The Use of Economic Evidence to Show Common Impact from Collusion—Lessons from *Plastics Additives*

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The Third Circuit's 2008 decision on class certification standards in *In re Hydrogen Peroxide Antitrust Litigation*[1] was heralded as signifying a shift in the circuit's treatment of the standard of proof required to support class certification. When the decision was handed down, many commentators observed that the Third Circuit was joining an expanding list of appellate courts that were imposing heightened standards of proof in support of class certification. The impact of *Hydrogen Peroxide* on certification decisions may therefore ripple through courts around the country. It had a game-changing effect on the ongoing *In re Plastics Additives Antitrust Litigation*,[2] pending in the United States District Court for the Eastern District of Pennsylvania. The court's treatment of economic evidence presented on the issue of class certification in *Plastics Additives* thus provides significant insights into how courts in the Third Circuit and beyond are likely to deal with such evidence in the wake of *Hydrogen Peroxide*.

The *Plastics Additives* case concerned alleged price-fixing involving two products: organotin heat stabilizers (tins), and epoxidized soybean oil (ESBO). In 2006, the district court certified the case as a class action, declining "to balance the credibility of the parties' experts on the issue of the predominance of common evidence demonstrating impact."[3] Defendants appealed the certification. While the appeal was pending, the Third Circuit handed down its decision in *Hydrogen Peroxide*, stating that before certifying a class, courts had to consider all relevant evidence and arguments concerning class certification, including expert testimony.[4] The Third Circuit later remanded the *Plastics Additives* case for further consideration of class certification in the light of *Hydrogen Peroxide*.[5] In August 2010, in an about-face from its earlier decision, the district court ruled that plaintiffs could not pursue the lawsuit as a class action.[6]

On remand, class certification primarily focused on the question of whether plaintiffs could show impact using evidence that was common to the class.[7] Plaintiffs argued that impact could be shown with four types of common evidence: (i) defendants' pricing behavior; (ii) the characteristics of the markets for the two products; (iii) an analysis of price structure; and (iv) econometric analysis using regressions.[8] The court concluded that the evidence presented was insufficient and denied certification.

Defendants' Pricing Behavior

Plaintiffs relied on pricing behavior evidence consisting of price lists and price announcements.[9] The court rejected this evidence because there was no showing that the prices customers actually paid were affected by announcements of changes in list prices.[10] To the contrary, there was evidence that customers individually negotiated prices, and the prices that were paid did not change when the seller publicly announced a list price increase.[11]

Characteristics of the Market

Plaintiffs argued that primarily two characteristics of the market for tins and ESBO would provide evidence of common impact: (i) the interchangeability of the products and (ii) the defendants' allegedly large share of those markets.[12] The plaintiffs' expert argued that these market characteristics meant that class members could not avoid "conspiratorially set prices."[13] The court

rejected plaintiffs' argument on factual grounds, finding that the products were not interchangeable and that non-defendant suppliers actively competed in the markets.[14]

Even if the plaintiffs' argument had been factually accurate, the market characteristics described might not have led to common impact. Plaintiffs in class actions sometimes argue that when products are interchangeable, a price-fixing agreement must raise prices to all customers, because if prices rose to only some customers, the disfavored customers could buy the product from the favored customers. Thus, arbitrage would eliminate the price differential. Plaintiffs also sometimes argue that customers could not avoid the effect of the price increase by turning to non-colluding sources, because the allegedly price-fixing firms dominated the market.[15] Nonetheless, from a defense perspective, these two market characteristics taken alone do not necessarily imply common impact. Even with identical products, arbitrage may be prevented by several factors, such as transportation costs, contract terms that prevent resale, and lack of information. The latter might be particularly important in markets where prices were individually negotiated, as was the case here, and customers would not know each other's prices. Moreover, non-colluding firms with small or even no market share still may be able to rapidly expand output if their rivals raise prices.

Price Structure

Plaintiffs in the *Plastics Additives* case also argued that common impact could be proved by evidence of a price structure, such that different prices moved in the same way over time.[16] In class certification proceedings, plaintiffs often argue that if prices across products, suppliers and customers generally move together, a collusive agreement that targets a core of significant products, suppliers and customers will cause an entire market price structure to rise, so impact will be common throughout the class.[17] Arguably, however, even if prices have a particular relationship under competition, that relationship may not stay the same under collusion. For example, suppose that, historically, the relative costs of producing two products were such that the competitive price of one was always $5 less than the competitive price of the other. Suppose also that purchasers of the cheaper product are very price sensitive, while purchasers of the more expensive product do not reduce purchases by very much even after a large price increase. Because of the difference in the price sensitivity of demand, collusion under those circumstances could lead to little or no increase in the price of the cheaper product, and a very large increase in the price of the more expensive product. The gap between the two prices will increase with collusion notwithstanding a prior history of a systematic relationship. This example demonstrates that the existence of a pricing structure does not necessarily imply common impact.

In *Plastic Additives*, plaintiffs' evidence of a price structure consisted of graphs showing how average monthly transaction prices changed over time and plaintiffs' economic expert's statement that those prices seemed to be moving similarly.[18] Subjective statements interpreting the appearance of a graph have been criticized by some commentators as an inadequate method of economic proof.[19] Conclusions about data based on visual inspection of graphs will not be reliable unless the interpretation is objective and replicable by other investigators. In *Plastics Additives*, the court found that a number of the plaintiffs' expert's charts "do not even superficially show prices moving similarly."[20] Moreover, the use of average prices can obscure how the prices paid by individual customers behave, and it is that information that is needed to assess common impact. The court found that even when the average prices moved similarly, the prices paid by specific customers included in those averages did not.[21] As such, the court found that plaintiffs' pricing structure analysis could not serve as proof of impact common to the class.[22]

Regression Analysis

Plaintiffs also argued that impact could be shown using common proof with a regression model that expressed industry prices as a function of various demand and cost variables and a dummy variable for the price-fixing conspiracy.[23] They argued that the results indicated that the conspiracy raised the average price of tins and ESBO by 4.3% and 7.3%, respectively.[24] These regressions, however, were run on data derived by combining data from individual customers, and they were designed to estimate only the average effect of the conspiracy and not the effect on individual customers.[25] Economics literature recognizes, however, that regressions designed to estimate average effects cannot be used to show common impact.[26] The court considered the use of average data to be a "fundamental" flaw because the "regressions tell us nothing about individual class member experience."[27]

In response, the defendants' expert submitted a regression analysis that estimated individual regressions for specific customers.[28] Such regressions could only be estimated for the minority of customers for whom sufficient data were available. The results indicated that the alleged collusion did not affect the prices paid by most of the customers included in that analysis.[29]

Plaintiffs responded that the defense analysis could not show common impact because it included only a small share of the customers potentially affected by the price-fixing and because it suffered from a number of statistical problems. In particular, plaintiffs argued that the analysis included many customers for whom the available data were insufficient. In the defendants' analysis, customers were included if there were enough observations to allow 30 degrees of freedom.[30] Degrees of freedom are equal to the total number of observations minus the number of coefficients to be estimated, and plaintiffs' expert argued that the number of observations in defendants' analysis was too low. Plaintiffs' expert did not provide a specific acceptable minimum number of observations, but did state that 100 degrees of freedom "would generally be sufficient."[31]

The number of degrees of freedom plays an important role in the analysis, because it affects the power of the statistical tests. In testing a hypothesis, such as the hypothesis that a collusive agreement did not affect the prices paid by a specific customer, one can make two types of errors. The first is to reject the hypothesis when it is true. The probability of avoiding a mistaken rejection is generally measured by the significance level. The second is to fail to reject the hypothesis when it is false. In this case, that error would be to accept the hypothesis that the collusion did not affect the customer when it did. The probability of avoiding a mistaken acceptance is measured by the power of the test. For example, if the chance that the test would find that collusion did not affect a customer when in fact it did is 20%, then the power of the test is 80%.

An increase in the number of observations and thus of degrees of freedom generally will increase the power of the test. Other characteristics of the data involved also will affect the power of a test, however, and a number of degrees of freedom that leads to an acceptable power in one case may be insufficient in another. There is no hard and fast rule for the acceptable level of power, but a number of analysts consider it sufficient for a test to have a power of 80% or higher.[32] The *Plastics Additives* opinion does not indicate that either side's expert specifically estimated the power of the tests presented.

In *Plastics Additives*, the dispute over the acceptable level of observations ultimately did not affect the court's decision. Even if the analysis was limited to customers for whom there were enough observations to allow at least 100 degrees of freedom, the results of defendants' analysis still showed that the collusion had no impact on a number of customers. The court noted that the defense was not required to show that its methodology could show common impact. The defense analysis showed that for a number of

customers there was no effect from the alleged collusion, even though the regressions based on averages did indicate an effect. Thus, the court concluded it was "presented with evidence showing that Plaintiffs' proposed method demonstrates impact where there in fact was none."[33]

The *Plastic Additives* decision provides a good example of how courts are likely to treat economic evidence in future decisions concerning common impact in class certification. In particular, it shows that price structure or regression analyses based on average prices are not likely to be probative. Analyses based on prices paid by individual customers will likely be more persuasive.

1.   *552 F.3d 305 (3d Cir. 2008).*
2.   *In re* Plastics Additives Antitrust Litig., No. 03-CV-2038, 2010 U.S. Dist. LEXIS 90135 (E.D. Pa. Aug. 31, 2010).
3.   *In re Plastics Additives*, 2010 U.S. Dist. LEXIS 90135, at *8.
4.   *Hydrogen Peroxide*, 552 F.3d at 311-12.
5.   *In re Plastics Additives*, 2009 U.S. App. LEXIS 2177 (3d Cir. Jan. 27, 2009).
6.   *In re Plastics Additives*, 2010 U.S. Dist. LEXIS 90135, at *6-7.
7.   *Id.* at *10-12.
8.   *Id.* at *17.
9.   *Id.*
10.   *Id.* at *18-26.
11.   *Id.* at *25-26.
12.   *Id.* at *26.
13.   *Id.*
14.   *Id.* at *26-47.
15.   Examples of cases where similar arguments were made include the hydrogen peroxide litigation, *In re Hydrogen Peroxide,* 552 F.3d at 311, and *In Re* Ethylene Propylene Diene Monomer (EPDM) Antitrust Litigation, 256 F.R.D. 82 (D. Conn. 2009). *See also* John C. Beyer, *The Role of Economics in Class Certification and Class Wide Impact*, in LITIGATING CONSPIRACY: AN ANALYSIS OF COMPETITION CLASS ACTIONS, 326-27 (Irwin Law 2006).
16.   2010 U.S. Dist. LEXIS 90135, at *47-48.
17.   This price structure argument was also made in the hydrogen peroxide case. *In re Hydrogen Peroxide,* 552 F.3d at 311. For a critical discussion of the concept of price structure, which includes cites to cases that deal with this argument, *see* John H. Johnson and Gregory K. Leonard, *In the Eye of the Beholder: Price Structure as Junk Science in Antitrust Class Certification Proceedings*, 22 ANTITRUST 3, 108-112 (Summer 2008).
18.   2010 U.S. Dist. LEXIS 90135, at *48-50.
19.   S*ee* Johnson and Leonard, 22 ANTITRUST 3, at 110.
20.   2010 U.S. Dist. LEXIS 90135, at *50.
21.   *Id.* at *50-55.
22.   *Id.* at *55.
23.   *Id.* at *55-59.
24.   *Id.* at *57.
25.   *Id.* at *56-60.
26.   A model that "assumes that a conspiracy has the same effect on every purchaser and focuses on an average effect. . . may hide variation across class members. If one is attempting to test whether there is an impact on all members of a proposed class. . . that assumption is not valid, as it assumes the very proposition that is being tested." *The Use of Econometrics in Class Certification*, ECONOMETRICS, 222 (Am. Bar Ass'n 2005) (citations omitted).
27.   2010 U.S. Dist. LEXIS 90135, at *55-56.
28.   *Id.* at *60-62.
29.   *Id.* at *61-62.
30.   To be included, a customer also had to have purchased the product both during and after the alleged conspiracy. *Id.*
31.   *Id.* at *70.
32.   Hun Myoung Park, *Hypothesis Testing and Statistical Power of a Test*, Technical Working Paper, The University Information Technology Services (UITS) Center for Statistical and Mathematical Computing, Indiana University, 8 (June 2010), *available* at www.indiana.edu/~statmath/stat/all/power/power.pdf.
33.   *Id.* at *64.