

Paper Trail: Working Papers and Recent Scholarship

Editors' Note: *Occasionally, an intensive intellectual probing of specific antitrust concepts will occur as a result of some court or agency opinion. While some of these issues may be discussed in other ABA Antitrust Section publications, The Antitrust Source will take the opportunity to summarize the probing for our readers and highlight the papers of interest in an Editor's Note. In this inaugural note, we review the recent buzz on critical loss. This issue also contains a brief Book Note reviewing a collection of essays on post-Chicago developments in antitrust. Send comments or suggestions for books, papers, or issues to review to William Page (page@law.ufl.edu), or John Woodbury (jrw@crai.com).*

—John R. Woodbury/William H. Page

WRITINGS ON CRITICAL LOSS

A Stylized Sketch of Market Definition History

Once upon a time, the approach of antitrust practitioners towards market definition seemed to flow from some simple, albeit idealized, concepts. In the “ideal” market, all goods were perfect substitutes, like wheat or widgets. The prices of each perfectly-homogeneous product produced by different firms would be identical—any price differences would be immediately and instantaneously eliminated either by suppliers arbitraging the market or by consumers engaging in “self-arbitrage.” To be sure, reality diverged from the ideal, but not enough for any (at the time) to believe that thinking of the markets in terms of the ideal was in any way misplaced. To define a market, one only had to find products that were “reasonably interchangeable” in supply and demand. Blue widgets seemed to be “reasonably” good substitutes for red widgets (and vice-versa, although it may have seemed odd to conduct the two-way analysis—after all, how could one product be a good substitute for another without the reverse also being true?)

But lawyers and economists began to view the “reasonably interchangeable” paradigm as one with its own implementation baggage. Practitioners had trouble distinguishing where one market ended and another began. Blue widgets seemed to be reasonable substitutes for red widgets, but square widgets and round widgets seemed to be used for somewhat different products. Where should practitioners say that the chain of substitution ended, thus defining a “market”? Becoming uncomfortable with seemingly broad markets that arose via the reasonable interchangeability standard, we began defining submarkets as well as markets, a concept that has been (until recently) scoffed at by purists, including or perhaps especially by economists. Either it's a market or it's not.

The SSNIP and Market Definition

And then came the 1982 Guidelines with the paradigm of the SSNIP-ing hypothetical monopolist as their basis for market definition: a market was now conceived of as a grouping of products over which

a hypothetical monopolist of those products could profitably make a “small but significant and non-transitory increase in price” over current levels. That approach captured the essence of what it meant to be a market for antitrust purposes: Was this a product whose price could be successfully raised by a firm with market power? The focus dramatically shifted from product interchangeability—or demand and supply cross-elasticities—to own-price demand elasticities. The thought experiment had become far more transparent.

Still, the question of how to operationalize the new paradigm seemed as difficult as the interchangeability paradigm. Yes, there were those whose papers explored residual demand analysis as a way of implementing the new market-definition test by directly focusing on own-price elasticities (e.g., Jonathan Baker and Tim Bresnahan, and David Scheffman and Pablo Spiller). This approach, however, was sufficiently data-intensive that for most mergers, it was impractical. What do you do if you can't directly measure product elasticities?

Finally, Critical Loss

Barry Harris and Joseph Simons answered in 1989 with critical loss analysis: “Simply” calculate how much the hypothetical monopolist of the product would have to lose in order to render a 5 or 10 percent price increase unprofitable and then ask whether such a loss—which depends upon the own-price demand elasticity—was more or less likely to result. The only data required was that on current production and the price-variable cost margin. Critical loss soon became part of the practitioner's lexicon and made its way into the courts. Although determining whether the actual loss would exceed the critical loss still required difficult-to-obtain and sometimes difficult-to-evaluate data, the approach nonetheless provided practitioners with a much more focused goal.

The *SunGard* decision and the FTC's *Cruise Line* opinion have recently thrust critical loss analysis into the spotlight. Critical loss analysis played a key role in both. Most recently, our sibling “old media” publication, *Antitrust* magazine, provided readers with a critique of that analysis by two former chief economists of the Antitrust Division, Michael Katz and Carl Shapiro. And another sibling publication, the *Antitrust Law Journal*, is set to publish a critical loss paper by Daniel O'Brien and Abraham Wickelgren. In addition, the ABA Antitrust Section recently sponsored a critical-loss Brown Bag program with Harris, Simons (the FTC's Competition Bureau Director), and Shapiro, and rumor has it that Scheffman, Director of the FTC's Bureau of Economics, has mandated critical loss analysis for all staff merger evaluations. (The edited transcript of the ABA Brown Bag will appear in a later issue of *The Antitrust Source*.)

The two sibling papers make very similar points. First, the papers make the point that the critical loss test has been widely misused. A critical component of the critical loss calculation is the current price-cost margin, and a high current margin generates a low critical loss. Only a relatively small actual loss of sales at such a high margin would make the SSNIP unprofitable. Many practitioners then proceed to “demonstrate” that the actual loss would be greater than the critical loss, a conclusion that justifies broadening the market.

But the current margin itself is related to the firm's own-price demand elasticity as indicated by the Lerner Index—the percentage price-cost margin is equal to the inverse of the firm's demand elasticity (expressed as a positive number). Thus, embedded within the critical loss is an estimate of the own-price demand elasticity (as can be inferred from the price-cost margin). And a relatively high margin is a result of a relatively low own-price elasticity of demand. So, with a relatively inelastic demand, any SSNIP will result in a small actual loss as well as a small critical loss. Given this

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conundrum, Katz and Shapiro suggest that when the margin is large, the presumption should be that the market is narrow.¹

While the two papers indicated that such a presumption could be rebutted by, e.g., evidence that demand is much more elastic when price increases than when it decreases or by evidence that tacit or overt coordination is already occurring (not the best argument in defense of a merger), it's apparent that the burden on the merging parties would be substantial.

Given the infirmities of the conventional critical loss calculation, Katz and Shapiro suggest an alternative approach that is also discussed in O'Brien and Wickelgren. Suppose among a number of products being considered as part of the relevant market and under the control of the hypothetical monopolist, there is a SSNIP for one product. Suppose as well that the fraction of the lost sales that is captured by the other candidate products under the control of the hypothetical monopolist—what Katz and Shapiro refer to as the “aggregate diversion ratio”—exceeds the critical loss (expressed as a percentage of total production) for a SSNIP. Then the two papers demonstrate that the actual loss to the hypothetical monopolist will be less than the critical loss and the SSNIP will be profitable. With respect to diversion, Katz and Shapiro note that with a 60 percent pre-merger margin, a SSNIP of 10 percent would be profitable if the aggregate diversion ratio is only 25 percent. Put differently, if the hypothetical monopolist raises price by a SSNIP and 75 percent of the resulting lost output is diverted to products outside the postulated market, then the products under the control of a monopolist still constitute a relevant antitrust market.

Because of the analytical shortcomings of the critical loss methodology, O'Brien and Wickelgren come very close to recommending that critical loss calculations be jettisoned as a tool for market definition. Katz and Shapiro recommend implementation of their aggregate diversion analysis for market definition but do not provide us with any guidance as to how to empirically implement that approach. And both papers underscore the point that the rebuttable inference from high margins or from modest aggregate diversion is that the markets drawn are likely to be narrow in merger cases.

Editor's Perspective—Whither Market Definition?

By necessity, this note has glossed over many of the subtle points these (and other) papers raise. Before providing a list of papers on critical loss that might be of interest, a few closing observations are warranted, if only by editorial prerogative. Readers are invited to offer their own responses to the observations and questions posed below.

First, the conclusion that antitrust markets tend to be narrow because firm margins tend to be high in many if not most industries (particularly product differentiated industries) depends critically on the more mundane, less glamorous calculation of the margin itself. Both papers make the same

¹ Note that this correct elasticity interpretation of the firm's margin and the resulting inference about the actual loss is seemingly at odds with the *Cruise Line* matter that has given heightened prominence to critical loss analysis. In that matter, the FTC concluded that the high margin of the cruise lines implied a small critical loss. Because the estimated aggregate demand elasticity was about 2 in absolute value, the FTC further concluded the actual loss would be greater than the critical loss and therefore that the market was broader than cruise lines. However, as discussed in the text above, a high margin implies a low price elasticity for the firm. And as the pair of recent papers reminds us, the market elasticity of demand will be smaller than the firm's elasticity of demand. The single firm's own-price elasticity is determined in part by output lost to other firms, including those in the same antitrust market, when the firm raises its price. Those are not losses to the hypothetical monopolist controlling those other firms and so the market demand elasticity will generally tend to be lower than the firm-level elasticity. For any given price increase for one firm (holding all other prices constant), the hypothetical monopolist, controlling multiple firms, loses fewer unit sales than does any single firm under the monopolist's control. Thus, the aggregate demand elasticity estimate of 2 was inconsistent with firm-level demand elasticities considerably smaller than 2. Either one or both was estimated incorrectly.

observation in footnotes that the margin calculation is assumed to be correct, but offer no guidance as to the appropriate calculation. The usual approach is to use the gross margin, where the cost components are typically limited to those that are most variable, which sometimes even excludes labor costs. The presumption here is that the only costs that count are those that we consider relevant for the two-year time horizon that plays such a prominent role in the Guidelines.

But if firms think that price increases and output reductions in the short run adversely affect their competitive position in the longer run, then those opportunity costs should be accounted for. For example, these costs might include any reduction in the inability to innovate to the extent that innovation incentives depend on the level of output or on market share. Inclusion of such opportunity costs would lower the margin and by implication increase the firm's own-price elasticity, suggesting broader rather than narrower markets.

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Second, and more fundamentally, these papers raise the question of what is the purpose of market definition in the numerous markets that are characterized by some degree of product differentiation. The language of diversion used in both papers is exactly what is used in the analysis of differentiated products. Of course, the practitioner can mechanically combine multiple differentiated products into a single antitrust market. In preparing to defend the merger to the agencies, the practitioner may conclude that the pre-merger shares of parties are not worrisome within that market. Then the practitioner goes on to assess whether within that market, the products of the two merging firms are the closest substitutes (the resurrection of the submarket). If this last question is relevant, what was the purpose of defining a market in the first place, given that the degree of substitution varies enough across products to ask the closest-substitute question?

The market definition exercise certainly is still likely to be a useful aid—whether using the thought experiment of the original Harris-Simons paper or the diversion approach developed in the two most recent papers—in identifying those products that are more rather than less substitutable for those of the merging parties. But the use of that exercise plays a far different role than the one used in the conventional approach to market definition: how high is the HHI and the delta? And there may well be other approaches and data (e.g., consumer surveys) that are as helpful in identifying closest substitutes as is the market definition exercise.

It is clear that once those substitute products have been identified, the next step is not an HHI analysis. Rather, it's something like a unilateral differentiated Bertrand analysis and an evaluation of the likelihood of coordinated effects among firms producing differentiated products. But wouldn't this conclusion suggest that all of the effort in defining a relevant market is largely if not completely irrelevant? For those who believe that the heart of antitrust analysis is competitive effects, not market definition, the response would be "tell us something we don't know."

In the case of the Bertrand simulations, any diversion between the products of the merging parties will lead to an increase in prices, absent efficiencies. This inevitable outcome is nowhere clearer than in the final footnote of the Katz and Shapiro paper, notwithstanding their use of "aggregate diversion." If price exceeds marginal/variable cost and the diversion is non-zero for at least one of the merging parties, prices are predicted to increase. And then the question is: what is a significant price increase? What benchmark should be used? And while it's customary to say that such a price increase can be defeated by repositioning and new entry, isn't that possibility already accounted for when the firm sets its pre-merger price, so that the resulting margin has embedded within it the repositioning/entry responses at "slightly" higher prices?

Like all good papers, these on critical loss raise at least as many questions as they answer.

Selected Critical Loss Literature

Some of the relevant critical loss literature includes the following:

Barry Harris and Joseph Simons, *Focusing Market Definition: How Much Substitution Is Necessary?*, 12 *Research in Law and Economics* 207 (Richard O. Zerbe, Jr., ed., 1989).

Michael G. Baumann and Paul E. Godek, *Could and Would Understood: Critical Elasticities and the Merger Guidelines*, 40 *ANTITRUST BULLETIN* 885 (1995).

Gregory Werden, *Demand Elasticities in Antitrust Analysis*, 66 *ANTITRUST LAW JOURNAL* 363 (1998).

Kenneth L. Danger and H.E. Frech III, *Critical Thinking about "Critical Loss" in Antitrust*, 46 *ANTITRUST BULLETIN* 339 (2001).

James Langenfeld and Wenqing Li, *Critical Loss Analysis in Evaluating Mergers*, 46 *ANTITRUST BULLETIN* 299 (2001).

Reid B. Horowitz, *The Use of Critical Loss in and Beyond Merger Analysis*, ABA Section of Antitrust Law, *CLAYTON ACT NEWSLETTER* No. 2, at 3 (2002).

David Scheffman, *"Critical Loss" Analyses*, Presentation to the EU Merger Task Force (January 2003), <http://www.ftc.gov/speeches/other/criticalloss.pdf>.

Michael Katz and Carl Shapiro, *Critical Loss: Let's Tell the Whole Story*, *ANTITRUST*, Spring 2003, at 49.

Daniel P. O'Brien and Abraham L. Wickelgren, *A Critical Analysis of Critical Loss Analysis*, *ANTITRUST LAW JOURNAL* (forthcoming 2003).

BOOK NOTE

Post-Chicago Developments in Antitrust Law (Antonio Cucinotta et al., eds., Edward Elgar Pub. Co., Cheltenham, UK and Northampton, Massachusetts 2002)

This collection of fourteen essays is part of Elgar's series, *New Horizons in Law and Economics*. It collects many of the papers presented at a conference on Post-Chicago antitrust held in Taormina, Sicily, in 2000. (As someone who was there, I have to say it was the best location for a conference I can recall.) The list of authors includes many names associated with American Post-Chicago scholarship: Herb Hovenkamp, Jon Baker, Eleanor Fox, Rudy Peritz, Mike Jacobs, Bob Lande, and Peter Carstensen. Some of their papers, not surprisingly, advocate or offer a Post-Chicago approach to antitrust issues—for example, Baker's identification of promising new theories of anticompetitive effect; Peritz's discussion of dynamic competition; and Fox's essay on global antitrust. And there are Post-Chicago contributions from European scholars, such as Francesco Denozza's essay on raising consumers' costs as an antitrust problem, and Patrick Van Cayseele's game-theoretic approach to cartel analysis. Nevertheless, this volume is by no means a Post-Chicago love fest. First of all, Hovenkamp's opening survey of Post-Chicago theories is remarkably critical; it finds only a few useful Post-Chicago innovations (some theories of raising

rivals' costs, and unilateral effects theories of horizontal mergers) and strongly condemns *Kodak v. Image Technical* and the litigation that followed it. In addition, Roger Van den Bergh's essay provides a Chicagoesque critique of European Community antitrust decisions. John Lopatka and I contribute a paper that tries to explain the pattern of Chicago's victories and defeats in its confrontations with Post-Chicago theories in the Supreme Court. ●

—WHP