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THE CENTER FOR THE STUDY
OF INDUSTRIAL ORGANIZATION
AT NORTHWESTERN UNIVERSITY

Working Paper #0074

**WHY WONDER BREAD LOST NO DOUGH:
MATERIALITY, SETTLEMENTS AND
THE FTC'S AD SUBSTANTIATION PROGRAM**

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&

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Abstract:

Previous studies (e.g., by Sam Peltzman) reveal powerful share-value effects of Federal Trade Commission (FTC) actions against firms for allegedly false advertising. Curiously, however, when the FTC announces an investigation but simultaneous settlement of the case with the advertiser, no adverse impact results, an empirical finding thus far unexplained. This article uses a recent FTC action, in which the accused advertiser suffered no adverse equity impact, to explain that result. The article focuses on the empirical issue of materiality. Many advertising messages challenged by the FTC are not material to consumers. If not -- and especially when, as in the case discussed here, the advertiser had much earlier discontinued the advertising challenged -- the advertiser predictably would not suffer. Econometric evidence strongly indicates that the messages the FTC challenged were immaterial to consumers.

*Ain't gonna lie
To us, a lie's the only sin
I'll get by
And I ain't gonna lie.¹*

I. Introduction

The Federal Trade Commission (FTC) monitors firms' advertising, pursuant to the Commission's statutory charge to prevent "unfair and deceptive acts and practices."² The Commission takes action not only against advertising it believes false, but also advertising for whose claims the advertiser is deemed to possess insufficient substantiation. When it succeeds in litigation or reaches a settlement with the advertiser, the FTC typically requires that the ads be withdrawn, only rarely imposing a monetary penalty. The press routinely reports these adverse outcomes for advertisers.

Studies by Sam Peltzman and by Alan Mathios and Mark Plummer have shown that in general the FTC announcement of adverse actions via a legal proceeding against the advertiser substantially reduces the value of the advertiser's corporate equity.³ There is one notable exception, however. Mathios and Plummer found that firms that settle with the FTC simultaneously with the Commission's announcement of its investigation suffer no loss.

¹ George Fischeff & Tony Powers, "Ain't Gonna Lie" (BMI). The song, sung by Keith (James Barry Kiefer), reached #39 on the Billboard charts in November 1966.

² 15 U.S.C. §45.

³ Sam Peltzman, The Effects of FTC Advertising Regulation, 24 *Journal of Law and Economics* 403 (1981); Alan Mathios and Mark Plummer, The Regulation of Advertising by the Federal Trade Commission: Capital Market Effects, 12 *Research in Law and Economics* 77 (1989).

This is a curious result, one that has not been scrutinized. It is examined here, however, through analysis of one recent case that ended with a simultaneous announcement of an FTC complaint and Commission settlement with the advertiser. In 2002, the FTC announced an action against Interstate Bakeries Corporation, Inc. (IBC). It concerned certain television advertising claims for IBC's principal product, Wonder Bread, that the FTC alleged were unsubstantiated. As soon as the investigation was announced, IBC signed a settlement agreement agreeing not to run the challenged ads, which engendered a series of press releases from both sides and ensuing articles in the press.⁴

The IBC episode therefore provides an opportunity to observe at an individual-firm level the process described by Peltzman and by Mathios and Plummer. Further, the episode permits, via a single-firm case study, tests of the Peltzman and Mathios-Plummer conclusions concerning simultaneous complaint and settlement in an advertising case. The fundamental questions are whether markets reacted the way that economic science predicts that they would, and why.

Section II begins with a brief description of the FTC's regulation of advertising substantiation, then reviews the Peltzman and Mathios-Plummer studies of FTC advertising regulation, particularly the effects of settling cases. The next section then describes the advertising challenged in the Wonder Bread case, focusing especially on whether that portion of the ads the FTC found objectionable was material to consumers. Section IV presents statistical analyses of the effects on IBC shares of its settlement with the FTC. As will be seen, the outcome is consistent with that found earlier in the large-sample work of Mathios and Plummer: no effect on IBC share value.

⁴ IBC's advertising agency, Campbell-Mithun was also named as a respondent in the case, and signed a similar consent.

Section V explains why that result occurred, asking statistically whether the challenged advertising claims were material to consumers. The analysis here is apparently the first to examine materiality in any sophisticated, quantitative fashion. Econometric analysis shows that the ads' challenged message was immaterial to consumers, in that they did not cause consumers to buy more Wonder Bread. This would explain why IBC suffered no share value loss from the case. The lack of materiality also demonstrates that the Commission's action was unnecessary to correct any market failure or to help consumers.

II. The Federal Trade Commission's Regulation of Advertising

A. Ad Substantiation

In safeguarding consumers against "unfair and deceptive acts and practices," the FTC pursues not only advertising it finds deceptive, but (since the early 1970s) ads it believes are unsubstantiated.⁵ In the seminal case,⁶ the FTC established not only that lack of adequate substantiation constitutes an "unfair" practice, but also that the advertiser has the burden, when challenged, of demonstrating it possessed sufficient substantiation at the time of the advertisement, with sufficiency defined by the Commission. Substantiation is thus an easier way than proving actual falsity for the FTC to proceed against an advertiser. So, substantiation rather than falsity or deception has become the principal focus of FTC advertising regulation.

⁵ For discussion of deception, see Paul H. Rubin, *The Economics of Regulating Deception*, 10 *Cato Journal* 667 (1991); for discussion of substantiation, see Richard S. Higgins & Fred S. McChesney, *Truth and Consequences: The Federal Trade Commission's Ad Substantiation Program*, 6 *International Review of Law and Economics* 151 (1986).

⁶ *In the Matter of Pfizer, Inc.*, 81 FTC 23 (1972).

Three points are essential for understanding ad substantiation cases, including that against IBC and Wonder Bread. First, the FTC staff attorneys assert independent expertise in what message is being communicated by an ad. Second, therefore, the advertiser may be deemed guilty of failing to substantiate (or substantiate “adequately”) a claim it did not think it was making in the first place.⁷ Finally, the FTC’s ad substantiation program regulates inputs, not outputs. It is not the truth or falsity of the ad, but the information the advertiser had when it made the claim, that creates possible liability. In fact, perhaps surprisingly to an outsider, the truth or falsity of the advertising claim is largely irrelevant in a substantiation case; a claim substantiated after the fact is still actionable.⁸ As explained below, these three points were all of importance in the Wonder Bread case.

B. Economic Analysis of FTC Regulation of Advertising

Two empirical studies have measured the impact of FTC regulation of advertising, both using event-study techniques. Sam Peltzman examined a relatively small number (23) of cases between 1960 and 1975, finding that “on average, a 1-2 percent capital loss is suffered sometime in the month before a complaint and a further 2 percent or so is lost in the month after.”⁹ Although the Commission imposes no fines, Peltzman’s principal hypothesis, that the FTC was hardly a “toothless tiger” in its ability to impose share value losses on firms, was vindicated.

⁷ Peltzman, *supra* note __, at 404-05 makes similar points about the FTC’s deception cases. The Commission decides what the message means, and whether it is true.

⁸ “In evaluating the adequacy of prior substantiation, the Commission will consider only post-claim substantiation that sheds new light on pre-existing substantiation. Thus, advertisers will not be allowed to create entirely new substantiation simply because their prior substantiation was inadequate.” FTC Policy Statement Regarding Advertising Substantiation, www.ftc.gov/bcp/guides/ad3subst.htm (originally published March 11, 1983. See, e.g., *Firestone Tire & Rubber Co. v. FTC*, 481 F.2d 246, 251 (6th Cir. 1973) (court “by no means sure” that product did not perform as advertised, but “that is not our question”).

⁹ Peltzman, *supra* note __, at 418.

Alan Mathios and Mark Plummer had a more recent (1963-85) and much larger sample (136 cases), from which they divided the FTC cases into different categories. Separate tests were run for cases that were settled and those that went to litigation. Each category was in turn subdivided. Consents were of two sorts, those where the FTC announced its case and then later announced that a settlement had been reached, and those where the announcement and settlement occurred simultaneously. For cases that went to litigation, Mathios and Plummer measured the separate capital-market effects of each trial event (filing of the complaint, decision, appeal). They broke out the different sorts of events to reflect the view “that the capital markets discriminate among FTC cases in much the same way” as in the Mathios-Plummer taxonomy.¹⁰

For the most part, Mathios and Plummer found that the large impact of FTC cases discovered by Peltzman had become even larger in more recent years.¹¹ However, one exception was the sub-set of cases in which the Commission quietly negotiated a settlement with the advertiser and then announced simultaneously its investigation and the settlement of the case. In that situation alone, the advertiser did not suffer an equity loss. The reason offered by Mathios and Plummer for this anomaly is considered later.¹²

Neither Peltzman nor Mathios-Plummer distinguish FTC cases brought against allegedly deceptive advertising from those brought for supposed lack of substantiation. The distinction is

¹⁰ Mathios and Plummer, *supra* note ___, at 78.

¹¹ “The cumulative losses associated with an unfavorable final decision by the FTC are larger than those found by earlier studies...” Mathios and Plummer, *supra* note ___, at 90. Interestingly, FTC advertising actions cause large capital losses even to firms ultimately found not to have violated the law. “The large capital market losses evinced in this study, therefore, can just as easily deter useful advertising if there is uncertainty about the FTC’s legal standards or if its case selection is poor.” *Id.* at 91.

¹² One might also ask why everyone would not just accept a consent with the FTC and avoid the capital-cost hit that accrues when the matter proceeds to litigation. This point, too, is considered below.

potentially important, however. “Deception” is an allegation about output: the message misleads consumers. “Lack of substantiation,” though, concerns inputs: the information possessed by the advertiser was insufficient in the Commission’s eyes to justify the claim. Consumers presumably care less about what inputs the advertiser had than about the output of information. So, an advertiser presumably is less worried about being accused of inadequate inputs when it is confident that its informational output is acceptable to consumers. There would be no important impact on a firm’s value if consumers did not judge the information they received – however “unsubstantiated” – was deceptive.

It follows that an advertiser would have little incentive to incur the costs of litigating an FTC case involving claims that did not disappoint consumers in the first place. The incentives on the government side are also relevant, of course. The government’s filing a complaint when the advertiser has no incentive to resist augurs an easy government victory. And, as noted, substantiation cases are easier for the Commission to bring than deception cases.

Interesting empirical questions thus present themselves in any particular advertising substantiation case. First, will a government case based on allegations of inadequate substantiation affect a firm’s value? The Peltzman and especially the Mathios-Plummer research indicates that an FTC case may or may not affect firm value, depending on the sequence of events following announcement of a complaint for lack of substantiation.

Second, what would explain those instances when a government complaint did not affect a firm’s value? This is a more interesting point, presenting an issue not yet examined empirically. The FTC’s complaint concerning advertising for Wonder Bread provides one answer, theoretically and empirically.

III. The Wonder Bread Case

For years Wonder Bread, almost alone among brands of bread, has been advertised nation-wide, presented as a white bread enriched with vitamins and minerals essential for "building strong bodies." IBC, the owner of the brand, purchases three- or four-week flights of local TV and national CATV spots for Wonder Bread. Typically, IBC buys a certain number of weekly "target rating point" (TRP) local TV spots and national CATV spots. (TRPs measure the percentage of eyeballs in the target audience – here, moms from 21 to 54 -- reached in a week.) Prior to the advertising claims at issue here, Wonder Bread ads drew attention to its ingredients, and sometimes to the importance of these ingredients for good health and healthy growth.

The FTC staff took issue with ads said to feature certain claims, referred to as the "Neurons" claims. The TV advertising containing the Neurons claims featured Professor Wonder, a zany "nutty professor" type in a white lab coat who advises "Mom" about the benefits of feeding her children Wonder Bread. The "Neurons" claim concerned Wonder Bread's calcium content. In the advertising, Professor Wonder looks into a child's ear with an otoscope, and with him viewers see lethargic children dressed as neurons inside the child's brain. Upon eating a slice of Wonder Bread, though, the "neurons" immediately dance frenetically to cries of "let's go do our homework."¹³ According to the FTC, the Wonder Bread snack was portrayed as working a miracle, with the allegedly clear message that eating Wonder Bread will immediately make you smarter.¹⁴

¹³ Seeing the ad, many viewers of a certain age quickly recognized the similarity of the ad to a certain scenario in Woody Allen's 1972 movie, *Everything You Always Wanted to Know about Sex but Were Afraid to Ask*.

¹⁴ For further details about the Wonder Bread case, see Higgins & McChesney, "Materiality and Method in FTC Advertising Regulation," *Antitrust*, vol. 18 (no. 3), summer 2004.

As a matter of fact, calcium is necessary to facilitate the transmission of neurons in the brain. But it appears that the calcium used there comes from other parts of the body (e.g., the bones), which in turn absorb calcium from a person's diet. Thus, while dietary calcium is an ultimate source of calcium in the brain, the time between ingestion and appearance in the brain neurons is not immediate.

IBC maintained that its ads were designed just to highlight the enhanced calcium content in Wonder Bread, which would be stored in the body and ultimately be usable in the brain. Calcium enrichment in Wonder Bread was a fact not challenged by the government, and could easily have been substantiated by IBC had it been. The company denied, however, that it intended to convey any message that the effect of ingesting calcium is immediate. The Professor Wonder ads were intended to be fanciful, and it is not obvious that the targeted moms would find in the Neurons message the sort of scientific claim the FTC insisted it conveyed. Nonetheless, based on its own interpretation of the Neurons claim, the FTC staff accused IBC of lacking adequate substantiation of immediate calcium impact when IBC ran the ads.

In effect, the FTC faulted IBC for failing to substantiate a claim IBC did not think it was making. Advertisers, particularly those selling a repeat-purchase product like bread, are not indifferent to the message they convey. IBC had worked with its ad agency to ascertain what viewers took away from its advertising. Nor would such a scientific message of immediate impact be necessary for IBC to find it profitable to run the ads.

For two reasons, economic rather than scientific, one would expect *ex ante* that the Professor Wonder advertising in question might have a positive influence on sales. First, regardless of its message, the fact of advertising informs viewers of the brand's continued existence, indicating long-term success in the market and reminding them therefore of the considerable brand-

name capital at stake should the product fail to satisfy. Second, the advertising in question contains more than the complained-of calcium claim. Wonder Bread's message in the challenged ads, again reinforcing its advertising over many decades, is that the bread simply is good for you.¹⁵

Whatever message the ads imparted, however, IBC itself had already found *ex post* that Professor Wonder was a dud. The Professor Wonder ads had been designed to run for about a year, but IBC decided shortly after they aired that they were ineffective. After running for only eight to ten weeks in the latter half of 2000, the ads were pulled.

Although the ads had ceased appearing months earlier, the FTC launched an investigation, demanding to know what substantiation supported the messages that the Commission lawyers contended the ads conveyed. IBC presented substantiation for the claims that it believed the ads made, but these were not the claims as the FTC interpreted them. When IBC was unsuccessful in convincing the FTC lawyers as to what the ads truly communicated, the FTC indicated it was ready to file a complaint against IBC for lack of substantiation. IBC then agreed (without admitting wrongdoing) to a consent order in which it promised not to run the ads it had already discontinued a year earlier.

IV. Capital-Market Effects of the FTC Case Against IBC

The IBC case resulted in a simultaneous announcement by the FTC that (a) it had investigated the Wonder Bread claims -- as the FTC interpreted them -- and had found them unsub-

¹⁵ “[T]he actual content of the ad may not be the relevant message.” Peltzman, *supra* note ___, at 404-05. See Benjamin Klein and Keith B. Leffler, The Role of Market Forces in Assuring Contractual Performance, 89 *Journal of Political Economy* 615 (1981); Phillip Nelson, Advertising as Information, 82 *Journal of Political Economy* 729 (1974).

stantiated, but that (b) IBC had consented not to run them again. From the Mathios-Plummer evidence on simultaneous FTC announcements of a complaint and a consent, one would think that the capital-market impact on IBC of the FTC's case concerning Wonder Bread would be nil. And so it was.

Table 1 shows the estimated impact on rates of return to IBC shares that the announcement of the FTC's investigation of IBC and the firm's settlement with the Commission had. With a sample of 280 trading days (March 20, 2001 to April 15, 2002), regression I estimates returns as a function of market returns overall (measured by R_SP500 , the Standard & Poor's 500 daily returns); and an interaction term to account for any shift in the relation between IBC and S&P 500 returns after the events of September 11, 2001 ($R_SP500*POST$, where $POST = 1$ following September 11 and zero before). Most interesting, the effect of the FTC's announcement is captured by a dummy ($ANNOUNCE$) for the two-day window (March 6 – 7, 2002), beginning the day of that announcement. As the results show, there was no significant impact of the FTC's announcement on IBC shares, holding the market and market-shift variables constant.

Regression II of Table 1 estimates IBC share returns from a sample period after September 11, 2001 of 128 trading days (October 30, 2001 to April 25, 2002). It also adds to the model a variable ($R_INDUSTRY$) to capture food-industry-specific returns, in addition to those in the market overall (R_SP500). The industry returns are measured as the average rates of return for six food companies: Kraft Food, Heinz, General Mills, Sara Lee, Group Danone, and Campbell's Soup.

Again, the coefficient for the ANNOUNCE two-day dummy is not significantly different from zero.¹⁶ The empirical evidence thus indicates that IBC shares suffered no adverse impact from the simultaneous announcement of the FTC's case and its settlement. The IBC-specific events thus parallel the findings of Mathios-Plummer more generally: no significant adverse impact for sample firms that settle a case at the same time the Commission announces its investigation.

As a check on these results, the experience of a Wonder Bread competitor was evaluated during the same period. Like IBC, Flowers Bakery is publicly held; it distributes Sunbeam Bread, sold nationwide like Wonder Bread. If IBC was hurt by the FTC's case based on the Wonder Bread ads, Flowers should have benefited.¹⁷ But if, as the results in Table 1 indicate, IBC was not harmed by the FTC's announcement of the case and simultaneous settlement, Flowers would not have been affected.

As shown in Table 2, the value of Flowers' shares in fact was not affected by the announcement concerning IBC, *ceteris paribus*. Regression I of Table 2 shows the estimated effect of the market return variable (R_SP500) and the market-shift variable (R_SP500*POST) on Flowers' shares, and adds a variable (SPLIT) to take account of a share split that Flowers declared during the relevant period (March 20, 2001 to April 15, 2002).¹⁸ Of greatest importance, the coefficient on ANNOUNCE again is statistically insignificant.

¹⁶ Event windows of different periods were also tested using the two regression models in Table 1, none of which revealed statistically significant coefficients for ANNOUNCE.

¹⁷ Peltzman, *supra* note ___, at 414, notes that losses by a firm from FTC advertising cases should be reflected in gains to competing firms.

¹⁸ Flowers declared a 3:2 split before the market opened January 3, 2002; SPLIT is a two-day window dummy for January 3 – 4, 2002. Predictably, the split would cause a significant decline in share prices, a result borne out by the results in Table 2.

Regression II of Table 2 again confines the sample to a period (October 30, 2001 to April 25, 2002) following September 11, 2001. With the food-industry-return variable (R_PORTFOLIO) again added, the coefficient for ANNOUNCE remains statistically insignificant. With no measured effect on IBC itself from the FTC's investigation and settlement, there was no evident impact on a major IBC competitor, either.

V. Why Settlements May Be Costless: The Materiality Issue

The econometric results just discussed validate the Mathios-Plummer findings that simultaneous announcement of an FTC advertising case and its settlement generally entail no capital wealth loss for the advertiser. These results raise several questions, however. First, why would IBC not suffer a capital loss from the announcement of the Commission's allegations? The results are particularly interesting, given that all the other sorts of cases analyzed by Mathios-Plummer (and previously by Peltzman) involved a wealth loss when the FTC challenged an ad.

A. Materiality

Mathios and Plummer explained their results only by suggesting their empirics failed to detect earlier wealth losses that (they apparently believed) must have accompanied the FTC's announcement. Although there was no separate announcement of an investigation,

this does not necessarily imply that information about the investigation was not available to insider traders and perhaps others before the official date. If this happens, the event periods around the official date of the complaint/consent may not capture the negative effect of the information concerning the investigation of the firm.¹⁹

¹⁹ Mathios and Plummer, *supra* note __, at 84.

Inability to measure the date when the relevant information became available to the market may be a sufficient condition for what Mathios and Plummer regard as anomalies in their results. But it is not a necessary condition.²⁰

Consider again the essence of the ad substantiation program. The FTC contends that it knows what an ad's message is, even if the advertiser does not think it is making the claim that the FTC is attacking. However, national advertisers typically spend a good deal of time and money to learn what viewers take away from an ad, working with experienced advertising agencies and other specialists to hone the message conveyed.²¹ And even when the Commission staff disagrees with the advertiser as to what that message is, the lawyers do not claim the message is false, only unsubstantiated.

Therefore, in many cases an advertiser has little to fear from market reaction to announcement of a case. If consumers did not understand the message to say what the FTC claims, or if the message was either true or unimportant in the overall thrust of the ad, there would be no material impact on consumers. In the Wonder Bread case, IBC disagreed completely with the FTC's contentions as to what the ads said. And they had pulled the ads after just a few weeks (in an advertising campaign intended to run for over a year), because IBC felt the ads were not increasing sales – that is, did not contain a message of material interest to consumers. The ads had not run for over a year when the FTC announced its (settled) case against IBC, the settlement requiring IBC not to run ads it had long before discontinued.

²⁰ The empirics and conclusions presented in this section likewise illustrate a sufficient, but not necessary, condition for an FTC action to have no impact on share prices: lack of materiality in the challenged advertising. Other instances of no share-value impact in the Mathios-Plummer sample might be due to causes other than lack of materiality.

²¹ Campbell-Mithun, the advertising agency that designed the Wonder Bread campaign, secured the substantiation on behalf of IBC.

Legally, materiality is supposedly something of concern to the FTC when it decides whether to challenge an ad.²² Economically, an advertisement's "materiality" is measured by whether it causes a shift of a product's demand curve. But whether an ad has shifted the product demand curve is an issue of fact, about which the Commission's lawyers have no particular expertise or methodological skills for evaluating.²³ With appropriate data, however, materiality is measurable. The data reveal, in fact, that IBC was right: its advertising message challenged by the FTC had no impact on sales. Professor Wonder's message was immaterial to consumers.²⁴

B. Testing for Materiality

To gauge the materiality of the Wonder Bread claims, we determined econometrically whether the ads containing the challenged Neurons claims raised sales more than did similar Wonder Bread advertising not containing these claims. Thus, in effect, we compared sales of Wonder Bread when there was advertising without the contested Neurons claims ("baseline" advertising) with sales when there was advertising including those claims. The comparison was

²² In recent litigation over advertising substantiation, a principal issue was materiality of ads for pain-killer Doan's Pills. *Novartis Corporation v. FTC*, 223 F.3d 783 (D.C. Cir. 1999). The Commission had held that Doan's efficacy claims were material and that evidence of Doan's advertising being ineffective in conveying the superior efficacy of its product was irrelevant. The Commission opined that failure to increase market share did not imply the irrelevance of advertising. The ten years of advertising may have helped Doan's maintain share in a highly competitive market and, in any case, Doan's spent substantially less on advertising than its analgesic rivals. The FTC likewise said it was dubious that a corporation would have spent millions over ten years for ineffective advertising just to appease retailers who demanded advertising from niche brands. Finally, said the Commission, myriad factors affect market performance, and Novartis' expert had not controlled for these in concluding that Doan's market share had remained static notwithstanding its advertising of the efficacy claims.

²³ As Peltzman points out, "there should be no presumption that false ads which happen to be detected by the FTC are typically successful." Peltzman, *supra* note ___, at 410-11.

²⁴ Several facts distinguish the Doan's case from that for Wonder Bread. First, there is uncertainty about what claims were made and intended by IBC; there was virtually no such uncertainty in the Doan's case. Second, the Wonder Bread claims appeared in advertising that ran for only twelve weeks before it was voluntarily pulled, not ten years.

possible because some of some of the baseline advertising actually used Professor Wonder, but without the Neurons claims.

1. The Model

The following demand curve for Wonder Bread sales volume (WBV) was estimated:

$$(1) \quad \log[\text{WBV}_{it}] = a_0 \text{City}_i + a_1 \log[\text{WBP}_{it}] + a_2 \log[\text{RP}_{it}] + a_3 \text{WBM}_{it} + a_4 \text{RM}_{it} + a_5 \text{WBC}_{it} + a_6 \text{RC}_{it} + a_7 \text{WBAS}_{it} + a_8 \text{RAS}_{it} + u_{it}$$

where i and t refer to city i (one of 21 cities) and week t (from one in the first week of June 1998 to 153 for the first week in June 2001). The independent variable definitions appear in Table 3.

Measurement of some variables requires explanation. Price-reducing coupons (from newspaper shopping inserts or received in the mail) are an important part of food advertising and marketing. In the actual equation estimated, Wonder Bread's own coupon (WBC) and rival coupon (RC) variables are included as current and lagged values, because coupons are not all redeemed in the first week of a coupon "drop." Rather, they are redeemed gradually over several weeks. The coupon variables are lagged from 0 to several weeks.

Also, as concerns the advertising stock variable, that stock (unlike a firm's physical plant) cannot be observed directly. However, advertising expenditures accumulate over time to determine this stock; as with physical capital, this stock is depleted if it is not replenished with new, additional advertising expenditure.²⁵ We assume that the advertising stocks at issue here depreciate at a constant weekly rate, λ . If we apply a Koyck transformation to equation (1), it becomes

²⁵ E.g., Robert Ayanian, Advertising and Rate of Return, 18 *Journal of Law and Economics* 479 (1975); Yoram Peles, Rates of Amortization of Advertising Expenditures, 79 *Journal of Political Economy* 1032 (1971).

(2) $\log(WBV_{it}) = \lambda \log(Q_{it-1}) + \text{RHS of equation (1) for coefficients, } a_0 - a_6 + \text{lagged RHS of (1) for coefficients, } a_0 - a_6 + b_1 PWadv_{it} + b_2 PWNadv_{it} + b_3 Radv_{it}.$

In order to estimate the incremental effect of Wonder Bread Neurons advertising, the baseline variable, $PWadv$, and the interaction term, $PWNadv$, are included separately. $PWadv$ is weekly TRPs for local and national advertising for Wonder Bread, including Professor Wonder ads that did *not* contain the Neurons claims challenged by the FTC. $PWNadv$ is weekly TRPs for local and national advertising for Wonder Bread during the Neurons ad campaign. So, the coefficient on $PWNadv$ measures the estimated incremental sales effect of the Professor Wonder Neurons advertising, and thus is of particular interest for the materiality issue. $Radv$ is weekly local and national advertising for Wonder Bread's largest and second-largest rivals. In this form, the effects of advertising on sales can be estimated.²⁶

2. Estimation

Table 4 provides the long-run coefficient estimates, the asterisks indicating levels of statistical significance.²⁷ The Koyck transformation applied here creates an errors-in-variables problem, the stochastic residual being correlated with the lagged dependent variable. In addition, if the errors are serially correlated, the estimation difficulties are compounded. To deal with these issues, two alternative estimation methods were used: a simple instrumental variables tech-

²⁶ The demand relation in equation (2) is estimated based on weekly data (June 1998 to June 2001) in each of 21 cities in the United States taken from these sources: (1) Institutional Resources, Inc. scanner data for brand-level sales (pounds and dollars) and merchandising of bread through supermarkets; (2) Marx Report data for coupon circulation and value; (3) Campbell-Mithun advertising data, including weekly TRPs purchased by IBC and weekly ad expenditure for IBC rivals.

²⁷ The equation estimates the determinants of Wonder Bread's sales volume (WBV). Similar results are obtained when the log of volume is replaced by either dollar sales or volume share. Also, since $\partial \ln[R(p,X)]/\partial \ln(X) = \partial \ln[Q(p,X)]/\partial \ln(X)$ for all X, the advertising coefficients would be the same if log expenditure were the dependent variable instead of log volume.

nique and a more complex method proposed by Hatanaka.²⁸ Method 1 of Table 4 refers to the Hatanaka two-step method, and Method 2 refers to the simple instrumental variable method outlined in Kmenta.²⁹

The coefficients of determination are quite high, over .95 regardless of specification, suggesting that all important influences on Wonder Bread sales have been included in the model.³⁰ The results are generally as would be expected. Notably, a handful of variables for both IBC and its rivals (prices, merchandising, couponing and advertising) explain the vast bulk of the variation in Wonder Bread sales. Individually, almost all of the variable coefficients have the predicted signs and are statistically significant, except for private label price.

And crucially, except for the Neurons advertising. The coefficient for that variable actually is negative, although statistically insignificant from zero. Thus, using standard levels of significance and ordinary concepts of hypothesis testing, one cannot reject the null hypothesis that the Neurons claims had no effect on sales.³¹ The econometrics validate the decision by IBC to pull the Professor Wonder Neurons ads: they cost money, and did not increase sales. Judged empirically, whether by econometricians or by bakers, the ads were immaterial.

²⁸ See Jan Kmenta, *Elements of Econometrics*, Macmillan Publishing Company, 1971, pp. 479-487; M. Hatanaka, "An Efficient Estimator for the Dynamic Adjustment Model with Autocorrelated Errors," 2 *Journal of Economics*, 199 (1974); and William H. Greene, *Econometric Analysis*, second edition, Macmillan Publishing Company, New York, 1993, pp. 435-436.

²⁹ If dollar sales were used as the dependent variable the results would be identical to those in Table 4, except for the coefficient on own price. See note __, supra.

³⁰ In Table 4, the coefficients reported for baseline and Neurons advertising reflect weight corresponding to the average weekly TRPs that IBC purchases for local spot TV advertising.

³¹ That is, if the FTC were required to prove materiality, it could not falsify the null hypothesis of no materiality. Indeed, the insignificant coefficient for *PWNadv* coefficient is negative, in effect meaning that any positive impact of the Neurons ads would be of trivial magnitude statistically. As demonstrated next, one can reject with substantial confidence the null hypothesis that these claims had any important positive effect on Wonder Bread sales.

C. Materiality and the Public Interest Standard

The very meaning of materiality was disputed in this case. IBC maintained that if the advertising claims in question did not cause any significant number of consumers to purchase more Wonder bread than usual, the claims were immaterial. And, as materiality is supposedly a necessary element under the FTC's ad substantiation doctrine, lack of materiality would mean there is no cause of action under the FTC's standards. In effect, "no harm, no foul."³²

In contrast, the FTC attorneys maintained that the claims were inherently material. According to the FTC staff's interpretation of the Wonder Bread claims, they *must* be material, or they would not have been made.³³ According to the FTC, the contested ads' claim that by eating a slice of Wonder Bread, a child could immediately concentrate better and more effectively do his homework. Under this interpretation, the explanation for the econometric results in Table 4 showing no sales effect, was because: (1) the chosen advertising vehicle failed to deliver the message effectively, (2) the econometrics were deficient; or (3) statistical evidence doesn't matter since lawyers know what is material.³⁴

In addition, the FTC economists were critical of the interpretation of the econometric results shown in Table 4.³⁵ They indicated that failure to falsify the null hypothesis of no sales ef-

³² Moreover, consumers presumably care little about the substantiation inputs that go into an ad, as long as claims made are truthful.

³³ As one FTC staffer involved with the Wonder Bread case wrote two years later, "Of course the ads are going to affect demand for the advertiser's product – why else would the companies run them?" Butters, in his Reply to Higgins and McChesney, *supra* note __, at 24. Butters continues, "we presume that the firm was successful in conveying the claim and that the claim was material to consumers." Of course, IBC's experience with the Professor Wonder ads was exactly the opposite: the ads were not successful, and so were discontinued before the FTC even started its investigation.

³⁴ As one lawyer put it, the question was whether "incompetent advertising justifies lack of a reasonable basis."

³⁵ Involving economists in case evaluations and proceedings is now an essential part of the FTC process. In this case, the FTC economists concurred with the lawyers' interpretation of the claims, and that the claims must be ma-

fect was insufficient proof of no effect. The Commission puts the burden of proving no effect on the respondent, a problem for statisticians encountered elsewhere in law where the burden of proving zero effect is on defendants.³⁶ Of course, proving a negative is impossible, but ordinarily failure to reject the null hypothesis of no effect is accepted in economics as sufficient to end the argument, barring contrary evidence. As George Stigler was fond of repeating, it takes a model to beat a model.

[[Richard: deleted material re Type I/II error appeared here.]]

Of course, just as one cannot disprove a negative, neither can there be certainty that the Commission was wrong to pursue the Wonder Bread matter. But nothing in life is sure. As a social scientist and statistician, however, one can be sure that the accepted methods of statistical science indicate that the error costs of pursuing the Wonder Bread matter were prohibitive. Even assuming the FTC was right that Wonder Bread's ads improperly increased sales, the expected loss to consumers was trivial. The potential loss to Wonder Bread – a national brand, with a long history of passing the market test with consumers – was considerable. Even with all assumptions made in the Commission's favor, the case had expected costs exceeding its benefits.

D. Materiality and Endogeneity

material because they were made. The economists reviewed the econometric analysis of materiality here, were given the data to review, verify and redo the econometrics, but never produced a model disproving the results in Table 4.

³⁶ E.g., the "Red Dye No. 2" case: *Certified Color Manufacturers Ass'n v. Mathews*, 543 F.2d 284 (D.C. Cir. 1976) (by statute, regulatory agency must deem a color additive "unsafe," with the burden of proving it was not unsafe on the manufacturer).

The foregoing discussion helps address a second question raised by the Mathios-Plummer results concerning simultaneous FTC announcements and consents, results corroborated here for Wonder Bread specifically. In the Mathios-Plummer sample, some 16 percent of the consents were signed after the announcement of the investigation. Those firms, as noted above, suffered a five-day loss in share value of 2.5 percent, a loss not recovered when the consent was signed. If consenting when an investigation is announced means avoidance of share value loss, why doesn't every firm just consent at that time?

That question has at least two answers. First, in some cases the Commission decides unilaterally whether to announce an investigation. The advertiser therefore may not have a chance to settle the matter with a consent simultaneous with the Commission's announcement.

Second, and perhaps more important, the fact that the sample firms settling at the time of the investigation announcement suffered no equity loss does not mean that other firms in the sample would have fared the same, had they also consented. In the Wonder Bread case, for example, IBC was also convinced that consumers did not understand the ads' message the way the FTC insisted they did. The bakery was adamant that the ads' messages as interpreted by the FTC were not material, despite the Commission's insistence they were. And finally, believing the ads were ineffective, IBC had pulled them a year before the Commission publicly announced its investigation.

Being required to stop an ineffective and immaterial ad campaign that has already been discontinued would hardly be costly, as compared to a case when a firm felt its message as understood by consumers was material and the ads were ongoing and effective. In that latter case, a firm would be more inclined to litigate, both to defend itself against the allegations of wrongdoing and to preserve the ability to run the successful ads. In fact, the very act of choosing to

contest the FTC's allegation would typically allow the firm to continue running the ad.³⁷ In short, the Mathios-Plummer results should not be understood as establishing an optimal strategy for all firms, but rather evidence of firm's rationally maximizing its value through self-sorting.³⁸

E. So Why Bother?: Alternative Hypotheses

The foregoing raises one final question. Why did the Commission devote resources to pursuing IBC? The Commission brought an action against a well-known brand, Wonder Bread, on the basis of ads that ran only a few weeks, and had been voluntarily discontinued well before the government opened its investigation, because they were ineffective. Econometric evidence presented here and provided to the FTC staff at the time indicates that there was no consumer harm because, as IBC had learned the hard way in the marketplace, the ads had no effect on consumer purchases.

In effect, the FTC moved in to "solve" a problem the market had already corrected voluntarily. It imposed a non-penalty on the advertiser who had already corrected the problem, and thus achieved no benefit. One might well ask, why bother? Although that question falls outside the principal discussion here concerning materiality, alternative hypotheses suggest themselves.

In effect, invoking a public-interest explanation for regulation, FTC staff sometimes fall back on the argument that their cases are important, not just in remedying the problem at hand, but for their future "deterrence effect." Each case signals the FTC's vigilant presence on the beat, and so will deter advertising violations by others. That argument, however, makes little

³⁷ The FTC has the legal power to seek an injunction against running an ad while the Commission challenges it, but only very rarely does so.

³⁸ As Mathios and Plummer say of losses suffered by firms that contest the FTC's allegations, "it is unlikely that these losses could have been avoided by consenting instead of fighting, as long as it is assumed that firms minimize their expected losses." Mathios and Plummer, *supra* note __, at 90. They do not explain, however, why loss-minimizing firms would sort themselves as they do.

sense in the Wonder Bread case. As a strictly legal matter, materiality is a requirement for liability. If there is no materiality, of what value is deterring future immaterial ads?

Analogously, as a matter of economics, it is costly to pursue advertisers; yet if the ads are non-material, there are no benefits.³⁹ Imposing liability when there is no harm is over-deterrence, raising the likelihood that future advertisers will eschew advertising that in fact was not harmful. The public interest is harmed, not served, by costly regulation that achieves no benefits, and may chill future beneficial advertising.

Regulation that does not correct any market failure, and imposes costs in excess of any benefits, is often better explained by the economic theory of regulation. That now-familiar model considers whether regulation not pursued in the public interest is nonetheless in the personal interest of particular parties. Explaining apparently misguided regulation must in particular include a reckoning of gains to the regulators themselves.⁴⁰ *Ceteris paribus*, budget-maximizing government agencies seek visible output.⁴¹

The Wonder Bread case may have meant little for consumers, but it served the goals of the FTC regulators themselves. In particular, the Commission was pursuing a “*national advertiser*,” to use the phrase heard in the FTC corridors. So the regulators were focused on a particularly visible company.

Almost all FTC advertising cases are brought against nondescript, penny-ante firms; national advertisers are big – and newsworthy – fish. The day before the FTC announced IBC’s

³⁹ The police would doubtless reduce driving speeds by randomly pulling over drivers who were not exceeding the speed limit. But, for obvious reasons, arresting those not violating the law makes little sense, legally or economically.

⁴⁰ “Bureaucratic man pursues power.” Dennis C. Mueller, *Public Choice II* 250 (1989).

⁴¹ Cotton M. Lindsay, A Theory of Government Enterprise, 87 *Journal of Political Economy* 1061 (1976).

consent, it posted a notice on its web site that it would hold a press conference to reveal a consent against a “national advertiser,” letting the public guess who that might be. “The room will be open [early] to allow for camera set-up. Reporters unable to attend can dial in....⁴² When the press conference revealed that the respondent was IBC and the product Wonder Bread, the case was reported in most national papers, including the *New York Times* and the *Wall Street Journal*.⁴³ As one source put it, “big brands make big targets.”⁴⁴ And bigger fish are more valuable to bureaucratic fishers.

⁴² <http://www.ftc.gov/opa/2002/03/wbma.htm>.

⁴³ E.g., “Maker of Wonder Bread Settles Charges by FTC Over Claims in Its Ads, *Wall Street Journal*, March 7, 2002, p. b8.

⁴⁴ *Bakery Production and Marketing*, March 8, 2002, p. 1.

Table 1

Effect of Announcement of FTC Action
On IBC Share Returns

	I.	II.
R_SP500	-.140	.294*
R_SP500 * POST	.366*	--
R_PORTFOLIO	--	.161
ANNOUNCE	-.0003	.0005

Constant term not reported.

* = significant at .05.

n	280	128
R-squared	.012	.068
D.W.	1.98	1.77

Table 2

Effect of Announcement of FTC Action Against IBC
On Share Returns of IBC Competitor Flowers

	I.	II.
R_SP500	.262***	-.035
R_SP500 * POST	.202	--
R_PORTFOLIO	--	.548**
SPLIT	-.181*	-.167*
ANNOUNCE	-.016	-.010
Constant term not reported.		
***significant at .10.		
* = significant at .01.		
n	278	128
R-squared	.274	.372
D.W.	2.13	2.43

Table 3: Variable Definitions

Dependent variable:

WBV = Wonder Bread weekly sales volume in pounds

Independent variables:

City = a dummy variable, one for each of 21 cities (not reported in Table 4)

WBP = weekly weighted average Wonder Bread retail price per pound

RP1 & RP2 = weekly weighted average prices for WB's first and second largest white bread rivals

RPPL = weekly weighted average prices for IBC's private label white bread, Home Pride

WBM = sales-weighted percentage of supermarkets with promotional special (e.g., a feature ad) for Wonder Bread

RM1 & RM2 = sales-weighted percentages of supermarkets with a promotional special for WB's first and second largest rivals

RMPL = sales-weighted percentages of supermarkets with a promotional special for IBC's private label white bread, Home Pride.

WBC = a vector of IBC's forecasts of the total number of WB coupons distributed at the beginning of a coupon program that would be redeemed by the expiration date

HPC = a vector of IBC's forecasts of the total number of Home Pride coupons distributed at the beginning of a coupon program that would be redeemed by the expiration date.

RC = a vector of the total value of coupons dropped for WB's largest rival

R1adv & R2adv = weekly expenditure for spot TV and non-TV advertising for WB's first and second largest rivals

PWadv = weekly TRPs for local and national advertising for Wonder Bread, including Professor Wonder ads without the Neurons claim

PWNadv = weekly TRPs for local and national WB advertising during the Neurons ad campaign

Table 4

Log-Linear Regression Coefficient Estimates
For Wonder Bread Demand

	<u>Method 1</u> (Hatanka correction)	<u>Method 2</u>
WBP	-1.51**	-1.32**
RP1	0.16**	0.09**
RP2	0.27**	0.11**
RPPL	0.05	0.08
WBM	0.004**	0.003**
RM1	-0.0007**	-0.001**
RM2	-0.0003**	-0.0006**
RMPL	-0.0006**	-0.0004**
WBC	1.4 E-06**	1.4 x 10 ⁻⁶ **
HPC	1.6 E-07	1.3 E-06
RC	-0.02	0.015
R1adv	-0.007	-0.006
R2adv	-0.006	-0.0016
PWadv	0.010*	0.016**
PWNadv	-0.0063 (0.0069)#	-0.0088 (0.0084)#
n	3150	3192
R-squared	98.8	96.7
D-W	1.79	1.83

Constant and city dummies not reported.

** Statistically significant at the 1 percent level.

* Statistically significant at the 5 percent level.

The standard error is reported in parenthesis.