FTC v. TRONOX LTD.,
332 F. Supp. 3d 187, 204-05 (D.D.C. 2018)
(excerpt on critical loss[1])

TREVOR N. MCFADDEN, U.S.D.J.

[The FTC sought a preliminary injunction under FTC Act § 13(b) to enjoin the acquistion by Tronox Limited of the National Titanium Dioxide Company's titanium dioxide (TiO_2) business (known as "Cristal") for $1.67 billion in cash and a 24% equity stake in the combined firm. TiO_2 is a pigment used to add whiteness, brightness, and opacity to products like paints, plastics, and paper. It is manufactured by subjecting raw titanium ores to either a chloride or a sulfate production process. A central issue in the case was the relevant product market definition. The FTC alleged that the relevant product market was TiO_2 produced by the chloride process, while the parties argued that the market must also include TiO_2 produced by the sulfate process. The court accepted the FTC's definition, relying in part on the testimony of Dr. Nicholas Hill, the FTC's economic expert, on his application of the critical loss test.]

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Dr. Hill also conducted several iterations of the "hypothetical monopolist test" to prove that the relevant market consists of North American sales of chloride-process TiO_2. The test seeks to determine whether a hypothetical company that is the only seller of the relevant product to customers in the relevant geography could profitably impose a "small but significant and non-transitory increase in price" ("SSNIP"). See Merger Guidelines §§ 4.1.1; 4.2.2. If this hypothetical monopolist can profit from imposing a SSNIP without losing a critical mass of customers, then a relevant antitrust market has been defined. If, on the other hand, customers can defeat the price increase "by substitution away from the relevant product or by arbitrage," the market definition must be broadened. *Id. See also [FTC v.] Sysco [Corp.],* 113 F. Supp. 3d [1] at 33-34 [(D.D.C. 2015)].

To run the test, Dr. Hill conducted a "critical loss analysis." He began by calculating the "critical loss," which is the percentage of "lost unit sales that would leave profits unchanged" if a hypothetical monopolist imposed a SSNIP. Merger Guidelines § 4.1.3. Dr. Hill determined that, with an SSNIP of 10%, a hypothetical monopolist could lose up to 15.4% of its sales and still break even. PX5000-051. The critical loss threshold is thus 15.4%.

Next, Dr. Hill estimated the "predicted loss" that would be observed in the event of a SSNIP of 10%. If the predicted loss is less than the critical loss, imposing a SSNIP would be profitable for the hypothetical monopolist, and the relevant antitrust market has been correctly defined. Dr. Hill used three methods to calculate the predicted loss:

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1 Record citations omitted.

the "price elasticity of demand" method, a "substitution components" method, and a "documentary evidence" method. Each showed that a hypothetical monopolist could profitably raise North American chloride TiO_2 prices by 10%.

Price elasticity of demand measures the responsiveness of a product's sales to a 1% change in the product's price. Demand for a product is "elastic" if a 1% price increase decreases demand by more than 1%. It is "inelastic" if a 1% price increase decreases demand by less than 1%. The more inelastic a product's demand, the less likely it is that the product has adequate substitutes. Dr. Hill found that the price elasticity of North American chloride TiO_2 is -0.45% (*i.e.*, a 1% increase in price reduces sales by 0.45%). He multiplied this number and a 10% SSNIP to show that the predicted loss of sales, 4.5%, would be considerably lower than the critical loss of 15.4%. In other words, estimates of price elasticity show that a hypothetical monopolist could profitably increase North American chloride TiO_2 prices by 10%.

Dr. Hill's "substitution components method" used the Defendants' data to estimate the expected increase of TiO_2 imports in response to a 10% SSNIP. The TiO_2 that firms acquire from imports or from other producers repatriating their exports represents lost sales for a hypothetical monopolist. Dr. Hill found that a 10% SSNIP would lead to roughly 75,000 more metric tons of TiO_2 being imported or repatriated, and another 3% decrease in the monopolist's sales of rutile TiO_2. Together, this represents roughly 12.6% of total North American chloride TiO_2 sales. As a 12.6% loss is lower than the critical loss threshold of 15.4%, the substitution components method predicts that the hypothetical monopolist could profitably raise prices.

Finally, Dr. Hill used data from Tronox documents. At some future point, Tronox contends, "Chinese sulfate could take up to 15 percent of [all TiO_2] applications" in North America, thus "reducing the share of chloride titanium dioxide by at most five percent." Dr. Hill assumed that such sulfate substitution would occur in response to a 10% SSNIP. He and calculated that the resulting loss of sales to the hypothetical monopolist would be about 8.7%, which again is lower than the critical loss threshold. Based on these calculations and his other analyses, Dr. Hill concluded that the relevant market for evaluating the merger's potential anticompetitive effects consists of North American chloride TiO_2 sales.