

# PART TWO

## THE ROLE OF ECONOMICS AND ECONOMISTS IN ANTITRUST LAW

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### I. INTRODUCTION

The past twenty-five years have seen a major expansion in the role that economics and economists play in antitrust litigation, enforcement and policy development. Whereas economists in the early 1970s could be fairly described as

largely commentators on antitrust policy,<sup>141</sup> today they play a prominent role. Both of the federal agencies that are responsible for antitrust enforcement—the Antitrust Division of the U.S. Department of Justice and the Federal Trade Commission—have sizable staffs of trained economists who routinely become involved in case analysis, litigation, and the development of enforcement policy.<sup>142</sup> Private parties also now routinely hire expert economists for assistance in litigation and for analysis in instances in which the parties anticipate a challenge by the enforcement agencies.

Reflecting this trend, the Milton Handler Annual Antitrust Review included, for the first time in recent memory, an economist, Professor Dennis Carlton. Professor Carlton's essay in this volume addresses a number of antitrust issues from the perspective of economics. This essay serves as a companion to Professor Carlton's by providing background and context for his paper for all readers, though especially for those readers who are not steeped in the details of the areas addressed by Professor Carlton.

Professor Carlton's remarks at the Milton Handler Annual Antitrust Review and in his paper in this volume, while citing the overall health of the application of economics in antitrust, focus on three areas where he recommends caution:

- Extensions of enforcement against price fixing beyond explicit cartels to oligopolies engaged in various activities often characterized as "agreements" are not warranted;
- The recent trend to evaluate mergers through detailed market definition and simulations of

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<sup>141</sup> Though both the FTC and the DOJ had economists on staff at the time, the economists were considerably fewer in number and had nowhere near the influence that they have today at those agencies; further fewer private parties used economists in antitrust litigation than is true today.

<sup>142</sup> In addition, at least one state attorney general's antitrust bureau—New York—employs economists.

price effects may be misguided; detailed simulations of the price effects of mergers are not a substitute for more direct analyses of mergers, and market definition prescribed by the FTC/DOJ *Merger Guidelines* can rarely be implemented precisely and should be considered a crude guide, at best.

- Seller concentration may result from vigorous competition, rather than from its absence, and ignorance of this fact is often part of a broader failure to recognize that competition occurs in many forms and across many dimensions, resulting in more competitive outcomes than one might otherwise expect.

Here, we dedicate individual sections to provide background on each of the first two points, while interspersing discussion of the third point throughout.<sup>143</sup>

First, the section on price fixing focuses on the concerns that Professor Carlton raises, discussing some of the issues involved in determining what proof is sufficient to show an illegal agreement, and summarizes the three cases and one consent decree to which Professor Carlton refers in his paper. Second, the section on merger enforcement discusses the framework for merger evaluation established in the FTC/DOJ *Merger Guidelines* and, within that context, provides background on Professor Carlton's comments with respect to market definition, merger simulation, and the use of natural experiments.

## II. EXPLICIT AND ALLEGED PRICE FIXING

Professor Carlton raises a concern that judges and the antitrust agencies at times impose antitrust liability for agreements that have little, if any, adverse impact on competition. While he starts with the premise that explicit

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<sup>143</sup> In addition, Professor Carlton addressed the implications of some of these points for international adoption and enforcement of antitrust policy. We do not address those issues here.

price-fixing agreements are generally harmful, he suggests that the courts are too quick to see implicit attempts at price-fixing in parallel behavior by oligopolies. In particular, he criticizes Judge Posner's recent decision in *In re High Fructose Corn Syrup* and the Department of Justice's consent decree with the airlines in 1992 and 1994 that ended certain of the airlines' practices with respect to publishing fares in advance.<sup>144</sup> Citing a recent case study that found that airline fares were not discernibly affected by the DOJ's 1992 and 1994 consent decrees,<sup>145</sup> Professor Carlton suggests that the proscribed behaviors did not, in fact, artificially raise prices. Professor Carlton contrasts these decisions with two cases that he believes applied the correct standard: *Hall v. United Airlines, Inc.*<sup>146</sup> ("Airline Travel Agent Commission case") and *Williamson Oil Co. v. Philip Morris USA*<sup>147</sup> ("Tobacco Wholesaler case"). These cases are discussed in more detail below, but it is helpful to begin with a short background on why courts and regulators are concerned about coordinated behavior by oligopolies in the absence of direct proof of explicit price-fixing agreements.

### A. Enforcement Standards Against Price Fixing

Section 1 of the Sherman Act is explicitly limited to "a contract, combination, or conspiracy." But, as Judge Posner

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<sup>144</sup> *In re High Fructose Corn Syrup Antitrust Litig.*, 295 F.3d 651, 654 (7th Cir. 2002), *cert. denied sub nom.*, A. E. Staley Mfg. Co. v. Dellwood Farms, Inc., 537 U.S. 1188 (2003) [hereinafter *High Fructose Corn Syrup*]. See also Complaint and Competitive Impact Statements, United States v. Airline Tariff Publishing Co., Civil Action No. 92-2854 SSH, 1994-2 Trade Cases ¶ 70,686 (D.D.C. 1992), available at <http://www.usdoj.gov/atr/cases/dir23.htm> (last visited Jan. 9, 2004).

<sup>145</sup> Severin Borenstein, *Rapid Price Communication and Coordination: The Airline Tariff Publishing Case*, in THE ANTITRUST REVOLUTION: ECONOMICS, COMPETITION, AND POLICY, 233-251 (John E. Kwoka, Jr. & Lawrence J. White eds., 4th ed. 2004) [hereinafter ANTITRUST REVOLUTION].

<sup>146</sup> *Hall v. United Airlines, Inc.*, 296 F. Supp. 2d 652 (E.D.N.C. 2003).

<sup>147</sup> *Williamson Oil Co. v. Philip Morris USA*, 346 F.3d 1287 (11th Cir. 2003).

noted in *High Fructose Corn Syrup*, the concept of what constitutes a "contract" under contract law is an evolving, amorphous concept.<sup>148</sup> As a result, "contract, combination, or conspiracy" has come to have a unique meaning under the antitrust laws, with the prevailing position being that an explicit agreement, i.e., a "meeting of the minds," must exist. Conscious parallelism is not sufficient under the antitrust laws alone to support a finding of agreement.<sup>149</sup> Judge Breyer provided a succinct justification for this requirement:

Courts have . . . almost uniformly held, at least in the pricing area, that such individual pricing decisions (even when each firm rests its own decision upon its belief that competitors will do the same) do *not* constitute an unlawful agreement . . . . That is not because such pricing is desirable (it is not), but because it is close to impossible to devise a judicially enforceable remedy for 'interdependent' pricing. How does one order a firm to set its prices *without regard* to the likely reactions of its competitors?<sup>150</sup>

Courts appear to raise or lower the level of proof that a plaintiff needs to prove an agreement based on the judge's view of the plausibility of the plaintiff's theory of conspiracy and the resulting harm as weighed against the defendant's justification for the alleged conduct. The Supreme Court in *Matsushita Electric Industrial Co. v. Zenith Electric Corp.* articulated what was, at least implicitly, the practice of most

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<sup>148</sup> *High Fructose Corn Syrup*, 295 F.3d at 654.

<sup>149</sup> See *Monsanto Co. v. Spray-Rite Service Corp.*, 465 U.S. 752 (1984). On this point, the Court held:

The correct standard is that there must be evidence that tends to exclude the possibility of independent action by the [parties]. That is, there must be direct or circumstantial evidence that reasonably tends to prove that [the parties] had a conscious commitment to a common scheme designed to achieve the unlawful objective.

*Monsanto*, 465 U.S. at 768.

<sup>150</sup> *Clamp-All Corp. v. Cast Iron Soil Pipe Inst.*, 851 F.2d 478, 484 (1st Cir. 1988) (emphasis in original).

courts: plaintiffs who advance an implausible claim must "come forward with more persuasive evidence to support their claim than would otherwise be necessary."<sup>151</sup>

The analytic framework that most courts and commentators use for the more difficult price-fixing cases is referred to as "parallel plus." A plaintiff first needs to demonstrate that there was parallel behavior by the defendants as to pricing (or output or customer allocation).<sup>152</sup> But this alone is not enough, because competitors in concentrated markets will often independently adopt strategies that result in parallel price movements or mutual forbearance in stealing each other's customers, etc.: so-called "conscious parallelism." Thus, courts require evidence of "plus factors" tending to exclude the possibility of independent conduct. Defendants, while not required to, often produce evidence of "minus factors" that tend to exclude the possibility of an explicit agreement. Judges, and juries if the case survives summary judgment, then weigh the plus and minus factors to determine if the plaintiffs have met their burden of proof. What constitutes a legitimate plus or minus factor varies from court to court, scholar to scholar, and economist to economist.

One notable trend has been the tendency of courts more readily to grant summary judgment in favor of defendants following the Supreme Court's *Matsushita* decision. Courts finding for defendants almost invariably rely on the following statement:

[A]ntitrust law limits the range of permissible inferences from ambiguous evidence in a § 1 case. . . .  
Conduct as consistent with permissible competition

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<sup>151</sup> *Matsushita Elec. Ind. Co. v. Zenith Elec. Corp.*, 475 U.S. 574, 587 (1986). See also *High Fructose Corn Syrup*, 295 F.3d at 661 (noting that "more evidence is required the less plausible the charge of collusive conduct"); *Apex Oil Co. v. DiMauro*, 822 F.2d 246, 253 (2d Cir. 1987) (requiring a lower standard of proof, as a practical matter, when alleged conspiracy is "short-term and relatively simple in nature," and thus is easier to carry out and conceal).

<sup>152</sup> A large body of case law is concerned with just how parallel the behavior needs to be, but that is beyond the scope of this Article.

as with illegal conspiracy does not, standing alone, support an inference of antitrust conspiracy. To survive a motion for summary judgment or for a directed verdict, a plaintiff seeking damages for a violation of § 1 must present evidence 'that tends to exclude the possibility' that the alleged conspirators acted independently.<sup>153</sup>

Plaintiffs' theory of harm in *Matsushita* made little economic sense and ran the risk of deterring pro-competitive behavior—facts that strongly influenced the Supreme Court's decision. The U.S. electronics manufacturers who were plaintiffs in *Matsushita* asserted that Japanese electronics manufacturers had engaged in an extended period of pricing their products *too low* in an attempt to drive the U.S. producers out of business. The theory had several practical problems, not the least of which was condemning low prices that had benefited U.S. consumers for years. Thus, the general statement in *Matsushita* that sets an apparently high bar for plaintiffs was not necessarily meant to apply to cases in which the plaintiff's theory of competitive harm is more plausible.

## B. Recent Case Law

The four cases that Professor Carlton cited in his paper provide a good vehicle for surveying the plus and minus factors that at least some courts have accepted. With the exception of the DOJ's airline consent decree, all three cases apparently did not present difficult fact situations for determining liability. *High Fructose Corn Syrup* involved defendants that had recently been convicted of criminal price fixing in related industries and plaintiffs that had suggestive e-mails and statements from the defendants as well as some economic evidence. The plaintiffs in the Travel Agent and Tobacco Wholesaler cases had little-to-no evidence of an agreement, and the defendants in both matters pointed to significant industry developments that explained the parallel

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<sup>153</sup> *Matsushita*, 475 U.S. at 588 (internal citations omitted).

conduct better than a price-fixing conspiracy did. The DOJ's airline consent decree was not litigated, and it is an open question whether the DOJ could have prevailed at trial.

### 1. *In re High Fructose Corn Syrup*

This case involved an appeal by the plaintiffs to the Seventh Circuit from a decision by the district court granting the defendants' motion for summary judgment.<sup>154</sup> In an opinion by Judge Posner, the Seventh Circuit reversed the district court's decision. The defendants were four of the largest manufacturers of high fructose corn syrup ("HFCS")—a commodity sweetener largely used in soft drinks—available in only two grades, which differ as to percent of fructose in the product. The defendants included Archer Daniels Midland ("ADM"), which had recently pleaded guilty to criminal price-fixing in other markets. Notably, a number of the ADM executives implicated in the other price fixing conspiracy were involved in HFCS.

The plaintiffs apparently conceded that they needed to prove an actual agreement to sustain liability. Judge Posner noted that, under contract law, an agreement can be created "even though there was no communication between the parties."<sup>155</sup> It is not clear whether the Seventh Circuit was indicating with this dictum a willingness in the future to condemn less explicit agreements under Section 1.

Judge Posner then elaborated on the parallel-plus framework. Absent direct evidence of a conspiracy, which was lacking in this case, a plaintiff can introduce two types of evidence: (1) economic, showing that the structure of the market was such as to make secret price fixing feasible and that the market behaved in a noncompetitive manner; and (2) noneconomic, showing that the anticompetitive behavior was the result of an agreement rather than conscious parallelism. Judge Posner notes that although economic evidence is not strictly necessary, "[it] is important in a case

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<sup>154</sup> *High Fructose Corn Syrup*, 295 F.3d at 654.

<sup>155</sup> *Id.* at 653.



such as this in which, although there is noneconomic evidence, that evidence is suggestive rather than conclusive.”<sup>156</sup>

As to structural economic evidence, the opinion lists a number of factors that indicate that price fixing is both feasible and more likely than if other conditions prevailed in the market:

- (1) few sellers (it is easier to reach an agreement among a small group);
- (2) a homogenous product with no good substitutes outside the market (this reduces the number of terms the conspirators have to agree to);
- (3) a large number of buyers, including small buyers (making it more difficult for buyers to protect themselves);
- (4) price is transparent (i.e., cheating by a competitor can be detected);
- (5) those that deviate from the cartel can be punished (without a punishment mechanism, the conspirators will have no reason not to cheat on the agreement in order to gain market share);
- (6) the defendants have considerable excess capacity (thus, absent a price-fixing conspiracy, prices are likely to be near incremental rather than total costs);
- (7) Judge Posner noted that the plaintiff did not develop evidence as to the difference between incremental and total costs, where the larger the spread between the two, the more that defendants have to gain from fixing prices; and
- (8) market-wide price discrimination in markets with homogenous products (this allows the conspirators to offer competitive prices to buyers that

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<sup>156</sup> *Id.* at 655.

can protect themselves while at the same time charging higher prices to customers that cannot protect themselves).<sup>157</sup>

As to evidence that the market reflected anticompetitive behavior, the plaintiffs cited that all of the competitors: (i) followed the leader's price increases; (ii) adopted a rule of thumb for the relative pricing of the two grades of HFCS that bore no relation to the production cost differences between the two grades; (iii) adopted uniform non-price terms; (iv) purchased HFCS from one another even when they had excess capacity to make more themselves; and (v) had market shares that changed little during the alleged conspiracy even though demand for the product grew. In addition, the plaintiffs (vi) submitted a regression analysis finding that, after correcting for other factors, the price of HFCS was higher during the period of the alleged conspiracy than it was before or after the conspiracy.<sup>158</sup>

Judge Posner noted that this economic evidence alone is not sufficient to establish that the defendants' actions were the result of an unlawful agreement. But the court did find that this economic evidence reduced the level of additional proof needed from which to infer an agreement because, unlike *Matsushita*, "the charge in this case involves no implausibility. The charge is of a garden-variety price-fixing conspiracy orchestrated by a firm, ADM, conceded to have fixed prices on related products . . . ."<sup>159</sup>

The non-economic evidence included e-mails and statements by the defendants that were suggestive of the existence of an explicit agreement. Judge Posner criticized the district court for not analyzing this non-economic evidence as a whole, while acknowledging that each individual piece of evidence was not, in itself, sufficient to show such an agreement. However, the district court judge did note that, "[a]lthough some of the record may be discussed piecemeal, the Court is nevertheless mindful of its

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<sup>157</sup> *Id.* at 656-58.

<sup>158</sup> *Id.* at 658-60.

<sup>159</sup> *Id.* at 661.

obligation to weigh the evidence as a whole in that 'plaintiffs should be given the full benefit of their proof without tightly compartmentalizing the various factual components and wiping the slate clean after scrutiny of each.'"<sup>160</sup>

Arguably, the real difference between the circuit and district courts was their intuitive reaction as to the plausibility of the plaintiffs' underlying theory. The district court was skeptical and thus demanded more evidence of an actual conspiracy, whereas the circuit court found that "the charge in this case involves no implausibility" and thus was willing to accept a lesser showing of additional non-economic evidence.

## 2. The Tobacco Wholesalers Case

The Tobacco Wholesalers case involved plaintiff cigarette wholesalers that claimed that defendant cigarette manufacturers (Philip Morris, R.J. Reynolds, Brown & Williamson, and Lorillard) had engaged in a conspiracy to raise the wholesale price of cigarettes and that, as a result, wholesale buyers paid nearly \$12 billion in overcharges.<sup>161</sup> The defendants introduced substantial evidence that, as wholesale prices rose, competition at the retail level increased dramatically with the use of trade spending and coupons. In addition, market share shifts were notable during the period of the alleged conspiracy. The district court held that the manufacturers' pricing behavior evidenced nothing more than "conscious parallelism, a perfectly legal phenomenon commonly associated with oligopolistic conduct."<sup>162</sup> The plaintiffs appealed the district court's grant of summary judgment in favor of the defendants to the Eleventh Circuit, which upheld the district court's decision. While the evidence presented by the

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<sup>160</sup> *In re High Fructose Corn Syrup Antitrust Litig.*, 156 F. Supp. 2d 1017, 1032 (C.D. Ill. 2001) (citing *Continental Ore Co. v. Union Carbide and Carbon Corp.*, 370 U.S. 690, 699 (1962)).

<sup>161</sup> *Williamson Oil Co. v. Philip Morris USA*, 346 F.3d 1287 (11th Cir. 2003).

<sup>162</sup> *Id.* at 1291.

plaintiffs could support a price-fixing conspiracy, the court found that the evidence was equally consistent with the individual defendants' making independent decisions in their economic self-interest.

The Eleventh Circuit applied a "parallel plus" standard: a plaintiff must (i) establish that parallel behavior took place; and (ii) provide evidence that shows "the existence of a plus factor so as to create an inference of conspiracy."<sup>163</sup> The circuit court went on to note that if a plaintiff meets the initial burden of introducing sufficient plus factors, then a defendant can introduce counter evidence that rebuts the presumption of an explicit conspiracy. The plaintiffs claimed eleven plus factors, all of which were rejected by the district and circuit courts. The district and circuit courts seemed to subject the plus factors to a relatively strict review, although many were simply structural and behavioral economic evidence that are not plus factors. But what likely led these courts to reject all of the plaintiffs' arguments is the compelling facts, or minus factors, that the defendants introduced rebutting an implication of a conspiracy, including:

- (1) the defendants spent more on competition at the retail level (trade spending and coupons) than the defendants gained from the price increases at the wholesale level;
- (2) the defendants believed that focusing competition at the retail level was more effective than price decreases at the wholesale level because of the risk that the wholesalers and/or retailers would simply pocket the money and the manufacturers would realize no benefits from price cuts to wholesalers;
- (3) cigarette prices were lower in absolute terms and rose more slowly during the period of the alleged conspiracy than before the conspiracy;

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<sup>163</sup> *Id.* at 1305.

(4) market shares shifted notably during the period of the alleged conspiracy; and

(5) during the period of the alleged conspiracy, retail competition was so intense that RJR, Brown & Williamson, and Lorillard brought an antitrust and unfair competition suit against Philip Morris.<sup>164</sup>

### 3. Airline Travel Agent Commission Case

The Airline Travel Agent Commission case involved the commissions paid to travel agents by most of the airlines serving the United States, both foreign and domestic. Until recently, airlines paid travel agents a percentage of the face value of every ticket the agent sold. Beginning in 1995, airlines began reducing the commissions paid to travel agents, with most of the large airlines completely eliminating commissions by 2002.

The airlines tended to reduce their commissions in a parallel manner, although the “parallel” action often did not occur for months with respect to some of the defendants. The traditional bricks-and-mortar travel agents then brought this antitrust class action. During the 1990s, the distribution of airline tickets underwent dramatic changes, with e-tickets becoming by some counts more prevalent than paper tickets and Internet sales eclipsing sales by traditional travel agents.

The district court for the Eastern District of North Carolina granted summary judgment in favor of the defendants.<sup>165</sup> Applying the Fourth Circuit’s standard for summary judgment in price-fixing cases, the district court ruled that a plaintiff must “discharge a two-fold evidentiary burden”: First, the plaintiff “must establish that [each defendant] had a ‘conscious commitment to a common scheme designed to achieve an unlawful objective.’” Second, [plaintiffs] must bring forward evidence that excludes the possibility that the alleged coconspirators acted

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<sup>164</sup> *Id.* at 1295, 1320-21.

<sup>165</sup> *Hall v. United Airlines, Inc.*, 296 F. Supp. 2d 652 (E.D.N.C. 2003).

independently or based upon legitimate business purpose.”<sup>166</sup> Meeting both requirements is a high bar for plaintiffs in light of *Monsanto* and *Matsushita*, respectively, but, given the apparent weakness of their case, the plaintiffs would have failed to meet almost any summary judgment standard. In particular, it appears that no credible evidence was presented of an explicit agreement.

In addition, the airlines demonstrated that the commission cuts arose because of the rise of e-tickets and the Internet as a distribution channel. The court noted that this explanation was more likely than the plaintiffs’ conspiracy theory, and specifically that: (i) the commission reductions were the result of the competition that traditional travel agents faced from the lower-cost Internet distributors; and (ii) the commission reductions came at a time when the airlines were in financial distress and were taking a number of cost-cutting actions, of which the commission cuts were only one. Moreover, defendants presented substantial evidence that a number of airlines had studied the effect of commission reductions and determined that airlines that did not cut their commissions did not notably gain market share against those that had cut their commissions.<sup>167</sup> In other words, airlines were receiving little, if any, benefit from the money they were paying to travel agents.

#### 4. Department of Justice Consent Decree with the Airline Industry

From 1991 through 1994, the Department of Justice investigated and sued the major airlines for their creation of an electronic board that allowed airlines to post and change very detailed price and term data quickly. The DOJ put forward a theory that the rapid and voluminous price information exchange either made it easier for the airlines to parallel-price or that this level of information exchange was so great that it rose to the level of an explicit agreement.

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<sup>166</sup> *Id.* at 660-61 (quoting *Laurel Sand & Gravel, Inc. v. CSX Transp., Inc.*, 924 F.2d 539, 543 (4th Cir. 1991)).

<sup>167</sup> *Id.* at 671-72.

The DOJ apparently had no further evidence. The airlines argued that they were simply engaging in conscious parallelism and that this information was also available to, and valued by, travel agents (and thus consumers).

United and USAir settled in 1992 and the remaining defendants settled in 1994 by entering into a consent decree that simply eliminated, or limited the content of, some of the information fields that could be posted on the electronic board.<sup>168</sup> The DOJ and airlines agreed that any parallel pricing behavior (so long as there was no explicit agreement) of the airlines would not be a violation of the consent decree. As noted above, this case was not litigated and thus is not binding precedent.

Professor Carlton referred to this matter because a case study by Severin Borenstein finds that the DOJ settlement had no discernable effect on the pricing practices in the airline industry.<sup>169</sup> The case study supports the proposition that the remedy the DOJ obtained was ineffective, but it does not necessarily support the proposition that there was no well-founded empirical reason for the DOJ to bring the case—that remains an open question. The empirical research does not address what standard of proof in price-fixing cases is optimal with respect to total or consumer welfare.

### III. MERGER POLICY AND ENFORCEMENT

Perhaps the area of antitrust in which the influence of economists has been most heavily felt has been that of mergers.<sup>170</sup> Twenty-five years ago, there was no standard

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<sup>168</sup> Complaint and Competitive Impact Statements, *United States v. Airline Tariff Publishing Co.*, No. CIV.A.92-2854-SSH, 1994-2 Trade Cases ¶ 70,686 (D.D.C. 1992), available at <http://www.usdoj.gov/atr/cases/dir23.htm> (last visited Jan. 9, 2004).

<sup>169</sup> See generally Borenstein, *supra* note 145.

<sup>170</sup> Portions of this section are a modified version of Lawrence J. White, *Economists in Merger Enforcement*, Presentation at the Seminar on Global Enforcement of the Antitrust Laws and Business Response, Tokyo, Japan (Dec. 15, 2003).

paradigm for delineating markets, and the general state of the antitrust analysis of mergers was erratic at best.<sup>171</sup> Today, the market delineation<sup>172</sup> paradigm of the DOJ/FTC *Merger Guidelines*<sup>173</sup>—which were first developed at the DOJ in 1982, with substantial contributions from the staff economists<sup>174</sup>—is the standard. Similarly, the structure of merger analysis that was the original focus of the *Guidelines*—the so-called “coordinated effects” approach<sup>175</sup>—

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<sup>171</sup> Though, by the late 1970s, the government had begun to lose some merger cases (notably *United States v. Gen. Dynamics*, 415 U.S. 486 (1974) and *United States v. Marine Bancorporation*, 418 U.S. 602 (1974)), thereby weakening the strength of Justice Potter Stewart’s comment in his dissent in *United States v. Von’s Grocery Co.*, 384 U.S. 270, 301 (1966) (Stewart, J., dissenting) (“The sole consistency that I can find is that under § 7, the government always wins.”), nevertheless the heavy hands of the government’s merger victories in the 1960s and early 1970s showed the malleability of merger analysis. See, e.g., *Brown Shoe Co. v. United States*, 370 U.S. 294, 325 (1962); *United States v. Philadelphia National Bank*, 374 U.S. 321 (1963); *United States v. Von’s Grocery Co.*, 384 U.S. 270, 301 (1966); *U.S. v. Aluminum Co. of Am.*, 377 U.S. 271 (1964) (Rome Cable); *United States v. Continental Can Co.*, 378 U.S. 441 (1964); *United States v. Pabst Brewing Co.*, 384 U.S. 546 (1966); *Ford Motor Co. v. United States*, 405 U.S. 562 (1972); *United States v. Falstaff Brewing Co.*, 410 U.S. 526 (1973).

<sup>172</sup> This is often described as “market definition.”

<sup>173</sup> The 1982 *Guidelines* superseded an earlier set that had been promulgated in 1968. Since 1982, the *Guidelines* have been revised in 1984, 1992, and 1997, but the essential structure that was established in 1982 has been retained. For further discussion, see, e.g., Lawrence J. White, *Antitrust and Merger Policy: A Review and Critique*, 1 J. ECON. PERSP. 13 (1987); and ANTITRUST REVOLUTION *supra* note 145.

<sup>174</sup> White, *supra* note 173; Lawrence J. White, *Present at the Beginning of a New Era for Antitrust: Reflections on 1982-1983*, 16 REV. IND. ORG. 131 (2000); and Gregory J. Werden, *The 1982 Merger Guidelines and the Ascent of the Hypothetical Monopolist Paradigm*, paper presented at the U.S. DOJ conference: The 20th Anniversary of the 1982 Merger Guidelines: the Contribution of the Merger Guidelines to the Evolution of Antitrust Doctrine (June 10, 2002), available at <http://www.usdoj.gov/atr/hmerger/11256.htm>. As Werden points out, the first use of the paradigm for merger analysis can be found in Morris A. Adelman, *Economic Aspects of the Bethlehem Opinion*, 45 VA. L. REV. 684, 688 (1959).

<sup>175</sup> This can be contrasted with the “unilateral effects” approach, which will be discussed further *infra*.



drew on standard oligopoly analysis that had been in the mainstream of economics for over a decade<sup>176</sup> at the time of the 1982 version of the *Guidelines* and still remains central to the analysis of mergers for which “unilateral effects” are not thought to be important.

We focus first on market delineation and then return to the theories of competitive harm identified in the *Merger Guidelines*. After the review of the *Guidelines* approach, we explore in greater detail the two areas cited specifically by Professor Carlton: the limitations of market delineation, and the use of structural modeling and natural experiments in merger review.

### A. Market Definition

The major public policy concern is that a merger will create or enhance the exercise of *market* power. Market delineation is an essential part of the analysis. The essence of the *Merger Guidelines*’ market delineation paradigm is that a relevant market is a group of products within a geographic setting with respect to which market power could potentially be exercised or enhanced; and then the remainder of the *Guidelines*’ analysis tries to determine whether the specific merger that is being considered is likely to change market conditions sufficiently so as to create or enhance that market power. More formally, the *Guidelines* define a relevant market as a product (or group of products) that is sold by a group of sellers who, if they acted in concert (as a “hypothetical monopolist”), could bring about “a small but significant and nontransitory increase in price” (“SSNIP”).<sup>177</sup>

These principles apply to the delineation of geographic markets as well as product markets.<sup>178</sup> The SSNIP test

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<sup>176</sup> George J. Stigler, *A Theory of Oligopoly*, 72 J. POL. ECON. 55 (1964); Kolasky Apr. 24, 2002 Speech, *supra* note 103.

<sup>177</sup> A five percent increase that can be sustained for a year is the SSNIP value that the enforcement agencies typically use.

<sup>178</sup> The essential determining factor is demand substitutability: how readily can buyers switch away (in response to a price increase) to other

delineates markets in which sellers could potentially exercise market power; it also identifies groups of customers in instances in which customers could be the target of sustained price discrimination.

Because a direct connection exists between (i) the average price-cost margin of a group of firms (e.g., those that are in a tentatively designated market), (ii) the elasticity of demand that the firms face, and (iii) the price increase that could be achieved by a hypothetical monopolist that encompasses that same group of firms,<sup>179</sup> the SSNIP test directly yields the concept of the "critical elasticity of demand" or, equivalently, "the critical sales loss."<sup>180</sup> If a five percent SSNIP test is the criterion, then the "critical elasticity of demand" is the elasticity (given the firms' average price-cost margin) that would be consistent with a hypothetical monopolist's being able profitably to raise prices at least five percent above their observed (current) levels;<sup>181</sup> similarly, the "critical sales loss" is the percentage loss in sales (implied from the application of the five percent price increase to the estimated demand elasticity) from which the lost profits (calculated from the average price-cost margins) would just offset the increased profits on the remaining sales and thus render the

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sellers (who are not included in the provisional delineation of a relevant market) of other goods and/or who are located in other geographic areas. In principle, a relevant geographic market could be as small as a neighborhood or as large as the entire global economy. Supply substitutability enters primarily through the determination of who are the participants in the relevant market or who are potential entrants into that market.

<sup>179</sup> This relationship follows from the standard formula for the profit-maximizing price of a monopolist:  $P_M = MC/(1 + 1/E_D)$ , where MC represents marginal costs and  $E_D$  represents the (negative) elasticity of demand.

<sup>180</sup> See, e.g., Gregory J. Werden, *Demand Elasticities in Antitrust Analysis*, 66 ANTITRUST L.J. 363 (1998) and especially the references found in his footnote 102.

<sup>181</sup> If the estimated demand is more elastic than this critical value, then the hypothetical monopolist could not succeed in raising prices by five percent, and the tentative market would have to be widened to encompass more firms (in neighboring geographic areas and/or in "neighboring" product "areas") so as to allow the hypothetical monopolist to control more of the possible substitution possibilities and thus lower the calculated elasticity of demand.

hypothetical monopolist's five percent price increase just barely profitable.<sup>182</sup>

## B. Theories of Competitive Harm

As was noted above, after the market has been delineated, the *Merger Guidelines* offer two potential theories of competitive harm that could arise as a consequence of a merger. First is the "traditional" theory of oligopolistic coordinated interaction. This approach dominated merger-enforcement thinking in the 1980s and has received a revival of interest in the early twenty-first century.<sup>183</sup> The second approach, which received substantial attention during the 1990s during its development, focuses on the "unilateral effects" that might arise from a merger of two firms that sell differentiated product substitutes (and for which a substantial number of customers have the two merging firms as their first and second choices).<sup>184</sup> We will address each in turn.

### 1. Coordinated Effects

The "coordinated effects" analysis usually proceeds from some version of a "structure-behavior-performance" model, whereby the structure of an industry—e.g., seller concentration, conditions of entry, conditions on the buyers' side of the market, the complexity of the quality and service dimensions of the product or products at issue, industry practices such as the extent of price transparency and other marketing practices, etc.—is believed to influence behavior,

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<sup>182</sup> Again, a greater loss in sales would render the five percent price increase unprofitable and would call for a widening of the market.

<sup>183</sup> See, e.g., Kolasky Apr. 24, 2002 Speech, *supra* note 103; David S. Sibley & Ken Heyer, *Selected Economic Analysis at the Antitrust Division: The Year in Review*, 23 REV. IND. ORG. 95 (2003); and Mary T. Coleman, David W. Meyer, & David T. Scheffman, *Empirical Analyses of Potential Competitive Effects of a Horizontal Merger: The FTC's Cruise Ships Merger Investigation*, 23 REV. IND. ORG. 121 (2003).

<sup>184</sup> See, e.g., Janusz Ordover & Robert Willig, *Economics and the 1992 Merger Guidelines: A Brief Survey*, 8 REV. IND. ORG. 139 (1993).

notably the extent of implicit coordinated price behavior (and possibly coordination in other dimensions, as well), which, in turn, affects performance (as measured by price-cost margins or profit rates or some variant on these).<sup>185</sup> The *Merger Guidelines* have specific provisions for the consideration of each of these structural conditions.

Seller concentration (in the market that has been delineated according to the procedures described above) leads in the discussion, perhaps because it is the most quantifiable of these measures and because much econometric and analytical attention had been paid during the 1940s through the 1970s to the empirical/statistical relationship between seller concentration and industry profit rates.<sup>186</sup> The *Guidelines* use the Herfindahl-Hirschman Index (HHI) as its tool for measuring seller concentration. The *Guidelines* provide a set of post-merger HHI levels (and changes in the HHI caused by the merger) that would trigger enforcement attention, although actual enforcement practice has informally used higher HHI levels.<sup>187</sup> The *Guidelines* also specify a post-merger market share of thirty-five percent for the merged firm (and indications of strong customer preferences for the two firms' products) to deal with concerns about unilateral effects.

Starting from the mid 1960s onward, some observers engaged in a continuing critique (often associated with the "Chicago School" of economists and antitrust lawyers who either taught or had been educated at the University of

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<sup>185</sup> For a recent review of the economics literature on conditions that either facilitate or frustrate coordination, see MARC IVALDI ET. AL., *supra* note 105.

<sup>186</sup> For surveys, see Richard Schmalensee, *Inter-Industry Studies of Structure and Performance*, in 2 HANDBOOK OF INDUSTRIAL ORGANIZATION 951 (Richard Schmalensee & Robert Willig, eds., 1989); and Timothy F. Bresnahan, *Industries with Market Power*, in 2 HANDBOOK OF INDUSTRIAL ORGANIZATION 1011 (Richard Schmalensee & Robert Willig, eds., 1989).

<sup>187</sup> See FED. TRADE COMM'N & U.S. DEPT OF JUSTICE, MERGER CHALLENGES DATA, FISCAL YEARS 1999-2003 (Dec. 18, 2003), available at <http://www.ftc.gov/os/2003/12/mdp.pdf>. See also, Kolasky Apr. 24, 2002 Speech, *supra* note 103.

Chicago) both of the structure-behavior-performance model itself and of the statistical testing of the model that had found the positive associations between seller concentration and profit rates.<sup>188</sup> These critics argued that the causalities could well lie in the opposite directions—e.g., that high profitability could induce entry, which would reduce concentration, and that economies of scale might be the source of both high concentration and the perceived high profit rates (rather than the high profit rates being due to the exercise of oligopoly coordinated effects)—and that the profit data themselves were not to be trusted.

That debate has persisted for over three decades, without complete resolution. Many of the believers in the traditional structure-behavior-performance model have conceded that suspect levels of concentration are probably higher than was thought to be the case in the 1970s.<sup>189</sup> And many who are in the critical camp also concede that duopolies are probably suspect.<sup>190</sup>

Professor Carlton's article renews this critique of the structure-behavior-performance model. It should be noted that this skepticism as to the empirical importance of oligopoly coordinated behavior affects not only how one thinks about the "joint monopoly" cases that the FTC considered bringing in the late 1970s (but never did) but also

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<sup>188</sup> For surveys, see *INDUSTRIAL CONCENTRATION: THE NEW LEARNING* (Harvey J. Goldschmid, H. Michael Mann, & J. Fred Weston, eds., 1974); Schmalensee, *supra* note 186; and Bresnahan, *supra* note 186. For the accounting critiques cited in the text, see George J. Benston, *Accounting Numbers and Economic Values*, 27 ANTITRUST BULL. 161 (1982); and Franklin M. Fisher & John J. McGowan, *On the Misuse of Accounting Rates of Return to Infer Monopoly Profits*, 73 AMER. ECON. REV. 82 (1983).

<sup>189</sup> See, e.g., F.M. SCHERER & DAVID ROSS, *INDUSTRIAL MARKET STRUCTURE AND ECONOMIC PERFORMANCE* (3d ed. 1990).

<sup>190</sup> But merger proponents have sometimes defended duopolies. See, e.g., John E. Kwoka, Jr., & Lawrence J. White, *Manifest Destiny? The Union Pacific and Southern Railroad Merger*, in ANTITRUST REVOLUTION, *supra* note 145; and Lawrence J. White, *Staples-Office Depot and UP-SP: An Antitrust Tale of Two Proposed Mergers*, in MEASURING MARKET POWER 153 (Daniel J. Slottje, ed., 2002).

how one thinks about merger issues such as the appropriate HHI levels that should trigger enforcement concern.

## 2. Unilateral Effects

As was noted above, the "unilateral effects" theory of competitive harm from mergers received extensive antitrust enforcement attention during the 1990s. Unilateral effects arise in markets where, even in the absence of cooperation with other sellers, the merged firm could find a unilateral price increase profitable. This might occur when two merging sellers are each other's major competitors in a differentiated product market, so that the elimination of competition between the two as a result of the merger significantly relaxes the prior pricing constraint that each imposed on the other. Other products are simply too imperfect as substitutes to prevent price increases, and for the same reason other sellers' cooperation in the price increase is not necessary.

Ordover and Willig<sup>191</sup> provide a stylized example of unilateral effects, which can be further stylized as follows: Suppose that all frozen beets are produced by a single company, B; all frozen carrots are produced by another single company, C; and all frozen spinach is produced by a single company, S. Each company has set its own prices so as to maximize its own profits. An important constraint on each company's pricing is the willingness of consumers to substitute between different vegetables, as reflected in elasticities of substitution among the different vegetables.

Now suppose that beet producer B merges with carrot company C. Assuming no dynamic changes result, two things occur: First, the merged company BC would now find that a higher price for beets would be profitable, because some of the lost customers (due to a price increase for beets) switch to carrots, and so the merged company BC gains (internalizes) the profits from those switched customers, which the stand-alone company B would not have gained;

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<sup>191</sup> See Ordover & Willig, *supra* note 184.

similarly, a higher price for carrots is profitable for BC where it was not profitable for stand-alone company C. Second, the merged company BC can do even better than this outcome because it is now able to set the prices of both products simultaneously so as to maximize joint profits.

Note that the competitive harm from this merger does not result from collusion or cooperation; instead, it results from the ability of the merged firm to internalize more of the benefits of the price increase. This result depends heavily on the pattern of elasticities and cross-elasticities among all products in the differentiated product setting. It also assumes that a new competitor, or the existing spinach competitor, will not enter the production of beets and/or carrots (or make spinach sufficiently more appealing to consumers) in a timely manner to defeat the attempted price increase.

### C. The Connection between Market Delineation and Competitive Effects

Professor Carlton's recommendation of caution in the use of market delineation is evident in recent merger enforcement, which has recognized the importance of not conducting market delineation in a black box, but rather linking it with the competitive effects analysis. Indeed, in 2002, Charles James remarked that, "if placed under sodium pentathol, most economists would concede that market definition is not particularly important in unilateral effects analysis."<sup>192</sup> Most economists would respond that they agree only because market delineation is embedded in a careful analysis of unilateral competitive effects. Many of the economic (particularly econometric) techniques used in analyzing unilateral competitive effects, and discussed in more detail below, enable practitioners to draw *direct* inferences on market definition and unilateral competitive effects that are intellectually consistent. The case studies

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<sup>192</sup> See Charles A. James, Rediscovering Coordinated Effects, Address at the American Bar Association Annual Meeting (Aug. 13, 2002), available at <http://www.usdoj.gov/atr/public/speeches/200124.htm>.

discussed below highlight the importance of maintaining intellectual consistency between market definition and competitive effects.

In various public presentations regarding its investigation of the acquisition of Carnival by either Royal Caribbean Cruises or Princess Cruises (hereinafter "Cruise Lines investigation"), the Commission has articulated the basis for its decision not to pursue a challenge in great detail, and FTC staff shed more light regarding the economic evidence that it found compelling in demonstrating *empirically* that a claim of coordinated effects would have been inconsistent with the market facts.<sup>193</sup>

Staff believed that it could have identified cruises as a separate relevant product market.<sup>194</sup> In particular, a conclusion that the relevant market consisted only of cruises would have been based, in staff's theory, on the implementation of complex strategies involving price discrimination and yield management by the hypothetical monopolist of cruises. However, a market defined with such complex and strategic pricing behavior likely would prove, in and of itself, inconsistent with a claim that either of the proposed transactions would likely facilitate coordinated pricing in such a market. David Scheffman, then Director of the Bureau of Economics of the FTC, characterized this as a "fuzzy market."<sup>195</sup> It was not that the proposed relevant market was imprecisely defined or poorly articulated. The market was fuzzy because the process of market definition rested on economic behavior and economic conditions that

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<sup>193</sup> See case documents, *In re Royal Caribbean Cruises, Ltd.*, available at <http://www.ftc.gov/os/caselist/0210041.htm>.

<sup>194</sup> See comments of David Scheffman, The FTC Cruise Line Merger Investigation—ABA Section of Antitrust Law 'Brown Bag' Program (Nov. 21, 2002), reprinted in ANTITRUST SOURCE (Jan. 2003), available at <http://www.abanet.org/antitrust/source/january03.html>; and the accompanying presentation, FED. TRADE COMM'N BUR. OF ECON., CRUISE INVESTIGATION: EMPIRICAL ECONOMIC & FINANCIAL ANALYSES, available at <http://www.ftc.gov/be/hilites/ftcbeababrownbag.pdf>, as well as the sources cited therein [hereinafter FTC CRUISE INVESTIGATION].

<sup>195</sup> FTC CRUISE INVESTIGATION, *supra* note 194.



were in conflict with a theory of coordinated effects within that relevant market.<sup>196</sup> (Of course, one still might be concerned about unilateral effects in such a market, as these pricing strategies would not imply similar hurdles for unilateral action.) In contrast, FTC staff concluded that any market definition involving a uniform price increase would have enlarged the market to such a degree that it would, for example, include all vacation destinations.<sup>197</sup>

In the acquisition by Waste Management of certain waste-hauling and disposal assets of Allied Waste, DOJ staff negotiated a consent decree that included relief in a number of areas, such as Morris County, New Jersey, in which DOJ staff alleged that the proposed merger would have increased the likelihood of coordination through a reduction in the number of suppliers of “small container commercial waste collection services” (“WCS”).<sup>198</sup> A geographic market such as Morris County properly would be defined using the SSNIP test based on the ability of a hypothetical monopolist to increase prices without facing a “critical loss” of sales, as discussed above.

Firms within a geographic market considering participation in a coordinated (albeit implicit) effort to raise price will do so only if they find it more profitable to participate in the hypothetical (implicit) cartel than not. This is what economists call the “incentive compatibility” condition, a condition that is a part of every economic model of tacit coordination.<sup>199</sup> In its most basic form, the analysis asks the following question: is a firm better off participating

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<sup>196</sup> See IVALDI ET AL., *supra* note 105.

<sup>197</sup> See FTC CRUISE INVESTIGATION, *supra* note 194, at 10.

<sup>198</sup> See case documents, *United States v. Waste Management, Inc.*, available at <http://www.usdoj.gov/atr/cases/wastem2.html>.

<sup>199</sup> It is also a consideration in analyses of explicit coordination. In one example, employees of Stolt-Nielsen SA's transportation group allegedly prepared an explicit analysis that “attempted to calculate the economic costs to Stolt of ‘going to war’ with the company's main rival, Odfjell ASA, rather than continuing to cooperate with Odfjell.” James Bandler, *Ex-Counsel at Stolt Called to Testify*, WALL ST. J., Sep. 22, 2003, at A3.

in the tacit scheme, accounting for the ability of the firms to reach an implicit understanding (i.e., conscious parallelism) and sustain tacit coordination, or would that firm be better served by going its own way, even if that behavior undermines the tacit coordination of its rivals?

Thus, even in situations in which a hypothetical monopolist may find it profitable to raise prices over a certain geographic (or product) area, tacit coordination among the competitors in that same area may fail because one or more of the competitors may find it individually profitable to deviate from the proposed coordination. For example, a monopolist would not care if a price increase leads to lost business in any particular geographic area within the relevant market, as long as its overall profit increases; however, a firm with a greater share of its operations in a particular area within a market (say the southeast corner) would care quite a bit. A scheme to coordinate may well fail because the incentive compatibility condition for this firm would not be met. Put differently, because the firm with its operations concentrated in a particular area facing greater out-of-market competition (say the southeast firm) will not participate, the scheme among its rivals unravels. This again shows the need to integrate market delineation and the analysis of potential competitive effects.

FTC staff recently recognized the importance of incentive compatibility and out-of-market competition on the ability of in-market firms to sustain post-merger price increases. In its investigation of the combination of ownership of Claussen Pickle and Vlastic Pickle in 2002, FTC staff concluded that the relevant market consisted only of refrigerated pickles. The Commission was concerned that prices would rise in this market because Claussen supplies refrigerated pickles, while Vlastic supplies both refrigerated and shelf-stable pickles.

Although the FTC concluded that shelf-stable pickles are not in the same market as refrigerated pickles, the FTC identified competition from shelf-stable pickles as an important constraint on pricing in the refrigerated pickles market. But because Vlastic is the largest supplier of shelf-

stable pickles, this was a cause of concern rather than a mitigating factor for the FTC: "Vlasic is the leading seller of premium shelf-stable pickles, and although its shelf-stable pickles are not in the same market as the Claussen refrigerated products, there is sufficient substitution that Vlasic's shelf-stable pickles also operate as a competitive constraint on Claussen."<sup>200</sup>

The FTC's position is an example of how out-of-market competition can affect coordination; had shelf-stable pickles *not* been in the hands of one of the merging parties, the FTC might not have been concerned about the transaction. In the hands of a rival, such out-of-market competition might have been sufficient to frustrate an attempt to raise the price of refrigerated pickles by undermining the incentive compatibility of an in-market participant to engage in a strategy of tacit coordination, even if it were insufficient to discipline the SSNIP of a hypothetical monopolist.<sup>201</sup>

A near successor in time to the Cruise Lines investigation was the FTC action in the proposed acquisition by Nestle of Dreyer's. While the Commission rejected a coordinated effects case in Cruise Lines based on a "fuzzy" market definition, it accepted the theory in the "the sale of superpremium ice cream" (marked by its higher butterfat and lower air content, combined with the quality of its ingredients) to the retail channel.<sup>202</sup>

Extensive differentiation in product space can affect considerably the extent to which any individual brand faces competitive constraints from ice cream products outside of the relevant market. Such out-of-market competition may be sufficient to undermine the incentive compatibility condition that must be satisfied for individual firms' participation in

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<sup>200</sup> See Complaint, *FTC v. Hicks, Muse, Tate & Furst Equity Fund V, L.P.* available at <http://www.ftc.gov/os/2002/10/hickscmp.pdf>.

<sup>201</sup> The case also illustrates the point that market delineation is really a matter of degree rather than of kind. If the SSNIP test were instead a ten percent test, the shelf-stable pickles might well have been properly included in the market.

<sup>202</sup> See Complaint, *In re Nestlé Holdings, Inc.*, available at <http://www.ftc.gov/os/2003/06/dreyercomplaint.htm>.

an agreement to raise prices or otherwise reduce output. In this case, the notion of "strategic complementarity" focuses on the extent to which an individual firm finds it in its interest to accommodate the price increase (or a change in another strategic variable such as advertising) of its rival. Thus, an analysis of strategic complementarity asks the following question: What happens to a firm's profits if its rival increases its prices and the firm does the same?

The answer is important because significant strategic complementarity is a requirement for tacit coordination. In the end, coordination means that a firm will accommodate the price increase of a rival by increasing its own price (or any other strategic variable, e.g., accommodating the decrease in advertising by a rival by decreasing its own advertising). In this way, strategic complementarity goes directly to the *Merger Guidelines*' definition of coordinated effects: "actions by a group of firms that are profitable for each of them only as a result of the accommodating reactions of the others."<sup>203</sup>

The maverick firm is often cited as a factor in frustrating coordinated pricing. A firm is a maverick because it exhibits weak strategic complementarity (or even strategic substitution) to other firms. But, these disruptive firms can be either inside or outside the relevant market. Because market definition is based on a *ceteris paribus* assumption—"assuming the terms of sale of all other products are held constant"—the products of maverick firms that respond strategically may be excluded from the market. However, a competitive effects analysis has to account for the strategic responses of firms both inside and outside the relevant market matter.

Returning to the case of refrigerated pickles, if Vlasic's shelf-stable pickles were in the hands of a rival, that rival's efforts to steal marginal consumers who are indifferent, or nearly so, between refrigerated and shelf-stable pickles may be sufficient to destabilize coordination in the market for refrigerated pickles. This would be the case, for example, if

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<sup>203</sup> MERGER GUIDELINES, *supra* note 33, § 2.1.

the rival did not accommodate the price increases by suppliers of refrigerated pickles, or even lowered its prices as the returns to this strategy increased. Such effects can arise even if the consumer substitution to out-of-market products is insufficient to discipline a price increase by a hypothetical monopolist.<sup>204</sup>

As these examples reflect, market definition conducted pursuant to the *Merger Guidelines* does not always capture the full scope of relevant competition—i.e., competition that constrains the conduct at issue or affects whether that conduct has had, or will have, an anticompetitive effect. To account for that characteristic of the *Merger Guidelines*, correct antitrust analysis, particularly in the merger context, requires an integrated approach to market definition and competitive effects. Two aspects of market definition are worth noting as potential origins of out-of-market constraints on in-market behavior that might be assessed incorrectly without proper integration of market definition and competitive effects. First, the hypothetical monopolist paradigm of market definition assesses the joint profitability of all firms (acting as a monopolist) within a candidate market, without assessing profitability of those actions for each individual firm within the market. Second, market definition under the *Guidelines* invokes a “ceteris paribus” assumption by looking only at consumer substitution while holding the terms of supply constant—consumer substitution to products outside of a candidate market is evaluated “at their existing terms of sale” for those products—while assessing competitive effects may require considering whether those out-of-market firms would adopt different strategies in response to changes by suppliers within the market.<sup>205</sup> As a result of both of these aspects of market definition, out-of-market competition can frustrate in-market

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<sup>204</sup> As discussed above, out-of-market competition can frustrate coordination by undermining the incentive compatibility conditions of an in-market participant. This is especially likely if the out-of-market competition has different effects on the in-market producers, for example, as a closer substitute for one producer’s product.

<sup>205</sup> MERGER GUIDELINES, *supra* note 33, § 1.21.

coordination by undermining the incentive compatibility conditions of in-market participants, and an integrated analysis of market definition and competitive effects assists in evaluation of such impacts.

#### D. Empirical Tools in the Delineation of Markets and Evaluation of Potential Competitive Effects

Since the mid 1980s, the implementation of the market delineation paradigm described above has featured ever-increasing involvement of economists and the use of increasingly sophisticated economic modeling (usually involving structural models of supply and demand for one or more products at one or more locations) and similarly sophisticated econometric tools. These modeling and econometric tools can yield predictions as to the likely competitive effects of a merger within the delineated market with respect to the prices charged; these results are often described as "merger simulation."

When data is abundant, the lure of econometric estimation of structural demand equations has been nearly irresistible to enforcement agencies and private practitioners alike (though the economists in each group may harbor greater enthusiasm than do other participants). When feasible, these techniques generate detailed information on the willingness of consumers to substitute between different products, in the form of own- and cross-price elasticities that can be employed in merger simulations. What emerges is a seemingly definitive answer as to the merger's likely competitive effects on price and output. One contributing factor has been the increasing availability of data, especially retail "scanner" data, which provides the large volumes of price and quantity data required for calculating the demand elasticities required for these approaches.

However, as reflected in Professor Carlton's cautionary notes, these techniques can yield results that may be puzzling, and occasionally downright confounding of industry facts and intuition. Significantly, these models make no allowance for strategic responses by competitors (outside of the price effects implied by the "Bertrand" model) that might

be triggered by the proposed merger. As a result, the modeling, the data, and the econometrics that comprise the structural approach have not been free from criticism. As is true of almost all empirical estimation, the economist/econometrician must make numerous choices, including choices about functional forms, the treatment of apparent “outlier” observations, the choices of control variables and relevant time periods, the choice of time lags (if any) to account for behavioral responses, and appropriate econometric techniques. These choices are often crucial for the determination of the specific magnitudes of the parameter to be estimated.<sup>206</sup>

An alternative approach would be to rely (where they are available) on “natural experiments”: variations in price (over time or across geography) that are sufficient in magnitude to allow straightforward inferences as to market delineation or competitive effects. Natural experiments, at their best, offer “clean” structural comparisons that rely to a lesser degree on complex statistical modeling than does structural modeling. Unfortunately natural experiments are not always available as useful alternatives, and structural demand techniques may be a better tool in these cases. We describe next each approach—structural modeling and the use of natural experiments—in more detail, and discuss some examples of their use.

## 1. Structural Modeling and Estimation

Structural demand systems estimation describes a class of statistical models used to estimate the competitive relationship between individual products or classes of

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<sup>206</sup> As Carlton reminds us, among the choices made is the type of small-numbers competitive behavior—e.g., whether the firms compete on the basis of price (a la Bertrand) or on the basis of quantity (a la Cournot)—that is assumed. See, e.g., Gregory J. Werden & Luke Froeb, *The Effects of Mergers in Differentiated Products Industries: Logit Demand and Merger Policy*, 10 J. L. ECON. & ORG. 407 (1994). The confidence that can be placed in such estimates generally increases with their robustness to alternative choices and assumptions.

products based on consumer preferences. The most basic techniques involve regressing the quantity demanded of each product on its own price, the prices of alternatives, and other control variables that affect consumer demand. As several demand equations usually must be estimated, together they constitute a demand system. These models produce estimates of the own- and cross-price elasticities of consumer demand. By themselves, these parameters offer partial insight into market definition. Where cross-price elasticities of demand among the products of merging firms are positive and of significant magnitude, the products are likely to be in the same product market (although an own-price elasticity that is negative and of significant magnitude would be important confirmatory evidence). If the cross-price elasticity of a group of products is statistically unrelated to another product group, this may rule out inclusion of these product groups in a single product market. Typically, the elasticity estimates, along with basic production cost information, are the primary inputs for simulations of price effects post merger. These methods have been applied in a number of recent merger reviews, two of which we discuss below.<sup>207</sup>

### (i) Heinz and Beech-Nut

In analyzing the competitive effects on baby food of the proposed acquisition by Heinz of Beech-Nut, the defendant's expert, Jonathan Baker, estimated a relatively simple system of share equations using supermarket scanner data

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<sup>207</sup> See also Michael D. Pelcovits, *The Long Distance Industry: One Merger Too Many? MCI Worldcom and Sprint*, in *THE ANTITRUST REVOLUTION: ECONOMICS, COMPETITION, AND POLICY* 233 (John E. Kwoka, Jr. & Lawrence J. White eds., 4th ed. 2004); Andrew Abere et al., *Mergers and Market Power: Estimating the Effect on Market Power of the Proposed Acquisition by the Coca-Cola Company of Cadbury Schweppes' Carbonated Soft Drinks in Canada*, in *MEASURING MARKET POWER* 233 (Daniel J. Slottje ed., 2002); DANIEL HOSKEN ET AL., *DEMAND SYSTEM ANALYSIS AND ITS APPLICATION TO HORIZONTAL MERGER ANALYSIS* (Fed. Trade Comm'n, Working Paper No. 246, 2002), at <http://www.ftc.gov/be/workpapers/wp246.pdf>.



to show, nationally, that neither the demand for Heinz, nor the demand for Beech-Nut, branded baby food was sensitive to changes in the other's price.<sup>208</sup> It was unusual for these two brands to have significant penetration in common geographic regions, so demand for each of the merging brands was driven almost exclusively by its own price and the price charged by market-leader, Gerber. The district court was highly sympathetic to this finding:

It is undisputed that Heinz and Beech-Nut are virtually never found in the same supermarket; that Beech-Nut and Heinz do not price against the other or even consistently monitor one another's prices; and that the cross-elasticity of demand between Heinz and Beech-Nut is not statistically significant . . . Heinz and Beech-Nut asserted, and proved with econometric evidence, that they do not constrain one another's retail or consumer prices. Heinz and Beech-Nut maintain that they do not price against the other . . . The FTC adduced no evidence of direct price competition between Heinz and Beech-Nut in the same region or SMSA.<sup>209</sup>

While there was little debate as to the functional substitutability of the Heinz and Beech-Nut brands, the econometric estimates revealed limited competitive interaction.<sup>210</sup> Nevertheless, the appeals court reversed and found in favor of the FTC, supporting—among other things—

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<sup>208</sup> See *FTC v. Heinz*, 116 F. Supp. 2d 190 (D.D.C. 2000), *rev'd* 246 F.3d 708 (D.C. Cir. 2001). For a discussion of the case, see Jonathan B. Baker, *Efficiencies and High Concentration: Heinz Proposes to Acquire Beech-Nut*, in *THE ANTITRUST REVOLUTION: ECONOMICS, COMPETITION, AND POLICY* 150 (John E. Kwoka, Jr., & Lawrence J. White eds., 4th ed. 2004).

<sup>209</sup> *Heinz*, 116 F. Supp.2d at 196.

<sup>210</sup> It is interesting to note that the FTC did not offer an alternative econometric study to refute Baker's findings. The FTC expert, John Hilke, presented a theory of wholesale-level competition for supermarket shelf-space where Beech-Nut and Heinz vied to be the second brand to Gerber. Hilke did not present an empirical analysis to measure the degree of price competition, and the district court found "conclusory testimony" to be "unconvincing." *Heinz*, 116 F. Supp. 2d at 200.

the FTC's argument that significant competition between Heinz and Beech-Nut occurred at the wholesale level.<sup>211</sup>

(ii) *State of New York v. Kraft*

In the *State of New York v. Kraft* cereal merger defense, the defendants used a structural approach to demand-system estimation to dispute the narrowness of the plaintiffs' market definition.<sup>212</sup> Plaintiffs argued that the relevant market be restricted to *adult* ready-to-eat (RTE) cereals where Kraft's *Post Grape Nuts* and Nabisco's *Shredded Wheat* were significant competitors. The defendant's economist estimated a "multi-level" demand system that indicated that children's cereal price variation had a significant impact on adult cereal demand. Under the expanded market definition that included all RTE cereal, the court ruled that the merger's competitive effects were likely to be minor.

## 2. Natural Experiments

Natural experiments can offer a clean, direct and intuitive approach to merger review. A well-structured natural experiment demonstrates the impact of the merger across different observable competitive conditions. Technically, a natural experiment may be a simple comparison of average prices, or it may require more complex econometrics to identify the competitive impact of a merger's market structure. In general, natural experiments require less restrictive statistical assumptions than do structural estimations, although this will depend on the quality of the structural contrast. Instead, these techniques rely on naturally occurring circumstances to predict industry behavior under pre- and post-merger competitive regimes. For example, price and output under existing or historical competitive circumstances that mimic the post-merger

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<sup>211</sup> *FTC v. Heinz*, 246 F.3d 708 (2001). The appellate court was also skeptical of the merging parties' efficiency and innovation claims.

<sup>212</sup> 862 F. Supp. 1030 (S.D.N.Y. 1993), *aff'd* 14 F.3d 590 (2d Cir. 1993).

market structure may be good indicators of actual behavior after a prospective merger.

Finally, natural experiments do not require theoretical assumptions about strategic market behavior; natural experiments rely on the observed behavior of firms under varying competitive conditions to inform the results. But, the use of natural experiments is a much more vaguely defined analytical tool, and the quality of the conclusions from a natural experiment will depend crucially on the quality of the structural contrasts from which the results are derived, and the presence of a discrete structure that resembles the post-merger market. Natural experiments are most effective when industry structure varies over time or across geographic areas. Comparisons of prices before and after competitor entry and exit are good candidates for natural experiments. Comparisons across cities or regions with varying market structures may be similarly revealing. In a typical merger of national competitors in stable industries, however, natural experiments may not be available.

(i) *FTC v Staples*

The evidence used in *FTC v. Staples*,<sup>213</sup> provides a good example of a natural experiment, so we will expand on it at some length. In September 1996, Staples Inc. announced its intention to acquire Office Depot, Inc.<sup>214</sup> The two companies operated the first and second largest chains of “office super stores” (OSSs) in the U.S. The OSS concept had been pioneered by Staples in 1986; Office Depot was a quick follower. The OSS concept involved large-volume retail

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<sup>213</sup> 970 F. Supp. 1066 (1997).

<sup>214</sup> More detailed discussions of this case can be found in Jonathan B. Baker, *Econometric Analysis in FTC v. Staples*, 18 J. OF PUB. POLY & MARKETING 11 (1999), Lawrence J. White, *Staples-Office Depot and UP-SP: An Antitrust Tale of Two Proposed Mergers*, in MEASURING MARKETING POWER 153 (Daniel J. Slottje, ed. 2002), and Serdar Dalkir and Frederick R. Warren-Boulton, *Prices, Market Definition and the Effects of Merger: Staples-Office Depot*, in THE ANTITRUST REVOLUTION: ECONOMICS, COMPETITION, AND POLICY (John E. Kwoka, Jr. & Lawrence J. White eds., 2004).

outlets for office supplies and other business-related items. The prices at OSSs were often substantially below the prices for the same items that were being sold in local stationery stores and other retail outlets.

At first glance, the merger of the two OSS chains appeared to pose no antitrust problem. After all, the two chains together accounted for less than ten percent of the total U.S. retail sales of office supplies. However, the initial staff investigation at the FTC showed a consistent result for simple price comparisons of like items sold at OSSs across different metropolitan areas: Where only a single OSS chain was present in a metropolitan area, the OSS's prices for these items tended to be the highest; where two OSS chains were present in a metropolitan area, the prices tended to be lower; where three chains<sup>215</sup> were present, the prices were the lowest.

These preliminary results were then subjected to more sophisticated econometric testing (which involved the inclusion of additional information about the metropolitan areas that were being compared, including cost data, income levels, the presence of other major retailers, such as Wal-Mart, etc.). The FTC staff concluded from these more sophisticated analyses that the basic results continued to hold.

From the FTC's perspective, this price data carried two strong antitrust implications. First, OSS sales of office supplies in metropolitan areas constituted relevant antitrust markets for the purposes of merger analysis, since prices could be raised (and were being maintained at higher levels) when fewer OSS sellers were present. In these OSS metropolitan markets, the HHIs were already quite high, and the merger promised to raise them substantially. Second, the price data could be used to predict directly what would happen after the merger in the various metropolitan area markets (a) where only Staples and Office Depot were present (so that the merger would reduce the number of OSS chains from two to one) and (b) where Staples, Office Depot,

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<sup>215</sup> OfficeMax, Inc., was the third major operator of OSSs.

and OfficeMax were all present (so that the merger reduced the number of OSSs from three to two).

On the basis of this evidence (plus supporting company documents that indicated that Staples and Office Depot focused primarily on the other firm and on Office Max, and mostly not on other retailers, in their consideration of pricing, marketing, and expansion plans), evidence that indicated that entry into OSSs was not easy, and a disbelief in the claimed efficiencies that could arise from the merger, the FTC in April 1997 decided to challenge the merger.

The merging parties contested the FTC's decision, and the trial took place in May 1997 and lasted for seven days. In June 1997, Federal District Court Judge Thomas F. Hogan ruled in favor of the FTC and granted the preliminary injunction requested by the FTC. The defendants chose not to appeal (or to engage in the lengthy administrative proceeding on the merits of the merger within the FTC), and the merger was abandoned.

However, even in this case of a "natural experiment," the FTC's findings as to OSSs' being relevant markets were hotly contested by the merging parties, who offered contrary econometric evidence.<sup>216</sup> The same kinds of questions and issues concerning assumptions and choices were raised by the *Staples* defendants as are raised by critics of the structural modeling approach.<sup>217</sup> Indeed, this is not surprising, since "natural experiments" differ from the

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<sup>216</sup> For a discussion of these results and the dispute concerning them, see Baker, *supra* note 208.

<sup>217</sup> Another "natural experiment" that has recently been described in the context of a merger has involved the cruise line mergers that were proposed in 2001 and approved by the FTC in 2002. See Mary T. Coleman et al., *supra* note 183, and Warren S. Grimes & John E. Kwoka, *A Study in Merger Enforcement Transparency: The FTC's Ocean Cruise Decision and the Presumption Governing High Concentration Mergers*, in THE ANTITRUST SOURCE, May 2003, at <http://www.abanet.org/antitrust/source/may03/metstudy.pdf>.

structural modeling approach only in degree and not in kind.<sup>218</sup>

## (ii) Echostar-DIRECTV

In the *Echostar-DIRECTV* merger review, Robert Willig, on behalf of Echostar, sought to show through a natural experiment that each company's satellite TV demand was driven by cable rather than alternative satellite pricing.<sup>219</sup> Monthly subscription rates for these services are largely uniform nationally, and national rate changes are infrequent. Without variation in pricing, standard demand system estimation techniques are difficult, if not impossible. In the ordinary course of business, DIRECTV surveyed a sample of customers that discontinued service after DIRECTV imposed a price increase in April 2000. In the months after they cancelled their service, former subscribers were asked why they had left and to which service they had switched. This "churn" analysis indicated that former DIRECTV subscribers who cited cost as the reason for canceling were three times as likely to become cable subscribers as to become Echostar subscribers. This provides a direct estimate of the cross-price elasticity of demand. While more elasticities were necessary for a full merger simulation, the results of this natural experiment provided an effective starting point.

Without geographic or temporal variation in competitive conditions, finding natural experiments with appropriate variation may be difficult. The *Echostar-DIRECTV* example

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<sup>218</sup> I.e., there has to be some variation in prices and quantities to allow any estimation at all. The structural approach deals with smaller variations and attempts to infer the necessary information from the modeling and econometric techniques and the sheer volume of data. By contrast, the "natural experiment" approach usually involves larger changes (variations); but this is just a matter of degree. In an important sense, all variations in prices and quantities provide "natural experiments," but they just happen to be of differing magnitudes.

<sup>219</sup> See Robert D. Willig, Remarks before the Federal Communications Commission on Behalf of Echostar Communications Corp. et al., 6 (Dec. 3, 2001), at <http://www.sbgo.com/PPMT486/willig.pdf>.

above is a notable exception, but the “churn” analysis relied on specialized data that is unlikely to be consistently available. The churn study, while novel, was not unequivocally clean. For example, the churn analysis offers no insight into cable behavior. The analysis failed to control for changes in cable pricing that may have accompanied DIRECTV’s April 2000 price increase. And, the cable companies’ strategic response to DIRECTV’s price increase may change post merger. In general, the structural variation may be complex and dynamic, making it hard to define distinct competitive regimes for a natural experiment.

Willig’s *Echostar-DIRECTV* analysis was based on a single price change by DIRECTV. While the churn analysis demonstrated consumer and firm behavior surrounding *this* pricing event, the analysis lacks a clear basis for statistical inferences regarding *future* events. This is a common challenge in using natural experiments. Often, the measured impact of structural differences is based on a small number of observations. While the experiment may be free of confounding events, the probability of the experiment’s result being duplicated post-merger is unknown. Without a large number of structural contrasts and a reasonable statistical distribution, it may not be possible to make out-of-sample predictions based on the results of the natural experiment, at least with a known error rate.<sup>220</sup>

### 3. The Two Methods as Complements

Natural experiments and structural demand estimation are neither mutually exclusive nor are they perfect substitutes. Ideally, all of the available data and information will be employed in merger review, and a number of different approaches will yield consistent results. Nonetheless, these approaches have different advantages that should be considered when interpreting results from

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<sup>220</sup> The Echostar-DIRECTV merger was rejected by the Federal Communications Commission on October 10, 2002, and was challenged by the U.S. Department of Justice as anticompetitive on October 31, 2002; it was never consummated.

them. In any data-driven component of merger review, the reviewer should focus on the quality of the data, the methodology used, and the robustness of the results. If the results of structural demand estimation or natural experiments hold up to varying assumptions and permutations, the results may be considered reliable. Furthermore, the data results should be consistent with known industry facts and the knowledge of market participants.

#### IV. CONCLUSION

The expansion of the roles of economics in antitrust enforcement over the past twenty-five years continues to pose challenges to practitioners as they attempt to incorporate sound economic thinking into antitrust policy, even as that economic thinking is evolving. Professor Carlton's speech highlights three areas where he believes that antitrust enforcement can be better informed by recent economic research. This article, as a companion to Professor Carlton's speech, presents some of the background on each of these issues, highlighting the economic contributions to current antitrust policy.