—is unrealistic” (Staples 1997a, p. 1090), the court followed the *Horizontal Merger Guidelines* in focusing on whether consumers would obtain the benefit of the efficiencies.

Fourth, in supporting its conclusion that entry would not solve the competitive problem, the written opinion emphasized the factual basis for that finding and the weaknesses in the defendants’ evidence. Yet, in a matter-of-fact way, the court adopted the perspective of the *Horizontal Merger Guidelines* (U.S. Department of Justice and Federal Trade Commission 1997). Judge Hogan recognized as the legal standard whether entry “would likely avert anticompetitive effects” from the acquisition by acting as a constraint on the merged firms’ prices (Staples 1997a, p. 1086; *United States v. Baker Hughes* 1990, p. 989). Here, the court accepted that entry matters, under Clayton Act §7, insofar as it would solve the competitive problem from the merger. Unlike some other courts, Judge Hogan did not regard his task as assessing the height of barriers to entry in the abstract, unrelated to the transaction before him (Baker 1997c). Rather, Judge Hogan properly compared how the office superstore market would likely look after the proposed transaction (including the competitive significance of any additional entry that the merger would call forth) with the likely evolution of the market in the absence of the proposed acquisition. This perspective on entry was reinforced by similar comparisons in Judge Hogan’s analyses of efficiencies (by refusing to accept efficiency claims that were not merger-specific) and competitive effects. In the latter context, the court pointed out that when the opinion discusses “raising” prices, it makes that comparison “with respect to where prices would have been absent the merger,” regardless of whether the prices represent “an increase from present price levels” (Staples 1997a, p. 1082, n. 14).

The remainder of this article highlights the second of these four government initiatives by discussing various aspects of the use of econometrics by the FTC in the *Staples* litigation.² The next section, on pricing studies, describes the FTC’s econometric analyses of the extent of localized competition between the merging firms. The following section describes the FTC’s econometric analysis of the extent to which the merged firm would pass on cost savings from the acquisition to buyers. The next section sets forth three lessons of the *Staples* experience for the process of relying on econometric evidence in merger investigations. The article concludes by drawing out some lessons regarding the use of pricing data in antitrust merger analysis.

Pricing Studies

Most of the econometric effort in the investigation and litigation focused on studies of pricing. Indeed, the pricing documents of the merging firms are what first attracted the

FTC staff’s attention. The FTC staff saw, and later introduced into court, documents that demonstrated that Staples and Office Depot each set prices and created price zones primarily on the basis of competition from other office superstore chains (its merger partner and OfficeMax). The documents showed that Staples expected that the merger would ease competitive pressure from Office Depot, allowing Staples to increase margins by an amount that the FTC’s primary economic expert, Dr. Frederick Warren-Boulton, later translated into an average 5% to 10% price increase on office supplies in overlap markets. The price increase forecasts discussed in this article are summarized in Table 1.

The noneconometric evidence further demonstrated that Staples prices were significantly lower in cities where Staples competed with Office Depot than in what Staples termed “noncompetitive” price zones, where Staples faced no other superstore chains. Similarly, Staples prices were lower in three superstore chain cities than in cities where Staples and OfficeMax both had a presence but Office Depot did not. As the FTC’s economic expert later testified, a simple comparison between prices in cities where the two chains competed and prices in cities where they did not compete suggested that the merger, by removing Office Depot from the market, would raise price on average by approximately 9% in overlap markets (Dalkir and Warren-Boulton 1999, p. 152). Moreover, this type of calculation understates the harm to competition from this merger, because the likely price effects were not limited to markets in which the merging firms currently compete. Many nonoverlap markets predictably would have become overlap markets in the absence of the merger as Staples and Office Depot continued their aggressive premerger expansion plans.

Initial econometric estimates made during the FTC’s investigation were aimed at confirming systematically what was believed to have been learned from the party documents: Staples prices were lower when Office Depot had a greater presence nearby. Weekly data covering more than 400 Staples stores (spread over more than 40 cities) for more than 18 months were obtained from the parties on a confidential basis. The data included prices for several individual office supply products defined by stockkeeping units (skus),³ as well as a price index for consumable office supplies created by the merging firms’ economic expert. Most of the analyses were conducted on monthly aggregates, in part because the FTC staff initially was unable to sample some variables on a weekly basis. The key parameter estimates, in general, did not vary with the frequency of the data.

The main object of the econometric analyses of pricing was to determine how Staples’ prices varied from one store to the next or over time as the number of nearby Office Depot stores varied. The pricing models employed internally by the FTC staff and those that the econometric

²This article focuses on the empirical studies introduced by the FTC’s econometric witness, so it does not discuss the stock market “event study” prepared by the FTC’s economic expert. Nor does it discuss two econometric analyses relied on by the defendants’ economic expert: an analysis of the relative reduction in revenues at the average Staples store when office superstores and nonsuperstores opened locations nearby and an analysis of the way Staples’ gross margins varied with the extent of rivalry from Office Depot.

³Stockkeeping units are the finely specified product definitions chosen by a firm for internal inventory management uses. For example, a firm might use different skus for red ink and blue ink models of a particular brand and style of pen and different skus for the medium- and fine-point models.

Table 1. Predicted Price Increases from the Staples–Office Depot Merger

| Estimated Price Increase* | Forecasting Method |
|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Noneconometric forecasts (reported by FTC's economic expert) | |
| 5% to 10% | Inference from internal Staples strategy document. |
| approximately 9% | Estimate from simple comparison of average price level in cities where Staples competes with Office Depot with average price level in cities without head-to-head competition (not controlling for other variables affecting price). |
| Simulations based on econometric analyses (reported by FTC's econometric expert) | |
| Cross-section versus fixed-effects estimates | |
| 7.1% | Cross-section estimate, controlling for the presence of nonsuperstore retailers. |
| 7.6% | Fixed-effect estimate based on a model similar to the model generating the cross-section estimate. |
| Correcting problems with the opposing expert's empirical study | |
| approximately 1% | Replication of model introduced by merging firm's economic expert. |
| 2.5% to 3.7% | Model introduced by merging firms' economic expert, adjusted by adding a variable based on the number of Office Depot stores within the metropolitan statistical area. |
| 6.5% to 8.6% | Model introduced by merging firms' economic expert, adjusted by adding a metropolitan statistical area-based Office Depot variable and estimated on a nationwide sample (including observations in California and elsewhere that had been excluded by merging firm's economic expert). |
| Pooled nationwide sample versus regional samples | |
| 7.6% | Fixed-effect estimate previously reported, estimated over a nationwide sample. |
| 9.8% | Weighted average of two regional estimates (California locations and the rest of the United States) using the same model. |

*Average Staples price increase nationwide for consumable office supplies in overlap markets.

experts for both sides adopted were reduced-form price equations, which explained Staples prices by variables treated as exogenous or predetermined (Gleason and Hosken 1999). These included variables reflecting the number and identity of nearby office superstore rivals, reflecting the number and identity of potential nonsuperstore rivals (discount mass merchandisers, warehouse club stores, and computer superstores), and accounting for exogenous determinants of cost and demand (such as paper prices and "fixed-effect" indicator variables for each sample period).

When seeking to identify price effects of changing market structure from variation in pricing over time, the models included fixed effects for each store. The results of this pricing analysis were used to simulate the effect of the merger in two alternative ways. One procedure, proposed by the defendants' economic expert, treated the merger as closing down Office Depot stores near Staples stores. The alternative approach took the view that the merger would convert Office Depot stores into Staples stores.

Cross-Section Versus Fixed-Effects Estimates

The FTC staff's initial analyses pooled what could be learned by comparing prices across the stores in the sample with what could be learned by comparing price changes over time as more superstores enter a market. (The data set was a panel; it followed individual stores over time and thus included multiple observations on each store.) In the data, pricing across markets varied more than pricing over time, so the estimates using pooled data were dominated by comparisons across markets. Accordingly, at the beginning of the investigation, the FTC staff essentially was employing a cross-sectional statistical approach that adopted the perspective of the merging firms' documents. The effects of competition between Staples and Office Depot were determined by comparing the price Staples charged at stores facing competition from nearby Office Depot stores with the price Staples charged at stores free from Office Depot rivalry.

The FTC staff's internal cross-sectional estimates were similar to the cross-sectional estimates that the FTC's econometric expert later reported. Prices were substantially lower where Staples competed with Office Depot, and a merger between the two likely would enable Staples to raise the average price of consumable office supplies by more than 7%. Similarly, analysis of pricing data from Office Depot showed that competition from Staples kept Office Depot's price low. Because demand elasticities differ across products, prices for some goods would be expected to rise by more than the average price increase of approximately 7%, and prices for other products would rise by less. For example, the average simulated price increase at Staples stores for a price index limited to what Staples termed "price-sensitive items" (such as copy paper, popular brands of pens, and one-third cut file folders) was more than double the predicted increase for the consumable office supply price index as a whole. Similarly, prices in some geographic regions would be expected to rise by more than this nationwide average, as was found in other econometric results described subsequently.

In discussing this approach with the merging firms, the firms stressed that, in determining the effects of Office Depot on Staples pricing, it was necessary to control for potential rivalry by nonsuperstore vendors of office supplies such as discount mass merchandisers (e.g., Wal-Mart), warehouse club stores (e.g., Price Club), and computer superstores. This was not actually a criticism of the FTC's approach because the FTC staff had evaluated that possibility from the start, notwithstanding the extensive documentary evidence that the merging firms treated nonsuperstore rivalry as only secondary in importance to superstore rivalry. Indeed, all the FTC's regression models—those specified internally as well as those specified by the FTC's

econometric expert—included variables to account for potential rivalry by firms other than superstores.⁴

The main criticism of the FTC staff's initial empirical approach offered by the merging firms and their economic expert was that the cross-sectional comparison was biased toward finding a greater price effect of head-to-head competition than actually existed. They insisted that Staples prices were high in single superstore markets and other markets where Office Depot did not compete because, on average, costs other than those the FTC could measure and control for in the equations, perhaps resulting from local zoning provisions or congestion, were high in those markets. They asserted that these higher costs simultaneously led Staples to raise the price higher than what it charged elsewhere and discouraged Office Depot from entering.

On the surface, this argument seemed plausible. It is a common criticism of cross-sectional studies to question whether the results are biased because the econometrician is unable to observe and control for important differences across markets, and those differences are correlated with the variables whose effect is at issue (Hsiao 1986, pp. 206–208). And if prices were at cost in all markets, as the merging firms contended, the only way the FTC could observe higher prices in markets with less superstore competition is if the costs it was unable to control for were higher in those markets. Unfortunately for the parties, this theoretical possibility had negligible support in their documents. The FTC's extensive review turned up no evidence of important unobservable cost variables affecting pricing, except in one city. On the basis of these documents, which did not support the merging firms' claims, the FTC staff believed that omitted variables did not bias its cross-section econometric analyses.

The merging firms' economic expert sought to test the omitted variable bias hypothesis statistically, notwithstanding the absence of support for that theory in the pricing documents. He proposed to compare the cross-section estimates with those derived from a fixed-effects model. The fixed-effects model incorporates indicator (or dummy) variables for the individual stores. It controls for the possibility of omitted variable bias because the unobservable costs, whose variation across regions allegedly were affecting both Staples pricing and rival entry decisions, were likely not to vary over time at any one location. That is, if roads were congested or zoning approvals difficult to obtain in some area at the beginning of the sample, these local features were likely to continue to be observed 18 months later. In such circumstances, the effect of rivalry from Office Depot on Staples pricing can be isolated by determining what happened to Staples prices in locations where Staples stores were free or largely free from such competition at the beginning of the sample but faced more nearby Office Depot stores at the end

of the sample. By including store fixed effects, comparisons of prices across stores effectively are removed from the sample; the estimated effect of Office Depot rivalry on Staples pricing comes solely from pricing variation within markets over time. Accordingly, if the fixed-effects model gives similar estimates to the cross-section model, the relationship observed in the cross-market comparisons is unlikely to have been biased by the failure to control for unobservable cost variation across stores.

This test could not be definitive, however, because the difference between the cross-section and fixed-effects estimates does not measure cleanly the magnitude of the omitted variable bias in the cross-section regression. Fixed-effects models tend to exaggerate "errors-in-variables" bias, which is the difficulty in detecting statistically the influence of an explanatory variable when that variable is measured with error (Ashenfelter and Krueger 1994; Griliches 1979; Griliches and Hausman 1986). The measurement error at issue could be technical (e.g., recording the wrong opening date for Office Depot stores) or conceptual (e.g., weighting nearby and distant Office Depot locations improperly in computing a variable intended to reflect the intensity of rivalry with Office Depot).⁵ Thus, if the fixed-effects regression showed that rivalry from Office Depot had less influence on Staples pricing than appeared in the cross-section regression, there were two possible explanations: (1) The cross-section results were biased upward because cost variables correlated with Staples pricing and Office Depot entry were omitted from the cross-section equation or (2) The fixed-effects results were biased downward because the variables controlling for the extent of rivalry from Office Depot measured that rivalry with error. If the first explanation is correct, the test is accurate, revealing a bias in the cross-section estimates.⁶ If the second explanation is correct, the test of whether the cross-section results were biased is flawed.

Well before the FTC decided to challenge this transaction, the defendants' economic expert estimated that the merger would raise Staples' prices slightly less than 1% when the effect of rivalry from Office Depot was measured

⁵Moreover, the timing of the effect of entry is difficult to date conceptually, even if the day the first Office Depot store opened is known. On the one hand, Staples may lower price at a store in anticipation of an Office Depot opening nearby. On the other hand, Staples may delay reducing price until many Office Depot locations have opened nearby and the rival superstore chain achieves a substantial local presence. This difficulty could mean that fixed-effects estimates that treat the appearance of a sole nearby Office Depot store as entry with full effect on the day of the store opening would appear to have far greater precision than they possess. The other variables in the data set associated with a Staples store newly facing Office Depot competition typically would not change between the week or month before the Office Depot entry and the date that entry is recorded. In consequence, the fixed-effects model improperly could treat the difference in the price at the nearby Staples store over that week or month as an extraordinarily powerful natural experiment that reveals the significance of Office Depot rivalry.

⁶The merging firms' economic expert offered a formal specification test purporting to show that a cross-section analysis was biased. The test in effect operated by comparing cross-section results with those derived from a fixed-effects model assumed to be specified correctly. However, the fixed-effects model employed by the merging firms' economic expert was specified incorrectly, as discussed subsequently. In consequence, the proposed specification test could not test whether cross-section regressions were appropriate.

⁴With such models, the FTC found that firms other than superstores provided little competitive constraint on Staples pricing. At the trial, the FTC's economic expert relied on simulations performed for him by the FTC's econometric expert to make that point as one justification for excluding consumable office supplies sold through nonsuperstore retailers from the product market. These simulations included estimates of the price effect of reducing the market presence of each potential nonsuperstore rival individually, as well as simulations of the price effect of merging all three superstores into a hypothetical monopolist.

with a fixed-effects rather than a cross-section model. This fixed-effects estimate was nearly an order of magnitude less than the cross-section estimates obtained by the FTC staff. At this intermediate stage of the merger investigation, the interpretation of the pricing data appeared to shape up as an argument about whether to prefer cross-section or fixed-effects models for estimating the price effect of rivalry between the merging firms. The cross-section results were consistent with the documents, but the fixed-effects results may have controlled for omitted variables that might bias the cross-section analyses at the price of exacerbating an errors-in-variables bias. Because of the powerful evidence in the merging firms' documents about the price-depressing effect of rivalry between the two (the same evidence later highlighted by Judge Hogan) and the absence of any indication in the documents of important omitted variables influencing Staples pricing and Office Depot entry, the FTC staff interpreted the lower fixed-effects estimates as most likely reflecting measurement error (i.e., as a flawed test) rather than as disproving the cross-section estimates.

Through further data analysis as the investigation proceeded, this interpretation was shown to be correct. At the trial, Professor Orley Ashenfelter, the FTC's econometric expert, described simulations of the impact of the merger on Staples prices based on his fixed-effects regressions, which were similar to those based on cross-section analyses. The cross-section estimates were obtained by recovering the estimated store fixed effects from a regression of price on store and time dummy variables and employing those fixed effects as the dependent variable in a model that included measures of rivalry from superstores and potential non-superstore competitors as independent variables. Professor Ashenfelter's simulation based on the cross-section regression predicted a 7.1% price increase from merger, and his simulation based on a similar fixed-effects model predicted a 7.6% price rise.⁷

Professor Ashenfelter highlighted two main problems with the fixed-effects study presented by the merging firms' expert; correcting these problems moved the simulated average nationwide price increase from approximately 1% to the range of 6.5% to 8.6% (depending on how the transaction was modeled in the simulation). The first problem was a type of conceptual measurement error. The merging firms' expert had measured the presence of Office Depot (and, similarly, the presence of all other actual or potential rivals to Staples) in three nonoverlapping concentric circles: one 0 to 5 miles from a Staples store, one 5 to 10 miles away, and one 10 to 20 miles away. This was not, on its face, an implausible approach for capturing the competitive significance of rivalry from Office Depot, but it did not share the perspective of the documentary evidence that the merging firms established price zones commonly encompassing entire metropolitan areas within which prices were nearly uniform. (Metropolitan area-wide pricing is plausible because many advertising media reach the entire metropolitan area.) Professor Ashenfelter showed that it was statisti-

cally important to do what the price zone documents suggested: include in addition a variable based on the number of Office Depot stores within the metropolitan statistical area (MSA). In a few cases, the Staples price zone was larger than an MSA, and the area-wide variable was based on the number of Office Depot stores within a Consolidated Metropolitan Statistical Area. Adding the MSA-based variable to the concentric circle variables had the effect of tripling or quadrupling the simulated price effect of the merger, moving the simulated price increase from just less than 1% to a range between 2.5 and 3.7% (varying with certain technical differences in the method of simulation). Although both kinds of variables contributed statistically to reflecting the intensity of Office Depot competition, the MSA-based competitor variables were more important than the concentric circle variables in the following sense: The FTC's econometric expert showed that the simulation results were not affected substantially by dropping the concentric circle variables as long as the MSA-based variables remained. At trial, the merging firms' expert conceded that it was reasonable for the FTC's expert to include the MSA-based variables (*Staples* 1997b, p. 64).

The characterization of the first problem as a conceptual measurement error presumes that the errors from this mis-measurement of the right-hand variables were not correlated with the other regressors. If the errors were not random, the problem could be characterized better as one of omitted variables. Regardless of the appropriate technical characterization of the misspecification in the study presented by the merging firms' expert, the FTC's expert tested for the problem in the best way possible by correcting the measurement error and demonstrating that doing so changed the results significantly (in both an economic and a statistical sense).

The other problem with the fixed-effects study presented by the merging firms' expert was a sample selection bias. This bias resulted from the arbitrary exclusion of observations in California, Pennsylvania, and certain other areas (*Staples* 1997c, pp. 48-49). When the excluded stores were included, the simulated price effect of the merger nationwide more than doubled from the 2.5% to 3.7% range, now reaching a range between 6.5 and 8.6%.

The most problematic exclusion involved 15 or 16 California stores (*Staples* 1997b, pp. 48-49, 71-88). The merging firms' expert offered three unconvincing justifications for dropping these stores from his pricing study. First, he described the excluded stores as rural (*Staples* 1997b, pp. 48-49), though many were in the San Francisco, Los Angeles, and San Diego metropolitan areas and others were in towns such as Monterey and Santa Cruz (*Staples* 1997b, pp. 79-80). Second, he said he identified the stores on the basis of observing that less than four computer superstores could be found within 20 or 25 miles (*Staples* 1997b, p. 49) but did not use this criterion to separate rural from urban stores in non-California markets (*Staples* 1997b, pp. 74-75). Third, he testified that exclusion of these stores was justified because Staples executives told him that these stores behaved differently (*Staples* 1997b, pp. 49, 71). Yet he did not adopt a consistent method of treating stores he believed behaved differently. When the defendants' expert concluded that the remaining California stores behaved differently than the rest of the United States, he chose to analyze them separately

⁷The FTC's expert presented estimated price effects exclusively for overlap markets. The defendants' expert calculated price effects both for overlap and all markets. All the estimates discussed in this article are for overlap markets.

rather than exclude them (*Staples* 1997b, p. 48). In addition, though he excluded these 15 or 16 stores when conducting pricing analyses, he did not exclude them from his analysis of Staples' price-cost margins (*Staples* 1997b, pp. 77, 88).

The main response of the defendants' economic expert to Professor Ashenfelter's demonstration of these problems with the expert report introduced by the defense was to argue that the FTC's expert had inappropriately included data for California stores in the same regression model with the data for the rest of the United States because a statistical test (Chow test) showed that the two subsamples behaved differently. The FTC's econometric expert agreed in principle but demonstrated that this criticism did not overturn his conclusion that simulations of the merger using the fixed effect regression model suggest that prices would rise on average more than 6% in overlap markets. When he adjusted his methodology to address this concern, he actually found higher simulated price increases than before. The adjustment involved estimating the regression model separately for the two relevant groups of stores (the California locations in the subsample identified by the defendants' expert and the rest of the United States), simulating the price effect separately for each subsample, and computing a nationwide average as a weighted average of the two regional estimates. For example, the FTC's expert originally reported simulations using one regression model that generated a 7.6% average price increase. Using the alternative methodology that responded to the criticism of pricing data across regions, the same model implied a nationwide average price rise of 9.8%, more than two percentage points higher. (The simulated price increase from merger was 17.4% for the California locations and 5.0% for the rest of the United States, leading to a weighted average 9.8% estimate for the nation as a whole.)

The merging firms and their expert also argued that these simulations overstated the likely price increase from the merger because the regression models on which they were based did not account for the reactions of superstore and nonsuperstore rivals, particularly the likely repositioning (expansion of office supply product lines) by secondary rivals such as Wal-Mart, Kmart, Sam's Club, and Best Buy. Yet the regression results and simulations derived from them reflect the response of competitors as it was observed historically in the data. Consistent with this perspective, Judge Hogan concluded that the absence of expansion by secondary competitors to compete away high superstore prices in cities with only one superstore in the past suggests that such secondary competitors likely would not solve the competitive problem in the future by repositioning in response to the higher prices likely to result from the post-merger exercise of market power (*Staples* 1997a, p. 1088).

Other Econometric Issues

Three other econometric issues involving the pricing studies were raised but not fully addressed by both sides under the time pressures of litigation. The first was the reliability of simulations out of sample, an issue that arose with the simulations both sides conducted that were based on fixed-effects models. (In contrast, simulations based on cross-section models did not require out of sample predictions.) During the less than two years in the data, any given Staples store might observe the entry of a small number of Office

Depot stores nearby, but rarely as many as five. Yet Office Depot has more than five locations in many metropolitan areas (including substantially more than five locations in Los Angeles). To simulate the merger in MSAs with large numbers of Office Depots using a fixed-effects model, it is necessary to extrapolate the regression model out of sample, adding to the uncertainty of the predictions. When large predicted effects result from this procedure, it is nevertheless reasonable to conclude that the merger would create a powerful incentive to raise price.

The second issue was the potential endogeneity of entry. The regression model treats the addition of a store by Staples or any of its potential rivals as an exogenous event, unrelated to the price Staples charges. Yet it is possible that a high Staples price encourages expansion and entry by Staples and perhaps other firms as well. The defendants' economic expert raised this possibility as one reason the FTC expert's results might be biased but did not press the point.⁸ When a similar issue arose in another setting, correcting for endogeneity in reduced-form price equations was found to raise the predicted price effect of increased concentration substantially (Evans, Froeb, and Werden 1993). The FTC staff had preliminary results, not part of the trial record, that corrected for this problem by using instrumental variables to estimate the regression model. The number of Staples stores and Office Depot stores near a given Staples location were treated as endogenous. The instruments were based on population of the MSA in which the store was found (a measure of the size of market), the number of outlets the superstore chain had in other MSAs in the state (a measure of geographic proximity to the superstore chain's existing locations), and interactions among these variables. Regressions estimated using these instruments led to simulated price increases roughly double those based on regressions that were estimated using ordinary least squares.

The third issue was whether fixed effects are the best way to account for the possibility of omitted store-specific cost variables correlated with both Staples prices and Office Depot entry. Both sides relied on models that used store fixed effects for this purpose. This modeling strategy assumes that any such omitted variables do not vary over time. On the eve of trial, the defendants' economic expert proposed instead accounting for omitted variables in a new way, with store-specific time trends along with store fixed effects. This is a more stringent test of whether the cross-section results are biased as a result of omitted cost variables than the fixed-effects model is, but it places an even greater premium on measuring the independent variables properly. The defendants' expert found that using store-specific time trends cut the estimated price effect nearly in half. But defendants did not offer any reason to suppose that omitted cost variables would vary over time, linearly, at a different rate from store to store; indeed, there was little reason to suppose that omitted cost variables played an important role in Staples pricing in any case. Therefore, if adding store-

⁸The defendants' expert did not include a variable reflecting the number of Staples stores near a given Staples store, though the FTC's expert did. The inclusion or exclusion of this variable made little difference to the simulation results.

specific time trends lowers the predicted impact of the merger, it is likely that this would not reflect omitted variables but instead would result from exacerbating errors-in-variables bias.

Pass-Through of Cost Changes

The FTC's econometric expert also testified to a statistical analysis of the rate at which Staples historically passed on firm-specific cost reductions to consumers. The merging firms' expert had framed the issue by asserting that Staples typically reduced price by two-thirds of any cost reduction, though he did not present a data analysis in support of this conclusion. In response, the FTC's economic expert, Dr. Frederick Warren-Boulton, pointed out the importance of distinguishing between firm-specific and industrywide cost shocks. He argued that the pass-through rate for industrywide cost savings was likely greater than the rate for firm-specific savings; in the former case, competition would force prices down. Yet the lower firm-specific rate was the more relevant for analyzing a prospective merger, because merger-specific efficiencies generally should be viewed as firm-specific. Efficiencies must be merger-specific because efficiencies that likely would have been achieved absent the merger are not cognizable under the *Horizontal Merger Guidelines* (U.S. Department of Justice and Federal Trade Commission 1997, §4).

The FTC's econometric expert, Professor Orley Ashenfelter, working with the FTC econometrics team, developed a way to isolate empirically the firm-specific pass-through rate (Ashenfelter et al. 1998). The data set employed for the pass-through rate analysis included a measure of average variable cost by sku and store for 30 products sold by both Staples and Office Depot.⁹ Two regression models were estimated. The first related the Staples price to its own costs and fixed effects for store, sku, and time.¹⁰ The coefficient on the Staples cost variable in this model was .57. Because variables were expressed in logarithms, this coefficient seemed to imply that when Staples' costs fell by 10%, it historically reduced price on average by 5.7%, close to the two-thirds pass-through rate suggested by the merging firms. But this historical average is not the right pass-through rate for analyzing the price effect of merger-specific cost savings because it combines the effects of industrywide and firm-specific cost reductions.

To isolate the firm-specific pass-through rate, a measure of Office Depot costs was added to the regression model. The Office Depot cost variable is thought of as a proxy for industrywide costs; after all, if costs fell for all firms in the industry, regardless of the market definition, they surely would fall for both these firms. That is, the methodology

does not require that the product market be defined; all that is required is that whatever the product market, both Staples and Office Depot sell within it. With the Office Depot cost variable in the equation, the Staples cost variable would pick up only the effect of Staples-specific cost reductions.

The results were striking. The Staples-specific pass-through rate was only 15%, much lower than the 57% figure suggested by the first model or the 67% figure claimed by the merging firms.¹¹ In other words, if Staples costs fell 10% but its rivals' costs did not change, Staples would lower price only 1.5%. As previously noted, Judge Hogan relied on this estimate in concluding that the cognizable efficiencies from the proposed merger would largely not be passed on to consumers.

Marshaling Econometric Evidence

The FTC economic staff has conducted and reviewed econometric studies and simulations (predictions) derived from regression results in many merger investigations, including *Staples*. This experience leads to three observations about the process of reviewing econometric studies submitted to the FTC by the economists working with outside parties. Other questions a court should consider in evaluating the admissibility and probative value of statistical evidence have been suggested by Rubinfeld (1985, p.1095; 1994, pp. 441-43).

The first observation grows out of a view of econometric analysis as a way of summarizing data. From this perspective, regression results presented by interested parties are an invitation to the FTC to interpret the data in a particular manner, much as briefs and white papers submitted by outside parties synthesize a view of the documentary and testimonial evidence. When interested parties quote documents and testimony in a brief or white paper, they are, in effect, asserting that if the FTC reviews the original source material (the full documents from which the quotes were selected and the evidence not mentioned along with the cited evidence), the FTC will interpret the body of facts in the way they propose. That assertion is the most trustworthy when the FTC has access to the documents and testimony that the parties reference, so the FTC staff can see for itself the context in which statements were made, study internal indicia of credibility, and confirm key factual assertions.

This analogy suggests why it is important that interested parties submitting econometric studies make it possible for the FTC staff to understand what they have done, reproduce it, and satisfy itself that results are not sensitive to alternative specifications. When outside parties submit regression results, they are, in effect, asserting that if the raw data are reviewed, the FTC staff will summarize it the same way the outside parties see it. That claim is most credible when the FTC staff has access to the raw data; understands how the data were collected and "cleaned" (corrected of obvious anomalies such as missing observations or prices less than zero); understands which observations were included in the

⁹Defendants mainly criticized this study for what they regarded as a small number and unrepresentative nature of the products in the sample. For example, the sample disproportionately included pens. The number of products was small because cost data were not available for most of the products sold by both Staples and Office Depot. Even so, the data contained in excess of 200,000 observations.

¹⁰In some specifications of both models, right-hand variables reflecting the presence of potential competitors (as employed in the pricing model) also were included. Doing so made virtually no difference to the coefficients of the cost variables, the primary concern.

¹¹The defendants' expert had gone through a similar exercise of matching those Staples and Office Depot skus for which cost data were available for a different purpose. When the FTC's model was reestimated on his product selections, the results were nearly identical: The Staples-specific pass-through rate was estimated at 17% rather than 15%.

analysis; understands how variables used in the study (e.g., price indices) were created and transformed; understands how the regression model that relates the variables was specified; determines what statistical techniques were employed; studies the full regression output (not just the coefficients of interest but also all estimated parameters, diagnostic statistics, and goodness-of-fit measures); understands how the regression results were interpreted (as bearing on the questions at issue in the investigation); and has the opportunity to "pressure test" those interpretations by reworking the study in its own way. Thus, econometric studies and simulation analyses should receive little weight when submitted without the data, explanations, and other assistance the FTC staff needs to understand and replicate the parties' methodology in a timely manner. Rubinfeld (1994, pp. 441-42) proposes that courts require similar disclosures, and a leading economics journal, the *American Economic Review*, also takes a similar view. The journal's policy, stated in every issue, is "to publish papers only if the data used in the analysis are clearly and precisely documented and are readily available to any researcher for purposes of replication. Details of the computations sufficient to permit replication must be provided." During the *Staples* investigation, for example, when the merging firms' expert presented his econometric pricing study, the description of his study did not specify that he had interpolated missing values or describe his methodology for doing so. It also did not indicate that he had normalized the price data for each store so that it began at the same index point, thus making his data unsuitable for comparisons of pricing across stores. Although these manipulations did not affect the results obtained from estimating fixed-effects regression models substantially, similar data modifications could matter to the results in some other case, and these adjustments to the data were time-consuming to uncover and understand.

Sharing such information facilitates developing a dialogue between the FTC staff and the parties about theory and evidence, which the FTC welcomes. During a merger investigation, before a complaint has been issued, the staff routinely discusses its concerns with the merging firms, based on the documentary, testimonial, and empirical evidence they have reviewed. For example, when the merger of Staples and Office Depot was under review, the FTC staff frequently discussed with those firms the relative merits of cross-section and fixed-effects analyses of pricing data. Merging parties have multiple opportunities during the course of an investigation to highlight exculpatory evidence, which may include providing their own data analyses, and share their view of the evidence with staff and the Commissioners. This information-gathering process enables the FTC to make an informed judgment about whether it has reason to believe the antitrust laws are violated by the proposed transaction. A dialogue with the merging firms helps test theories, and it helps the firms identify additional evidence that might bear on the FTC's concerns. This is manifestly in the FTC's interest; it neither wants to harm the economy by holding up procompetitive transactions nor learn about exculpatory evidence after it has decided to take a case to court.

The FTC staff tries to inform the parties of its concerns with enough specificity (consistent with confidentiality requirements) to permit them to understand and respond to those concerns, but it does not allow the parties to conduct discovery before the Commissioners have determined

whether to challenge the transaction. Staff analyses, from recommendation memos to econometric studies, are part of the FTC's deliberative process and are privileged in order to encourage staff to tell the Commissioners frankly what it thinks about the evidence. This is not unfair; if the FTC votes out a complaint, the staff must prove the case to a federal judge to obtain a preliminary injunction, and the parties receive full discovery before the hearing.

From another perspective, econometric analysis is more than merely a way to summarize data. Econometric modeling almost necessarily requires methodological choices, including decisions about the measurement of variables, specification of functional form, assumptions about error structure, selection of an appropriate time period for the study (or other restrictions on what data to include), and choice of instrumental variables. This leads to a second observation: Econometric analyses are more persuasive when key modeling choices are consistent with economic theory, informed by quantitative or qualitative information about the market, and tested against plausible alternatives. In the *Staples* litigation, for example, the FTC staff preferred regression equations that included MSA-based competitor variables along with concentric circle variables, both because doing so was suggested by the documentary evidence about price zones and because the MSA-based variables contributed statistically to reflecting the intensity of competition. Similarly, it preferred simulations based on regression equations accounting for all the Staples stores to simulations based on regressions that excluded certain observations because the FTC staff found the reasons the defendants' expert offered for excluding the data unconvincing. Although Judge Hogan made no specific findings of fact regarding appropriate econometric or simulation methodology in *Staples*, he concluded that the proposed merger likely would lead to price increases, consistent with the simulations conducted by the FTC's econometric expert and inconsistent with those offered by the defendants' economic expert.

The third observation about the process of evaluating econometric studies and simulations applies when the process for doing so is adversarial, regardless of whether the decision maker is an enforcement agency deciding whether to challenge a merger or a court deciding whether to sustain such a challenge. In an adversarial setting, each party may present both its own analysis of the data and a criticism of the other side's analysis. In such circumstances, the adversaries should be charged with assisting the decision maker by narrowing the issues to those that matter to the ultimate conclusion. Thus, criticism of an econometric or simulation methodology should be treated with skepticism absent a demonstration that a reasonable alternative leads to a substantially different result, where such an analysis is possible. This observation is consistent with the view of the circuit courts that have interpreted the Supreme Court's decision in *Bazemore v. Friday* (1986) to require that the party challenging a regression analysis for omitting a relevant variable make a showing (beyond mere conjecture or assertion of possible flaws) that including that variable weakens the proof of whatever the statistical study is offered to demonstrate (*Catlett v. Missouri Highway and Transportation Commission* 1988, p. 1266; *EEOC v. General Telephone*

Co. 1989, pp. 579–83; *Palmer v. Schultz* 1987, p. 101; *Sobel v. Yeshiva University* 1988, pp. 34–35). Similarly, Finkelstein (1978, p. 238) proposes that, when econometric studies are introduced into evidence in regulatory proceedings, “a party objecting to an econometric model introduced by another party should demonstrate the numerical significance of his objections wherever possible.”

In situations in which the effect of the questioned methodology cannot be determined quantitatively, the party criticizing the other side’s analysis should explain both why the other side’s approach is inappropriate and why it is plausible that the difference between the inappropriate and preferred approaches is substantial. The FTC appealed to this principle in the *Staples* litigation in responding to the merging firms’ criticism that it was inappropriate to pool observations nationwide when estimating a regression model. As previously noted, the FTC’s econometric expert demonstrated that the nationwide simulation results were substantially similar—indeed, more favorable to the FTC’s position—when the model was estimated regionally to address this criticism.

Pricing Data in Antitrust Merger Analysis

It is unlikely that the FTC would have brought the *Staples* case had the theory suggested by the documents not been confirmed with systematic empirical evidence. The anti-competitive theory had to overcome a natural initial supposition that defendants would be able to show that they were small players in a broad office-supply retailing product market characterized by easy entry and that they were merging merely to achieve greater scale economies more rapidly than internal growth would permit. Even though the party documents were inconsistent with this view, it was useful to confirm the anticompetitive theory with a systematic study of industry pricing. Moreover, the FTC believed that its pricing studies undermined defendants’ ability to rebut the evidence in their own pricing documents by asserting that the relationship the FTC alleged between Staples prices and rivalry from Office Depot was merely a “nonsense correlation” reflecting “cherry-picking” anecdotes.

Although the result in *Staples* does not discourage the continued use of econometric studies of pricing (and cost pass-through rate), it does not mandate any specific form for the pricing analysis. Pricing studies in future cases may involve simulations based on reduced-form price equations (the methodology employed by both sides in *Staples*), but they may instead (or also) involve simulations based on the estimation of demand elasticities. Reduced-form price equations are attractive for expediting in court the systematic determinants of pricing because they relate price to market structure (concentration). The reduced-form pricing analyses conducted during the *Staples* investigation related price to market structure in a more complex way than is done in traditional concentration–price studies (Weiss 1989). Consistent with the localized competition perspective of the FTC’s competitive effects theory, the econometric studies allowed for the possibility that some rivals constrained Staples’ pricing more than others. Still, this methodology is, in a general way, sympathetic to the structuralist perspective of the case law. However, demand

estimation is attractive because it is more sympathetic to the logic of the localized competition analysis central to the unilateral theory of adverse competitive effects of merger among sellers of differentiated products (Baker 1997a, p. 23; 1997b). In other investigations, therefore, the FTC staff and parties have exploited pricing data to estimate elasticities of demand.

Staples was an unusual case because so much pricing data were available for analysis. Many firms do not develop pricing information routinely as systematically as did these. In the wake of *Staples*, some wondered whether the FTC’s reliance on extensive pricing evidence to prove harm to competition would raise the expectations of courts trying other merger cases and, in consequence, make it more difficult for the antitrust enforcement agencies to succeed in future merger litigation. After *Staples*, could the agencies successfully demonstrate harm to competition without systematic pricing evidence, merely by showing, for example, as they had done effectively in the past, that the merging firms sold close substitutes in a concentrated market into which entry was not easy? The force of this question was heightened by the 1997 revisions to the federal *Horizontal Merger Guidelines* (U.S. Department of Justice and Federal Trade Commission 1997), which expressly called for consideration of the possibility that merger-related cost reductions would create an incentive to reduce price that outweighed any incentive to raise price resulting from the loss of competition. Could the antitrust agencies demonstrate that competition likely would be harmed when the merging firms sought to quantify the efficiencies from the transaction but when, unlike the situation in *Staples*, the enforcement agencies could not quantify the magnitude of the likely harm to competition?

These questions appear to have been answered in the affirmative in the recent decision in *Federal Trade Commission v. Cardinal Health, Inc.* (1998). In that case, Judge Stanley Sporkin issued a preliminary injunction barring two mergers involving the four largest firms in the drug wholesaling industry: Cardinal Health’s acquisition of Bergen Brunswig and McKesson’s acquisition of AmeriSource Health. (The two merger challenges were joined for trial.) During the drug wholesaling merger litigation, neither the FTC staff nor the merging firms introduced quantitative pricing analyses. Rather, Judge Sporkin found compelling the evidence introduced by the FTC staff, based on the merging firms’ own internal documents and public statements, that the mergers were intended to ease pricing pressures by removing excess capacity from the marketplace. He also found that the firms had the ability to engage in collusive pricing practices even without the mergers and concluded that the transactions would give them an increased ability to do so. The court was convinced that significant efficiencies likely would result from the proposed mergers, but it accepted the FTC’s view that the estimates of cost savings presented by the merging firms were overstated; that they were largely not relevant because, to a considerable extent, they could be achieved by continued competition absent the mergers; and that for the most part, they would not be passed on to consumers.

In analyzing these mergers, the antitrust enforcement agencies and the courts sought to understand how the merging firms set prices, identifying which rivals each firm primarily competes with and what factors drive each firm’s pricing decisions, in order to assess how the change in mar-

ket structure arising from merger would affect prices (or other important dimensions of industry competition). If *Cardinal Health* demonstrates that antitrust merger analysis does not require quantitative and empirically based forecasts of future prices, then *Staples* highlights the power of such evidence when it can be obtained and when it tells a clear story consistent with the available documentary and testimonial evidence.

References

- Ashenfelter, Orley, David Ashmore, Jonathan B. Baker, and Signe-Mary McKernan (1998), "Identifying the Firm-Specific Cost Pass-Through Rate," *FTC Bureau of Economics Working Paper No. 217* (January). Washington, DC: Federal Trade Commission..
- and Alan Kreuger (1994), "Estimates of the Economic Return to Schooling from a New Sample of Twins," *American Economic Review*, 84 (December), 1157-73.
- Avnet, Inc. v. Federal Trade Commission* (1975), 511 F.2d 70 (7th Cir.), *cert. denied*, 423 U.S. 833.
- Baer, William (1997), "New Myths and Old Realities: Perspectives on Recent Developments in Antitrust Enforcement," (November 17) [available at <http://www.ftc.gov/other/bany.htm>].
- Baker, Jonathan B. (1997a), "Unilateral Competitive Effects Theories in Merger Analysis," *Antitrust*, 11 (Spring), 21-26.
- (1997b), "Contemporary Empirical Merger Analysis," *George Mason Law Review*, 5 (Spring), 347-61.
- (1997c), "The Problem with *Baker Hughes* and *Syufy*: On the Role of Entry in Merger Analysis," *Antitrust Law Journal*, 65 (Winter), 353-74.
- (1997d), "Product Differentiation Through Space and Time: Some Antitrust Policy Issues," *Antitrust Bulletin*, 42 (Spring), 177-96.
- and Timothy F. Bresnahan (1992), "Empirical Methods of Identifying and Measuring Market Power," *Antitrust Law Journal*, 61 (Summer), 3-16.
- Bazemore v. Friday* (1986), 478 U.S. 385.
- Brown Shoe Co. v. United States* (1962), 370 U.S. 294.
- Catlett v. Missouri Highway and Transportation Commission* (1988), 828 F.2d 1260 (8th Cir.), *cert. denied*, 485 U.S. 1021.
- Dalkir, Serdar and Frederick R. Warren-Boulton (1999), "Prices, Market Definition, and the Effects of Merger: Staples-Office Depot (1997)," *The Antitrust Revolution*, 3d ed., John E. Kwoka Jr. and Lawrence J. White, eds. New York: Oxford University Press, 143-64.
- EEOC v. General Telephone Co.* (1989), 885 F.2d 575 (9th Cir.), *cert. denied*, 498 U.S. 950 (1990).
- Evans, William N., Luke M. Froeb, and Gregory J. Werden (1993), "Endogeneity in the Concentration Price Relationship: Causes, Consequences, and Cures," *Journal of Industrial Economics*, 41 (December), 431-38.
- Federal Trade Commission v. Cardinal Health, Inc.* (1998), 12 F. Supp. 2d 34 (D.D.C.) (Sporckin, J.).
- Federal Trade Commission v. Staples, Inc.* (1997a), 970 F. Supp. 1066 (D.D.C.) (Hogan, J.).
- (1997b), May 23, Trial Transcript.
- (1997c), May 21, Trial Transcript.
- Finkelstein, Michael O. (1978), *Quantitative Methods in Law: Studies in the Application of Mathematical Probability and Statistics to Legal Problems*. New York: The Free Press.
- Gleason, Suzanne and Daniel Hosken (1999), "Econometrics in FTC Versus Staples/Office Depot," *Antitrust Bulletin*, 44 (forthcoming).
- Griliches, Zvi (1979), "Sibling Models and Data in Economics: Beginnings of a Survey," *Journal of Political Economy*, 87 (5), S37-64.
- and Jerry A. Hausman (1986), "Errors in Variables in Panel Data," *Journal of Econometrics*, 31 (1), 93-118.
- Hsiao, Cheng (1986), *Analysis of Panel Data*. New York: Cambridge University Press.
- Olin Corp. v. Federal Trade Commission* (1993), 986 F.2d 1295 (9th Cir.), *cert. denied*, 510 U.S. 1110 (1994).
- Ordober, Janusz A. and Jonathan B. Baker (1992), "Entry Analysis Under the 1992 Horizontal Merger Guidelines," *Antitrust Law Journal*, 61 (Summer), 139-46.
- Palmer v. Schultz* (1987), 815 F.2d 84 (D.C. Cir.).
- Pitofsky, Robert (1997), "Staples and Boeing: What They Say About Merger Enforcement at the FTC," (September 23) [available at <http://www.ftc.gov/pitofsky/STAPLESspc.htm>].
- Rubinfeld, Daniel L. (1985), "Econometrics in the Courtroom," *Columbia Law Review*, 85 (June), 1048-97.
- (1994), "Reference Guide on Multiple Regression," in *Reference Manual on Scientific Evidence*. Washington, DC: U.S. Government Printing Office, 415-69.
- Sobel v. Yeshiva University* (1988), 839 F.2d 18 (2d. Cir.).
- U.S. Department of Justice and Federal Trade Commission (1997), *Horizontal Merger Guidelines*, (April 8) [available at <http://www.ftc.gov/bc/docs/horizmer.htm>].
- United States v. Baker Hughes* (1990), 908 F.2d 981 (D.C. Cir.).
- Wasserstein, Bruce (1998), *Big Deal: The Battle for Control of America's Leading Corporations*. New York: Warner Books.
- Weiss, Leonard W., ed. (1989), *Concentration and Price*. Cambridge, MA: MIT Press.

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