U.S. DEPARTMENT OF JUSTICE

Antitrust Division

MERGERS WITH DIFFERENTIATED PRODUCTS

Address by

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Introduction

I very much appreciate the opportunity to speak at this important conference on the merger review process. As you have just heard, I joined the Antitrust Division quite recently as the Economics Deputy. This is my first major opportunity to speak about mergers in my new role. As I am telling my academic colleagues, there are pluses and minuses associated with speech-giving as a government official, compared with seminar-giving as an academic: I have to be particularly careful to avoid misinterpretation (more like writing for publications than giving seminars), but all of a sudden many more people actually care what positions I articulate!

When I saw the title of the conference -- Getting the Deal Through a Competition Review -- I have to confess that I was a bit unsure about my role. But I figured that out: if you make sure not to bring forward any anticompetitive deals, I will make sure your deals get through the DOJ review process. This is more than an economist's excuse for a joke: pre-merger counseling and deal restructuring are critical to a successful merger practice. I say this with added conviction for two reasons:

1. I can now see up close how serious the Division is about working with parties to fix competitive problems, to insure that the synergies and other legitimate strategic reasons for mergers can be achieved without injury to consumers; and

2. I am terribly impressed with the quality and sophistication of the Division's staff in analyzing mergers. Certainly the Economic Analysis Group which I supervise, is unmatched in private practice in its experience and ability to analyze mergers. I thank my immediate predecessor, Rich Gilbert, for passing on to me such a fine group of economists.

The fact is, the 1992 Merger Guidelines provide an excellent framework for evaluating mergers, and the Division in my view is experienced and consistent in their application. Don't expect us to miss any problems; do expect us to be swayed by relevant evidence and/or sound arguments that are consistent with the Guidelines' methodology as well as the case law. It is all too easy to bemoan the government bureaucrats who "just don't understand our industry." You'd be better off figuring that we **do** understand your industry, perhaps with your help, and fashioning your arguments on that basis.

Before launching into my main topic, I'd like to comment on the role of antitrust enforcement in the context of the current wave of mergers and acquisitions. There should be no doubt that we are in the midst of a surge of merger activity. In the U.S. alone, deals are running at a pace of more than $1 billion per day so far in 1995, easily a record. The *New York Times* just reported that 1995 acquisitions in the U.S. now total $363 billion, surpassing 1994's record of $347 billion with nearly two months to go in the year. HSR filings are up accordingly. Yet the vast majority of proposed mergers and acquisitions either raise no significant antitrust concerns, or

ultimately pass muster after agency review. This is true in part because many mergers are not among actual or potential rivals. Many other deals are primarily vertical in nature, e.g., in the telecommunications sector, and vertical deals are far less likely to raise antitrust concerns than horizontal deals. Yet one of the current fads in business strategy (a subject I usually teach at the Haas School of Business at U.C. Berkeley) is for corporations to focus on their core strengths. This urge pushes business executives towards horizontal mergers, either to obtain true synergies (efficiencies) or so-called "market synergies" (a euphemism for market power, so far as I can tell). In the banking industry, for example, horizontal mergers are the current rage. I believe that the Merger Guidelines have been very successful in communicating our enforcement approach to the merger bar, to help rein in the urge for "market synergies."

I can see from the program that you are here to learn in some detail about the merger review process here and abroad -- from initial planning, through the HSR waiting periods, on to consent order negotiations. As an economist, not an attorney, many of the nuances associated with the merger review process are beyond me. So, I do not intend to say much about the *process* itself. I would simply say that, as a new member of the Front Office Merger Team, I intend to let the parties know in no uncertain terms just what concerns I might have, to give them a fair chance to address those concerns.

Applying the key economic concept of specialization (comparative advantage), rather than dwell on any particular aspect of the merger review

process, I would like to talk more substantively about how the Division applies the 1992 Horizontal Merger Guidelines to mergers involving *differentiated products.*

Now, I recognize that your idea of lunch may not involve such delightful topics as the cross-elasticity of demand, brand equity, and product repositioning. Consider this an economist's attempt to be entertaining. The best consolation I can offer you is that you can enjoy your dessert without having to take notes: copies of my remarks are available for you to pick up after lunch.

Monopolistic Competition

I ask you to consider with me mergers between rivals who are selling differentiated products. I find it helpful to keep two examples in mind: (1) branded consumer products, where each brand of pens, or bread, or computer software, or cereal, is distinct; and (2) physical facilities that distribute or deliver goods or services, such as supermarkets, department stores, branch banks, or hospitals, where the differentiation is based on location. These two broad examples correspond to the familiar tasks of product and geographic market definition, respectively.

To a greater or lesser degree, virtually all markets involve *some* element of product differentiation. Even in a classic homogeneous-goods market -- such as the market for an agricultural commodity or for a specific chemical compound -- producers often attempt to differentiate themselves based on product quality, reliability, or customer service. My emphasis here

is on markets where the brands are distinct in important and long-lasting ways. My two broad examples fit this criterion: branded products typically have their own image and physical characteristics that are resistant to change, and distribution outlets are geographically distinct and costly to relocate.

Economists have long realized that firms selling differentiated products have *some* "market power" in a technical economic sense, although typically not nearly enough to rise to the level of "monopoly" power. In the 1930s, Joan Robinson and Edward Chamberlin developed the theory of "monopolistic competition" to describe markets in which each firm has a distinct product, but competes with several or many other firms. By the 1990s, economists have made great progress in our understanding of competition with differentiated products, offering a sound foundation for merger enforcement in such industries.

Unilateral Competitive Effects with Differentiated Products

The predominant approach taken by economists studying markets with differentiated products is to model the firms as independently setting the prices of each of their brands. As usual in economics, we assume that each firm seeks to maximize its own profits. This method of analysis fits perfectly with the "unilateral effects" portion of the Merger Guidelines, in no small part due to the central roles played by my predecessors, Robert Willig and Janusz Ordover, in helping to draft those Guidelines.

In fact, it is fair to say that economic analysis of differentiated-products mergers at the Division typically focuses on unilateral effects, unless there are structural factors facilitating collusion following the merger, or unless there is a history of collusion in the industry. This emphasis represents a significant shift in a fairly short period of time. I remember well back in 1989, when I was consulting for a merging party in a branded-goods industry. I was arguing that the merging brands were at opposite ends of the market (one was high-end, the other low-end), and so the merger would provide little incentive for the merged entity to raise price on either of its product lines. I provided the FTC with a simple model of product differentiation to make my point. My work was well received, I believe, but was regarded as fairly novel as I did not emphasize collusion in my discussion.

Economic analysis regarding unilateral effects is more amenable to quantification than is economic analysis of the dangers of collusion. Employing a combination of game-theoretic and econometric methods, we now have the capability to estimate consumer demand using industry data and, based on these demand estimates (see below), derive specific predictions regarding post-merger prices.[1] This is in some contrast to the analysis of the dangers of collusion. While we are fairly confident in listing

[1]Let me emphasize once, but clearly, that the reliability of this analysis, which is discussed below in some detail, depends very much upon the data and other evidence upon which it is based. Ideally, the analyst should conduct a sensitivity analysis to make sure his or her results are not overly sensitive to specific simplifying assumptions that must be made.

factors that facilitate or hinder collusion, including market structure, there is no single accepted method of quantifying the increased likelihood of collusion attendant to a merger.

Of course, our ability to predict unilateral effects based on demand patterns is only as good as the available data. Very often one must make do with qualitative evidence or rather rough estimates. However, even when the data are limited, the theory of monopolistic competition can provide some very helpful rough predictions based on pre-merger gross margins and market shares, which often can be measured using data routinely collected during the second-request process. Of course, these predictions need to be checked against the views of industry participants, company documents, and other information sources, but they do constitute a vital part of merger analysis.

A final caveat: the analysis below applies when the firms independently set uniform prices for their branded products. To the extent that firms engage in price negotiations on a customer-by-customer basis, or engage in other forms of price discrimination, the analysis must be modified or replaced with another approach.

Estimating Post-Merger Prices: Four Steps

I realize that few if any of you are economists, and I do not see anyone rushing out of the room to perform econometric estimations (or powering up your laptops). My point is that economists on both sides -- in the agencies and working for private parties, and I have done both -- largely

agree on what to look for to estimate unilateral competitive effects, although they may differ in specific implementation steps. Succinctly put in economists' jargon, we seek to estimate the post-merger Bertrand equilibrium in prices, accounting for the new market structure in which some brands are jointly owned that had previously been independent, and accounting for the new cost structure of the merged entity.[2]

There are many valid ways to approach this task. As much as anything, the method chosen depends upon the available data. Generally, however, I find it useful to structure my thinking about unilateral effects in differentiated-product markets in terms of the following four steps, for a merger between brands A and B:[3]

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[2]I realize that Bertrand equilibrium is not the only possible equilibrium concept, but, absent clear evidence to the contrary, it is a very useful workhorse.

[3]I do not want to leave the impression that the actual analysis precisely tracks the four steps outlined below. For me, these four steps form a conceptual road map. Below I will say more about how one estimates unilateral effects as a practical matter. I shall also discuss how the estimation of unilateral effects relates to the task of defining the relevant market. I reserve my discussion of market definition until later simply because I wish to focus here upon the unilateral competitive effects analysis.

1. Consider a price increase for Brand A of, say, 10%. Try to measure what *fraction* of the sales lost by Brand A due to this price increase would be captured by Brand B. I like to call this fraction the *Diversion Ratio.*[4]

2. Based on pre-merger gross margins and the estimated Diversion Ratio, calculate the post-merger price increase, assuming no synergies or rival supply responses.

3. Try to account for any likely and timely changes in prices or product offerings by non-merging parties, including product repositioning and entry.

4. If there are credible and documented synergies that lower marginal costs, reduce the predicted post-merger prices accordingly. This step can lead to a predicted price *decrease.*

If these steps indicate that the merged entity would find it optimal to impose a significant price increase following the merger, then the merger is very likely to be anticompetitive.

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[4]The Diversion Ratio is measured in physical units, not dollars. The Diversion Ratio is closely related to the cross-elasticity of demand. In practice, economists often estimate the merging brands' own- and cross-price elasticities, from which the Diversion Ratio can be calculated. I for one find the Diversion Ratio more intuitive and easier to work with, so I frame the discussion in terms of the Diversion Ratio. I am hardly the first economist to focus on this ratio. For example, Robert Willig also notes that the ratio of the cross-price elasticity to the own-price elasticity measures the share of the marginal sales of one brand that will divert to another in response to a price increase. See Robert Willig, "Merger Analysis, Industrial Organization Theory, and Merger Guidelines," *Brookings Papers on Economic Activity: Microeconomics*, 1991, 281-332.

These analytical steps can be described more simply: If a significant number of consumers consider the merging firms' products to be their first and second choices (at pre-merger prices), then the merged entity will have an incentive to impose a non-trivial price increase following the merger. Unless product repositioning or entry would defeat (make unprofitable) such a price increase, and unless reductions in marginal costs imply that the price increase will not in fact raise profits, the merger will injure consumers and be anticompetitive. Hopefully, this all sounds familiar to those of you versed in the Merger Guidelines.

Since the Diversion Ratio plays a crucial role in this analysis, in differentiated-product mergers I will invariably want to know the best estimate of the Diversion Ratio based on available evidence.

Estimating Unilateral Competitive Effects in Practice

How does this work out in practice? The first thing to keep in mind is that implementation depends very much on the available evidence.

Demand-Side Analysis if Good Data Are Available

Let me begin by illustrating what can be done with quite detailed data.[5] For that purpose, I will use as an example the Division's analysis of the recent merger between Interstate Bakeries Corporation and the Continental

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[5]Of course, it goes without saying that one cannot predict the effects of a merger based on data analysis alone. To be reliable, any data analysis must pass a reality check based on business documents and the testimony of industry participants.

Baking Company.[6] That merger involved the first and third largest bakers of fresh bread in the United States. The Division concluded that the deal would substantially lessen competition in the production and sale of white pan bread in five regional markets. The proposed Final Judgement orders Interstate and Continental to divest certain white bread brands in each geographic market. Our competitive concerns, as well as the ultimate relief, were greatly informed by our economic analysis of the merger's anticompetitive unilateral effects.

In the bread merger, we had access to excellent data derived from supermarket checkout scanners. These data permitted us, with considerable work, and making various assumptions about the structure of demand, to estimate the extent of direct competition between the brands of premium white bread sold by Continental and Interstate.[7] In fact, these sophisticated methods actually involved calibrating a complete model of demand using industry data. These methods subsume the Diversion Ratio concept I stressed above.

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[6]U.S. v. Interstate Bakeries Corporation and Continental Baking Company, Civil Action No. 95C-4194, Northern District of Illinois, Eastern Division, Complaint filed July 20, 1995. Gregory Werden played the lead role in providing the economic analysis of this merger for the Division.

[7]This method is described in some detail most recently in Gregory Werden and Luke Froeb, "Simulation as an Alternative to Structural Merger Policy in Differentiated Products Industries," Economic Analysis Group Discussion Paper EAG 95-2, September 1995.

This calibrated model of consumer demand was then used to predict the likely post-merger price increases for the various brands. This is the high-tech version of Steps 1 and 2 above. In this prediction exercise, we assume that all firms in the industry set prices independently after the merger to maximize profits. The predictions of the model at this point do not account for product repositioning, entry, or synergies. In the bread merger, the computer model predicted price increases in the 5% to 15% range for Continental's and Interstate's premium white pan breads in the Los Angeles and Chicago areas.

Demand-Side Analysis if Data Are Limited

Econometricians dream about this type of "high-tech" analysis; it may seem more like a nightmare to you. Well, wake up. The reality is, the data are rarely available to do this type of full-blown simulation analysis with assurance. So, I would like to discuss some less sophisticated and less complex approaches to estimating unilateral competitive effects. In particular, I can offer some "rough and ready" quantitative procedures that can be used when hard data are scarce, as well as some guidance in evaluating qualitative evidence.

Step 1 calls for an estimate of the Diversion Ratio. If econometric estimation of elasticities is not possible, there still may be relevant consumer survey data that can be used to directly estimate the Diversion Ratio. Survey data is not as good as actual transactions data, but can still be reliable if valid sampling procedures were used and if the results are not overly sensitive to the framing of the questions.

If these empirical data resources are not available, as is often the case, one may be able to rely on company documents and other qualitative information regarding consumers' first- and second choices among brands. If none of the brands in the market are especially "close" to or "distant" from each other, market shares can be helpful in this step.[8] For example, consider such a market in which Brand A has a 25% share and Brand B has a 15% share. Suppose also that very few customers of Brand A would reduce their overall purchases in the market if Brand A were to raise its price; instead these customers would by and large pick among the other brands. In this case, the Diversion Ratio between Brand A and Brand B is 20%.[9] The Diversion Ratio will be lower, to the extent that some of Brand A's customers reduce their total purchases in the market when the price of Brand A rises.

Various familiar factors enter into Step 1. If the merging brands are similar in characteristics, or if the merging brands have large shares within a broader product category, the Diversion Ratio is likely to be high. Note in particular that the Diversion Ratio is likely to be high for a brand that is

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[8]Among a group of brands that are all equally "close" or "distant" substitutes, Diversion Ratios will be proportional to market shares. This is the essence of the "logit" model of demand. For much more detail on using the logit model to analyze mergers, see Gregory Werden and Luke Froeb, "The Effects of Mergers in Differentiated Products Industries: Logit Demand and Merger Policy," *Journal of Law, Economics, and Organization*, 1994, 407-426.

[9]This figure is obtained by dividing Brand B's market share of 15% into the combined share of all the brands to which customers of Brand A turn, which is 75%: 15/75 equals 20%.

merging with a *dominant* brand: the large market share of the dominant brand makes it likely that customers switching away from the smaller brand will divert to the dominant brand rather than elsewhere. On the other hand, if the merging brands are usually sold to different types of consumers, or through different channels, or if consumers' preferences are such that they can easily substitute to a broad range of products (e.g., gifts instead of premium pens, or travel to various destinations instead of a single resort area), the Diversion Ratio is likely to be lower, other things equal.

Merely asserting that there are numerous products to which consumers *could* substitute, and thus the Diversion Ratio must be low, ignores the importance of diverse consumer preferences and does not replace this step of the analysis.

Nor is a merger immunized merely because the merging brands are not next-closest substitutes, as some parties claim, any more than a merger is immunized merely because the merged entity still faces some post-merger competition.

In Step 2, the estimated Diversion Ratio is used directly, along with pre-merger gross margins and perhaps other industry measures, to give a rough prediction of the post-merger price increases for the merging brands. The tricky part here is that the calculation of the post-merger price increase depends upon the specific shape assumed for the demand curve.

A simple formula can be derived for the post-merger price increase if one is willing to assume that consumer demand functions exhibit constant elasticity over the relevant range of prices. Very often when economists estimate demand using data they employ such constant-elasticity demand functions. With constant-elasticity demand, and assuming that the two merging brands are symmetric prior to the merger, the formula for the merged entity's profit-maximizing price increase is given by[10]:

$$(p^* - p)/p = mD/(1-m-D).$$

Here p^* is the post-merger price, p is the pre-merger price, m is the pre-merger percentage markup, m = (p-c)/p where c is incremental cost, and D is the Diversion Ratio between the two merging brands.

For example, suppose that the pre-merger price is $100, and the cost per unit is $60, so the pre-merger markup, m, is (100-60)/100 = 0.4, a 40% markup (not uncommon at all for differentiated products). Suppose the Diversion Ratio is D = 0.2, i.e., 20% of the sales lost when the price of Brand A goes up are captured by Brand B. Then the optimal post-merger price increase in percentage terms is (0.4)*(0.2)/(1-0.4-0.2) = 0.2. In other words, a 20% price increase would maximize profits. Serving as the

[10]This formula also assumes that each merging firm sells a single brand prior to the merger. The analysis is more involved, and the formulas much more complex, if the brands are not symmetric or if the merging firms sell multiple brands prior to the merger.

Division's outside expert, I used this formula to get a rough sense of the likely price increase in the waterjets merger.

The formula above must be used with great caution, because it relies on several strong assumptions, as I have noted. To the extent that the elasticity of demand for a brand *rises* as the price of that brand rises, the constant-elasticity-of-demand calculations will *overestimate* the post-merger price increases. This overestimation can be significant, especially if the formula as stated generates a large percentage price increase. In some cases, even with limited data, other formulae can be employed which use other measures as well as the Diversion Ratio. Still, I find the formula above a useful starting point in gaining a sense of the likely magnitude of any post-merger price increase, if full-scale demand estimation is not possible.

Steps 1 and 2 will *invariably* lead to the interim prediction that prices will rise after the merger, if indeed Brands A and B compete with each other. After all, a merger between rival brands *does* eliminate competition between those brands, which in and of itself leads to higher prices.[11] But we do not

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[11]Oligopoly theory generally predicts that horizontal mergers will lead to at least marginally higher prices if they generate no efficiencies, although the tendency towards higher prices can be thwarted by product repositioning or entry. This tendency is perhaps clearest in the case of differentiated products and pricing (Bertrand) competition, where rivals will typically choose to raise prices if the merging parties do so. See Raymond Deneckere and Carl Davidson, "Incentives to Form Coalitions with Bertrand Competition," *Rand Journal of Economics,* 1985, 473-486. However, the same result applies with quantity (Cournot) competition, even though rivals typically increase output as the merging firms restrict output. Even with these

condemn all horizontal mergers, of course. To begin with, we recognize that this incentive to raise price is very slight for some mergers, even horizontal ones. Steps 1 and 2 should detect this, in the form of a very small predicted price increase. But there are two more important reasons why horizontal mergers often are not anticompetitive. First, the true price increase may be far smaller than predicted in Step 2, or negligible, because rivals may respond to defeat any price increase. Second, the merger may reduce costs. Steps 3 and 4 are where these crucial considerations come into play.

Step 3: Product Repositioning and Entry

If the merging brands are "close" in attributes, the Diversion Ratio is likely to be high, and Step 2 will suggest a significant price increase. In precisely this situation, however, it may well pay for a rival firm to reposition its brand closer to the merging brands. And this threat could well deter the price increase in the first place. Alternatively, a *de novo* entrant could locate its brand near Brands A and B if prices of these brands were above competitive levels. Very often in differentiated-product markets, brands enter and exit with some regularity, and existing products may be repositioned either through design changes or revised marketing strategies. As a general rule, the "farther" a brand must be moved to compete more effectively with the merging brands, the less likely it is that such a move would in fact occur in response to a post-merger price increase. As noted generally in the

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responses, horizontal mergers under quantity competition lead to higher prices unless they generate synergies. This is the "No Synergies Theorem" proven in Joseph Farrell and Carl Shapiro, "Horizontal Mergers: An Equilibrium Analysis," *American Economic Review*, 1990, 107-126.

Guidelines, the greater are the sunk costs associated with product entry or repositioning, and the longer such supply responses take, the less likely they are to deter or defeat an anticompetitive price increase.

I should note that rivals' responses do not necessarily reduce the profitability of a post-merger price increase. Game-theoretic analyses of pricing competition with differentiated products indicate that rivals will typically find it optimal to *raise* their prices in response to higher prices set by the merging firms. Accounting for these accommodating responses tends to increase, not decrease, the predicted post-merger price increase.

Merging parties in consumer-goods industries may be tempted to argue that brand name is unimportant, but they should be cautious in doing so. Such claims are not credible if the parties themselves have made substantial investments in brand equity, or if the deal price itself reflects substantial brand equity. Attempts to downplay the importance of brand names are particularly problematic if new brands historically have found it difficult to gain a secure foothold in the market.

In the bread merger, the Division concluded that brand names were very important. The evidence also showed that a brand that achieved success in one region might not meet with acceptance in another area. Furthermore, new entry required significant sunk investments in brand promotion, as well as investments in a route delivery network. For these reasons and more, our concerns were not alleviated by the prospect of product repositioning or entry.

The merger is anticompetitive only if a price increase, or a reduction in quality, remains profitable, after accounting for rivals' supply-side responses. The history of brand entry, exit, and positioning, and the associated costs, will be relevant for this portion of the analysis.

Step 4: Synergies

If a post-merger price increase is profitable, even after accounting for rivals' responses as well as consumer substitution, the merger is likely to be anticompetitive. Consumers will likely to harmed by the combination, unless it truly offers substantial efficiencies that lower incremental costs sufficiently to offset the incentive to raise price (or unless some other antitrust defense applies). Of course, blocking firms from achieving significant and genuine efficiencies in and of itself would be contrary to the interests of consumers and would constitute poor antitrust policy.

I have two main points to make about such efficiencies. First, the cost savings must truly be synergies specific to the merger. If one firm alone can achieve lower costs by expanding its scale of operations, that should occur through competition, not merger. Second, the synergies typically must lower incremental costs if they are to benefit consumers. As I impress on by MBAs at Berkeley, profit-maximizing prices are driven by incremental costs. Without entering the debate on how we should treat savings in fixed costs (I'll leave that to the FTC Hearings, for now), there should be no doubt that consumers will typically capture the benefits of cost reductions only if they

affect incremental costs.[12]

What About Market Definition and Market Shares?

You may have noticed that I have yet to discuss market definition, a peculiar omission in a merger analysis to be sure. What's up?

First, let me assure you that I appreciate the legal significance of market definition in antitrust cases generally and merger matters specifically. In my experience, in fact, the main battlefield in litigated merger cases is market definition. But, as Edward Chamberlin himself clearly realized,[13] any attempt to make a sharp distinction between products "in" and "out" of the market can be misleading if there is no clear break in the chain of substitutes: if products "in" the market are but distant substitutes for the merging products, their significance may be overstated by inclusion; and if products "out" of the market have significant cross-elasticity with the merging

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[12] Of course, there is always the issue of how to measure incremental costs. This involves questions of time and questions of scale, at least. The longer the time frame over which we are looking, the more costs tend to be variable, or incremental, rather than fixed. And some categories of costs may be incremental with respect to large customers, but not small ones. In the extreme case of one customer, such as the Department of Defense for some weapons systems, cost savings in virtually any category may be passed along to the customer, at least to some degree.

[13]Edward Chamberlin, "Product Heterogeneity and Public Policy," *American Economic Review*, 1950, 86-87, as quoted by Gregory Werden and George Rozanski in "The Market Delineation Dilemma," *Antitrust*, Summer 1994, p.40.

products, their competitive significance may well be understated by their exclusion.

Since we need to define markets to identify the lines of commerce affected by the merger, it may be tempting for you to argue for a very broad market if there is no clear break in the chain of substitutes. Not so fast. Applying the Guidelines carefully can certainly lead to a market boundary between very similar products. In the pens case, testifying on behalf of Gillette, I agreed with the Division on this point, as did the judge. In the case of geographic markets, the mere fact that there are gas stations or supermarkets all over L.A. hardly implies that the geographic markets for these products are as broad as the entire L.A. area. Nor is there a single market for all food, despite the fact that it is difficult to draw boundaries between food groups.

On the other hand, an anticompetitive merger cannot be disguised by arguing for a very *narrow* market so as to quarantine the merging parties in separate "markets." Suppose that Brands A and B propose to merge, but Brand C is situated between them. Suppose further than a merger between Brands A and C would lead to at least a 5% price increase, and likewise for a merger between Brands B and C. You might be tempted to argue that A and C form a market, and that B and C form a market, but that A and B are not in the same market. Still, if the Diversion Ratio between A and B is significant (albeit smaller than between A and C or between B and C), the merger of A and B could well harm consumers. In this case, it is appropriate for the Division to use a price increase of more than 5% in defining the market, as suggested in the Merger Guidelines.

After we define markets, using the Guidelines approach, what are we to make of market share numbers in differentiated-products markets? As the Guidelines point out, market share numbers must be interpreted in conjunction with evidence about the proximity of the merging brands. If the merging brands are close together, the Diversion Ratio is likely to be high, and any given level of market concentration is more troubling. The reverse is true if the brands are distant.

If all the brands in the market are roughly equidistant from each other, then the market shares of various brands will be proportional to their Diversion Ratios, making emphasis on the two brands' market shares very appropriate. The Guidelines look to both the sum of the market shares of the merging brands (to see if this sum exceeds 35% in evaluating unilateral effects) and to the product of the market shares (which will reflect the number of consumers who regard the merging brands as their first and second choices).[14] As illustrated above, if the brands are equidistant from one another, information about market shares can be combined with a measure of the overall market elasticity of demand to estimate the Diversion Ratio between the merging brands. The Diversion Ratio can then be combined with information about pre-merger margins to give at least a rough estimate of the profit-maximizing post-merger price increase.

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[14] See Robert Willig, "Merger Analysis, Industrial Organization Theory, and Merger Guidelines," *Brookings Papers on Economic Activity: Microeconomics*, 1991, 281-332, for a discussion of the role of market shares in differentiated-product markets using the logit model.

In arguing for a broad market, a common tactic is to calculate a "critical elasticity" of demand for a group of products being considered as a market, and then argue that the true elasticity is above this critical level, making a 5% price increase unprofitable. This method must be used with great caution in the context of differentiated products, to avoid at least two pitfalls. First, there is no reason to restrict attention to a uniform price increase of 5% for the purposes of market definition if a single firm controlling the entire product category would find it optimal to increase the prices of different brands by different amounts. Second, care must be taken to insure that the claimed "market" elasticity is consistent with information about each brand's own elasticity of demand and the cross-elasticities of demand among the products in the category. Remember, the "market" elasticity will be lower than the individual brand elasticities of demand, and significantly so if the Diversion Ratios are large. If each brand sells at a high markup, this is strong evidence of a low price elasticity for each brand, which is inconsistent with a high "market" elasticity of demand. If the pre-merger markups are large and the Diversion Ratios among the brands are large, claims of a large "market" elasticity of demand are not credible.

Unilateral Effects in Practice

I realize that I have probably confirmed you worst fears about economists: too much theory, not practical enough, and no sense of humor. Well, I'll never be a stand-up comic, but I do think that what I have said has real practical implications and helps illustrate and explain our enforcement actions involving mergers.

The approach I have described here underlies the analysis of competitive effects in a variety of mergers, not merely the bread merger I have used for illustrative purposes. Certainly it is commonly used by the Antitrust Division's economists. Expect this to continue.

The courts have also incorporated this type of analysis into their reasoning. The court case I know the most about is the pens case, U.S. vs. The Gillette Company, 828 F. Supp. 78 (D.D.C. 1993). The general approach I have sketched out here was the methodology I used to develop my testimony on behalf of Gillette in that case, although we lacked data on prices and quantities for premium pens to econometrically estimate the Diversion Ratio. This same general methodology was employed by George Rozanski in his excellent analysis for the Antitrust Division. We both agreed on the need to draw a line in the continuum at some point, and the judge did ultimately draw such a line. We both agreed it was appropriate to focus on unilateral effects, which the judge did. We just disagreed about how to interpret the evidence of substitution between fountain pens and roller ball and ball point pens, and on the difficulty of product repositioning.

Another important example is the cereals merger between Kraft and Nabisco, which was decided earlier this year.[15] Economic experts for both sides, relying on supermarket scanner data and survey evidence, spent considerable time estimating elasticities of demand for the purposes of

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[15]State of New York v. Kraft General Foods, Inc., Nabisco Cereals, Inc., et.al., Southern District of New York, Civil No. 93-0811 (KMV), February 22, 1995.

evaluating unilateral effects. In her well-reasoned opinion, Judge Wood discusses unilateral effects at great length, giving emphasis to the econometric estimates of cross-price elasticity between the key merging brands, Grape Nuts and Shredded Wheat, for evaluating possible anticompetitive unilateral effects.[16]

Summary and Conclusions

Mergers in markets with differentiated products may seem a confusing area to many of you (if you ever gave them much thought before this lunch). Most fundamentally, how is one supposed to go about defining markets to include "reasonable substitutes"? For reasons I think are somewhat inevitable, the case law provides less guidance than you might like on this point.

I hope to have convinced you today that the 1992 Merger Guidelines, and the consensus view among economists of how to analyze competition in differentiated-product industries, together provide a consistent, valid, and reliable way of evaluating proposed horizontal mergers involving differentiated products. Central to the analysis is the Diversion Ratio, which measures the number of consumers who regard the merging firms' brands as their first and second choices. Elasticities of demand can be estimated

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[16]Some of you may find interesting the following comment which Judge Wood makes near the end of her opinion. After demonstrating that she understands clearly how the Merger Guidelines approach unilateral effects, she states: "Although courts do not invariably concern themselves with unilateral effects in Section 7 cases, I will assume, *arguendo*, that the Merger Guidelines' concern for this effect is valid." (opinion at 74,069)

econometrically in cases where detailed price and quantity data are available, allowing estimtes to be made of the Diversion Ratio. More typically, the estimated Diversion Ratio is based on whatever pieces of evidence are available, including more qualitative information. If there are many consumers who regard the merging brands as their first and second choices, the merger will indeed create an incentive to raise price. This incentive can be undercut by rivals' product repositioning, by entry, or by credible synergies.