

The Political Economy of “Truth-in-Advertising” Regulation during the Progressive Era

Preliminary Draft

Zeynep K. Hansen
Olin School of Business
Washington University

and

Marc T. Law
Department of Economics
University of Vermont

Abstract

This paper concerns the origins and impact of “truth-in-advertising” regulation during the Progressive era. Historical accounts of the truth-in-advertising movement emphasize the role that advertising interests played in obtaining regulation. These accounts also note that advertising interests desired regulation in order to enhance the credibility of advertising. Was advertising regulation desired by advertising interests in order to improve the perception of advertising, or was it merely a symptom of anti-business Progressive reform sentiments? We exploit cross-state variation in the characteristics of state-level advertising regulation and find that advertising interests were a key group in favor of regulation, but Progressive reformists were not. We also match information on the timing of state and federal advertising regulation with data on the volume of advertising expenditures and find that advertising regulation at both the state and federal level increased total advertising expenditures. Hence, the evidence also suggests that regulation may have played a role in improving the credibility of advertising.

I. Introduction

State and federal regulation of advertising in the United States emerged in the early twentieth century. Under the rubric of the “truth-in-advertising movement” reformers lobbied governments to enact legislation that made false advertising a misdemeanor. The question this paper deals with is why these regulations emerged and what effects they may have had.

One explanation for the origins of these regulations argues that advertising regulation was merely a symptom of the Progressive era reformist spirit. The first two decades of the twentieth century were a period of growing distrust in business among reformist interests. According to many historical accounts of the Progressive period, muckraking journalism about the abuses of “big-businesses” like the meat packing trusts, Standard Oil, and other large enterprises induced reformist interests to lobby for legislation such as meat packing regulation, food and drug regulation, and antitrust regulation (Chalmers 1974; Filler 1976). In light of this view, it seems plausible that advertising regulation was introduced as part of a broader agenda to restrain the influence of business interests over the broader political economy.

The main problem with this explanation is that it ignores the role that business itself played in lobbying for advertising regulation. Indeed, much scholarship on the political economy of Progressive era regulation suggests that business groups were important constituencies in favor of a wide range of regulations (Kolko 1963; Weibe 1967). Regulation was sought by business either because of its potential to tilt the competitive playing field in favor of particular producers, or because of its potential to help “make a market” for certain products. In the context of the advertising industry, much historical scholarship suggests that advertising regulation was adopted because it furnished a mechanism through which advertisers could improve the credibility of advertising (Pease 1958; Pope 1983). Advertising interests—manufacturers of highly advertised products, retailers, publishers, and advertising agents—often believed that bad advertising imposed a negative externality on all advertising, that bad advertising was a “rotten-apple” that harmed the credibility of all advertising. By making it illegal to falsely advertise, these groups believed that regulation would shore up public faith in advertising and increase the returns to advertising.

In this paper, we present evidence that is broadly consistent with this alternative view. In particular, we attempt to test this hypothesis—that advertising regulation was desired in order to improve the credibility of advertising—in two ways. First, we empirically examine the political economy of state-level truth-in-advertising legislation and find that proxies for advertising industry interests are closely correlated with the timing and characteristics of these regulations. This suggests the importance of advertising interests as a pro-regulation lobby. Second, we take seriously the rotten-apple theory and investigate the effect these regulations had on the level of advertising expenditures. Taking advantage of variation in the timing and characteristics of state and federal advertising regulation, we find that truth-in-advertising regulation increased the level of advertising expenditures. This result is consistent with the view that regulation increased the credibility of advertising.

This paper is structured as follows. We first describe the rise of advertising in the late nineteenth and early twentieth century and discuss the interest group politics that led to the adoption of truth-in-advertising regulation. We then exploit cross-state variation to empirically examine the determinants of state advertising regulation. This is followed by an analysis of the effect of state and federal advertising regulation on the level of advertising investment. We then conclude.

II. Historical Background

The United States economy in the late nineteenth and early twentieth centuries experienced rapid technological and organizational change. Falling transportation costs made possible tremendous increases in specialization (Kim 1998, 2000). As production moved out of households and into markets, regions and cities became increasingly specialized in the production of goods and services. As a consequence, impersonal exchange became the dominant mode of economic interaction among individuals and firms.

While specialization increases the gains from trade, specialization also comes at the cost of greater uncertainty about product quality. The more specialized individuals are, the less they know about the goods and services they purchase from others (Wallis and North 1986). Hence, asymmetric information about product quality becomes

increasingly relevant as goods become more sophisticated and exchange more impersonal. As is well known, asymmetric information about product quality can give rise to the “lemons problem” in which low quality goods dominate the market (Akerlof 1970).

Many scholars have noted the role that market mechanisms can play in solving the problem of asymmetric information. Klein and Leffler (1981), for instance, have shown how sunk investments in reputations—such as brand name development and advertising—can play a role in signaling quality to consumers. Along these lines, it has been argued that the rise of multiunit firms and retail chains during this time emerged in part as solutions to this asymmetric information problem (Kim 2001). Hence, it is not surprising that this period of rapid specialization witnessed the widespread use of advertising and the proliferation of brand names.

Obtaining accurate estimates of the growth of advertising during this period is difficult since few sources report systematic data on total advertising volumes in all forms of advertising media. Nevertheless, the available figures do suggest its rapidly growing importance. For instance, according to estimates contained in Borden (1942, p. 48), based on US Census of Manufacturing data, per capita advertising expenditures in periodicals and newspapers in America increased dramatically, from 78 cents per capita in 1899 to over \$5 per capita in 1919. Frederick (1925) estimates that total advertising revenues increased from \$30 million in 1880 to \$850 million in 1920. Finally, according to the Printer’s Ink General Index of Advertising Activity, advertising volumes approximately doubled between 1914 and 1920 (Borden 1942, p. 57). Hence, many sources point to significant growth in advertising during turn of the century America.

Market solutions like advertising, however, may not always be perfect remedies to the problem of asymmetric information. For goods that are purchased frequently and about which it is relatively easy for the consumer to discern product quality *ex post* (*i.e.* experience goods), mechanisms like repeat purchase may be sufficient to ensure that the right level of quality is delivered (Klein and Leffler 1981). However, for a wide range of products, quality is not easily discerned with experience (*i.e.* credence goods). For instance, for food and drugs, the evidence suggests that consumers were often unable to accurately determine whether a product had been adulterated by the manufacturer; in this

instance, regulation by analytical chemists played an important role in assuring consumers of quality (Law 2003). In cases where goods are not purchased repeatedly, and/or fly-by-night operators are common, market forces may fail to solve the asymmetric information problem (Darby and Karni 1973; McCluskey 2000).

Along these lines, it is not clear whether advertising alone is sufficient to solve the asymmetric information problem since the effectiveness of advertising depends on the specific function that it serves. In general, advertising can reduce the extent of asymmetric information either by serving as a pure signal of quality, or by directly informing consumers about product characteristics. In some theoretical models of advertising (Nelson 1974; Schmalensee 1978; Milgrom and Roberts 1986), because advertising is a sunk cost, only high quality producers have an incentive to advertise in equilibrium. Hence, in these models, the information conveyed by advertising is not important; all that matters is that one advertises. Nelson (1974), among others, finds some empirical evidence in favor of this perspective. In other models, however, advertising may play a directly informative role in helping consumers determine product characteristics (Butters 1977; Grossman and Shapiro 1984). As a result, in these models, it is not sufficient that a firm advertise; it is also important that the firm's advertising be credible. In a setting where the credibility of advertising is suspect, advertising is unlikely to function effectively as a market mechanism for solving the asymmetric information problem.

In turn of the century America, most advertising was either by direct mail or in newspapers or magazines. Even by 1935, after the introduction of radio as an alternative medium for advertising, over 40 percent of all advertising was placed in newspapers and magazines and direct mail advertising comprised another 30 percent (Borden 1942, p. 54). Additionally, throughout this period, local advertising in newspapers and magazines constituted approximately 80 percent of all advertising in these media (Pease 1958, p. 14). While information on advertising costs is limited, it would appear that they were not substantial. Local and national firms advertised widely, as did firms producing products of varying qualities. Indeed, products like patent medicines, which were often produced by very small firms, were among the most heavily advertised products (Young 1967; Pope 1983). Since advertising was inexpensive and widely accessible to most firms,

advertising on its own was unlikely to function effectively as a pure signal of quality. In such an environment, much of the value of advertising therefore depended critically on its ability to convey specific information about product characteristics. However, if product characteristics were costly to verify, then the perception that advertising was not truthful could undermine the value of all advertising. Hence, the credibility of advertising became especially important in this period.

In fact, a close examination of the writings of advertisers during this period suggests that there were growing concerns about the credibility of advertising (Kenner 1936). Indeed, it was widely believed by the industry that advertising would be of little value if it were not perceived to be truthful by consumers and that the credibility of all advertising could be challenged by a few, untruthful ads. This sentiment was consistently expressed by the editors of *Printer's Ink*, the most widely circulated advertising trade periodical, who, in an April 1899 issue, wrote: "A slight misrepresentation in a single advertisement may often cast a shadow of doubt over all the advertiser's subsequent efforts, even though these be thoroughly reliable." (*Printer's Ink*, 26th April, 1899, p. 10). According to Pope (1983, p. 191) *Printer's Ink* believed that "[O]ne false statement in an advertisement would weaken its effect; one false advertisement would injure a seller's credibility permanently; one discredited advertiser would harm the advertising of all others." Hence, "bad advertising" that misrepresented various dimensions of product quality had the potential to impose a negative externality on all advertising. This view was labeled the rotten-apple theory of advertising and was widely endorsed by *Printer's Ink* and other advertising interests.

Recognition of this negative externality problem initiated action by various advertising interests—retailers, publishers, manufacturers—to reduce the incidence of misleading advertising. By the 1890s, *Printer's Ink*, among other advertising trade publications, was arguing that "[i]f every newspaper advertisement were strictly legitimate, the returns from advertising would show a marked improvement." (*Printer's Ink*, 11th April 1894, p. 432). This sentiment was echoed by local advertising clubs that emerged at this time to advise and inform businessmen about advertising techniques. In response to these claims, elements of the advertising trade attempted to control the quality of their advertisements. For instance, publishers of certain newspapers and

magazines, began to self-censor the advertisements placed in their publications. Examples of this include the *St. Louis Post-Dispatch*, which, in 1907, imposed the following condition in its advertising contracts: “The publishers of the *Post-Dispatch* reserve the right to revise or reject, at its option, any advertisement which it deems objectionable either in its subject matter or phraseology.” (Quoted in Kenner 1936, p. 222). The *New York Times* refused to publish advertisements that made certain types of claims about product quality. Similar policies were introduced by the *Chicago Tribune*, *Good Housekeeping*, the *Minneapolis Journal* and the *Philadelphia Public Ledger*. In retailing, businessmen like John Wannamaker who were pioneers in department store retailing, publicly committed themselves to truthful advertising of their merchandise (Pope, 1983, p. 188). Hence, initial efforts were made on the part of individual businesses to police the truthfulness of advertising.

However, by the early 1900s, it became clear that, while it might be in the interests of all advertisers to reduce the incidence of misleading advertising, it was costly for any individual business to improve the credibility of its own advertising. First, for publishers, forgone advertising revenues were substantial. In the late 1800s and early 1900s, earnings from advertising constituted an increasingly large percentage of total newspaper and magazine revenues. According to Census of Manufacturing figures, advertising revenues as a share of total newspaper and magazine earnings increased from 44 percent in 1880 to 65 percent in 1920 (US Bureau of the Census 1880, 1920). In testimony to Congress, officials from *Good Housekeeping* magazine estimated that their losses from refusing to print suspect advertising exceeded a million dollars (Pease 1958, p. 82). Hence, while some publishers may have been willing to self-censor the advertising printed in their journals to improve advertising credibility, most were not since the short term losses from refusing to print suspect advertising were significant. Second, for many products, the benefits of short term deception about product quality were enormous. Products like patent medicines, which were marketed as cure-alls for a wide range of ailments for which no true remedy was available, benefited enormously from deceptive advertising (Young 1967; Pope 1983). As Pope (1983, p. 187) notes: “[N]ostrum peddlers were notoriously deceitful advertisers, for honesty would usually have compelled them to admit that their drugs lacked curative power. In matters as uncertain

and emotion-laden as personal health experience was (and is) a fallible guide to truth, so worthless products might be bought again and again.” Producers of these kinds of products were therefore unwilling to improve the truthfulness of their advertising. For similar reasons, industry groups like the Proprietary Association were generally unwilling to discipline their members for placing misleading advertisements in newspapers and magazines. While industry groups often paid considerable lip-service to the benefits of improved advertising quality, more often than not these same groups refused to sanction their members who engaged in deceptive advertising (Pease 1958). Hence, because the costs of reducing the use of misleading advertising were born by individual firms, while the benefits of improved public perception of advertising were diffused across industry as a whole, a collective action problem emerged in which it was rational for many businesses to continue to rely on deceptive advertising.

It was in this milieu that the call for truth-in-advertising regulation was born. In the early 1900s, advertising groups like the Association of Advertising Clubs of America (AACA) were formed to encourage advertisers to shun false or misleading advertising and to educate firms about the benefits of truthful advertising (Kenner 1936; Pope 1983; Borden 1942). Diverse interests including manufacturers, retailers, publishers, advertising agents, and other parties that had a stake in the quality of advertising, were members of these groups. By 1910, these groups began to urge their members to press for state regulation of advertising to solve this collective action problem. In 1911, *Printer’s Ink* hired H.D. Nims, a New York lawyer, to author a model truth-in-advertising statute which made deceptive advertising a misdemeanor. According to this statute:

Any person, firm, corporation or association who, with intent to sell or in any wise dispose of merchandise, securities, service, or anything offered by such persons, firms, corporations, or associations, directly or indirectly, to the public for sales or distribution, or with the intent to increase the consumption thereof, or to induce the public in any manner to enter into any obligation thereto, or to acquire the title thereto, or an interest therein, makes, publishes, disseminates, circulates, or places before the public, or causes, directly or indirectly to be made, published disseminated, circulated or placed before the public, in the form of a book, notice, handbill, poster, bill, circular, pamphlet or letter or in any other way, an advertisement of any sort regarding merchandise, securities, service or anything so offered the public which advertisement contains, any assertion, representation, or statement of fact, which is untrue, deceptive or misleading, shall be guilty of a misdemeanor (quoted in Roper 1945, p. 291).

This model statute was endorsed by pro-advertising regulation groups and throughout the 1910s and early 1920s, the overwhelming majority of state governments enacted some version of it (see Table 1). The strictness of these truth-in-advertising laws varied across states (Roper 1945). In some places, the laws exempted publishers from liability; in others, the intent to deceive was required to successfully prosecute businesses placing misleading advertisements. Enforcement of these laws was largely left to local advertising clubs (which later became known as the Better Business Bureaus). These BBBs monitored local advertising, received complaints from consumers and other producers, investigated suspect ads, and used the threat of prosecution under these truth-in-advertising laws to induce compliance on the part of firms (Kenner 1936; Pope 1983; Pannell 2002).

III. Empirical analysis of the interest group determinants of state advertising regulation

In this section we attempt to determine empirically the key players behind the enactment of truth-in-advertising regulation at the state level. If the adoption of these regulations were the product of Progressive Era reformist sentiment, then proxies for reform interests should be correlated with the timing and characteristics of state regulation. On the other hand, as the historical evidence suggests, business groups concerned with and directly affected by the credibility of advertising were the critical constituencies in favor of regulation. This alternative view suggests that advertising interests should influence the adoption of regulation. Hence, by exploiting cross-state variation in the characteristics of truth-in-advertising regulation and the strength of advertising and Progressive reform interests across states, we explore one implication of the rotten-apple hypothesis.

In order to test these hypotheses, we collected data from *State Session Reports* and from Roper (1945) on the timing and content of state truth-in-advertising statutes. For each state, we know the year in which legislation was enacted, and the strictness of its legislation in terms of whether intent to deceive was required to successfully prosecute false advertisers. To proxy for the relevant interest groups, we collected data from the 1909 *Census of Manufacturers* and the *Historical Statistics of the United States*. The

specific proxies we construct are as follows. We use advertising revenues in newspapers and magazines per capita to capture the influence of advertising interest groups, and we use the percentage of the popular vote in favor of the Progressive Party in 1912 to measure the influence of Progressive era reformers. We included the value of patent medicines per capita to measure the influence of patent medicine manufacturers, who were most likely to be adversely affected by advertising regulation. Additionally, we included data on the per capita production of prepared foods, confectioneries, and tobacco, since these were nationally marketed and highly advertised products (Borden 1942, p. 67). Ideally, we would like to include separate proxies for retailers, manufacturers, and publishers to capture the various dimensions of the truth-in-advertising lobby. Unfortunately, systematic data on retailing is not available until the 1930s, and we do not have information on the level of advertising expenditures of various manufacturing groups. However, we believe that per capita advertising revenues in newspapers and magazines should be a reasonable proxy for the combined influence of all of these groups for the following reasons. First, as noted earlier newspapers and magazines were the largest advertising medium at the time. Second, because revenues from advertising were a substantial portion of total newspaper and magazine earnings, this variable is likely to capture the interests of publishers. Third, since these revenues are also a reasonable proxy for the total advertising expenditures by retailers and manufacturers, advertising revenues per capita should also measure the influence of other businesses who advertised.

Table 2 displays descriptive statistics for each of these variables. LEG is a binary variable that equals 1 if a state introduced a truth-in-advertising law, and 0 otherwise. STRENGTH is a count variable that equals 0 if the state did not enact a law, 1 if it enacted a “weak” law, and 2 if it enacted a “strong” law. We define a “strong” law as one that did not require the prosecution prove intent to mislead. LEG_YEAR is the year in which a state enacts its truth-in-advertising statute. ADS_PERCAP is the per capita value of newspaper and magazine advertising revenues in 1909. PATENT_PERCAP is the per capita value of patent medicines in 1905. Similarly, CANDY_PERCAP, TOBACCO_PERCAP, and PREPFOOD_PERCAP are the per capita values of

confectionery, tobacco, and prepared food production in 1909. SHARE_PROGRESSIVE is the percentage of the popular vote for the Progressive Party in 1912.

Regression results are displayed in Table 3. To take advantage of the information we have on the timing and characteristics of state advertising regulation, we estimated three different econometric models. In the first model (column 1), we estimate a logistic regression where the dependent variable is LEG. In the second model (column 2), we estimate an ordered probit, using STRENGTH as the dependent variable. Finally, in the third model (column 3), we examine the timing of adoption using LEG_YEAR as the dependent variable in an ordinary least squares regression.

The refutable implications of our hypotheses are as follows. If Progressive reform interests were behind the adoption of state truth-in-advertising legislation, then the coefficient on SHARE_PROGRESSIVE should be positive and significant for models 1 and 2 and negative and significant in model 3; the likelihood that states adopt a truth-in-advertising statute, and the overall strength of regulation should be increasing in the vote for the Progressive Party, and states where Progressive reform interests were stronger should enact legislation sooner. If advertising interests were important determinants of regulation, then the coefficient on ADS_PERCAP should be positive and significant for the first two econometric models and negative and significant in the third model. States where advertising per capita was greater should be more likely to adopt regulation, should be more likely to enact strong regulation, and should enact regulation sooner. Since patent medicine manufacturers were likely to be adversely affected by truth-in-advertising regulation, we expect that the coefficient on PATENT_PERCAP should be negative for models 1 and 2 and positive for model 3. Presumably, patent medicine manufacturers should have lobbied against legislation, and states where patent medicines were relatively important should enact regulation later.

Overall, the regression results are roughly supportive of the rotten-apple hypothesis, which posits that business groups most directly concerned about advertising credibility should be the strongest supporters of regulation. The coefficient on ADS_PERCAP is positive and statistically significant in models 1 and 2 and negative but not significant in model 3. Progressive reform interests appear not to have been important determinants of the adoption and strength of regulation, although they did influence the

timing of regulation. Finally, we find that patent medicine interests did not have a statistically significant effect on the timing, adoption, and strength of advertising regulation, although the coefficient on PATENT_PERCAP does have the correct sign in each of the regressions.

In terms of economic significance, our logit results indicate that a \$1 increase in real per capita advertising in 1909 increased the probability that a state enacted some kind of advertising legislation by only 0.8 percent, holding each of the independent variables at their means. Based on the ordered probit coefficient estimates, however, a \$1 increase in real per capita advertising raised the probability of enacting a strong law by 4.8 percent, and reduced the probability of enacting no law by 1.7 percent. This would suggest that what advertising interests sought was a strong advertising law that would allow for the effective prosecution of misleading advertisers. Although Progressive reform interests do not appear to have influenced the enactment or strength of advertising regulation, the OLS regression on the timing of advertising regulation suggests that an increase in the share of the Progressive vote by 10 percent induced states to enact regulation sooner by approximately 1 year.

As noted earlier, ADS_PERCAP measures the combined influence of all the business groups who may have been part of the truth-in-advertising regulation lobby. Data limitations make it difficult to construct proxies for each of the relevant business groups. In an attempt to tease out the separate influence of newspaper and magazine publishers, we re-estimated models 1, 2 and 3 including the number of publishers per capita (PUB_EST_PERCAP) among the independent variables. Since ADS_PERCAP is highly correlated with PUB_EST_PERCAP, a potential collinearity problem arises if we include both variables in each regression. To solve this problem, we constructed a variable called R_ADS_PERCAP to measure the influence of non-publisher business groups. R_ADS_PERCAP are the residuals from a regression of ADS_PERCAP on PUB_EST_PERCAP and a constant term. Econometrically speaking, R_ADS_PERCAP is the portion of ADS_PERCAP not explained by PUB_EST_PERCAP. We interpret this variable as measuring the strength of non-publishing advertising interests.

We find qualitatively similar results when we use these two variables to measure the influence of publisher and other business interest groups. Specifically, our regressions

indicate that the number of publishers per capita was the influential group, and that other business interests (as reflected by the residual variable) were not significant determinants of state advertising regulation. The coefficients on the other control variables were similar (in both sign and significance) to those results reported in Table 3.

In summary, we find evidence that advertising interests were systematic determinants of the characteristics of state advertising regulation. Progressive reform interests appear to have influenced the timing, but not the strictness of these regulations. These results suggest that a coalition of business groups and Progressives influenced different aspects of state regulation and are broadly consistent with other scholarship on Progressive era regulation (Fishback and Kantor 1998; Law and Libecap 2003).

IV. Effects of state truth-in-advertising regulation on advertising expenditures

In this section, we analyze the effect of advertising regulation on advertising revenues of newspapers and magazines. Recall that, according to the rotten-apple theory, bad advertising imposed a negative externality on all advertising. Hence, if truth-in-advertising regulation improved the credibility of advertising, regulation should reduce the externality problem and the returns to advertising should increase. Hence, another way to test the rotten-apple hypothesis is to examine the relationship between advertising regulation and the volume of advertising investments. If advertising regulation increases the returns to advertising, the level of investment in advertising should increase following regulation.

We do not have direct information on total advertising investments by firms or by states. However, as noted earlier, we do have census data on the advertising revenues of newspapers and magazines in each state in each census year. Given that the largest portion of advertising revenues was earned by these forms of print media during this period, this should be a reasonable proxy for the volume of advertising investments.

Hence, we collected data on advertising revenues in newspapers and magazines in 1899, 1909, 1919, and 1929, and converted these figures to real 1967 dollars using the CPI. We then scaled this data by population to obtain per capita figures, and matched this with data on the timing of state advertising regulation to examine the effect of state advertising regulation on advertising revenues using a fixed effect model. In this

framework, the rotten-apple hypothesis implies that, other factors held constant, advertising regulation should increase real per capita advertising revenues.

An endogeneity problem is likely to arise with respect to our truth-in-advertising regulation index variable. One might imagine that states where real advertising revenues per capita are high might be more inclined to introduce regulation (because advertising interests are more influential in such states, or because advertising itself is more deceptive in these places). Indeed, our analysis in the previous section suggests that this was in fact the case. A positive correlation therefore exists between the regulation indicator variable and the error term. Thus, OLS estimates of the effect of state advertising regulation on advertising revenues may be overestimated. To address this, we instrument for advertising regulation. An ideal instrument should be correlated with the likelihood that advertising regulation is introduced in a given state, but not correlated with real advertising revenues per capita in that state. To instrument for advertising regulation, we constructed an index which measures the number of occupations (out of a total of eleven) that were licensed by each state in each year. In the early 1900s, state level occupational licensing became increasingly common throughout America (Law and Kim 2004). In addition, since public utility regulation was also increasing at this time, we included an indicator variable that equals 1 if a state had introduced electricity regulation in a given year. States that licensed several occupations and/or introduced electricity regulation may have been more likely to enact advertising regulation (since such states tended to introduce more regulations overall) but there is no obvious reason why these instruments should be correlated with real per capita advertising revenues. Data on occupational licensing was taken from Council of State Governments (1952), while information on electricity regulation was obtained from Stigler and Friedland (1962).

Table 4 presents descriptive statistics for our regression variables. We control for urbanization (URBANIZATION) to account for the fact that advertising may have been more intensive in states that were urban. We expect this to be the case for two reasons. First, the presence of retail chains, which utilized advertising heavily (Kim 2001) was more widespread in urban regions. Second, because anonymous exchange was more prevalent in urban areas, advertising may have been more intensive in urban states. We also control for the percentage of the population that was illiterate in each state

(PERCENT_ILLITERATE). Presumably, advertising in newspapers and magazines was directed at the literate population. Hence, increases in illiteracy should reduce the intensity of advertising in these media. Real per capita income (REAL_INCOME_PERCAP) is also included to account for the possibility that advertising per capita was higher in states with higher income and consumption levels. We also include state fixed effects to sweep out any state-specific factors that influenced the level of advertising expenditures per capita. Finally, we use our occupational licensing index (OCCUP_REG) and the electricity regulation binary variable (ELECTRIC_REG) as instruments for advertising regulation.

Two stage least squares (2SLS) regressions results with state fixed effects are displayed in Table 5. ADVERTISING_REG is a binary variable that equals 1 if a state had introduced a strong version of the *Printer's Ink* model statute in a given year and 0 otherwise. We treat states that introduced weak versions of this law as equivalent to those that did not introduce any law, since the requirement that fraud be proven made enforcement very difficult in these states (Kenner 1936). Our results indicate that advertising regulation had a positive and significant impact on real advertising revenues per capita. Taken literally, the point estimate implies that the introduction of state advertising regulation, as instrumented by our occupational licensing index and by the presence of state electricity regulation, increased per capita advertising by \$3.30 (1967=100), which is an economically significant increase; across all states and all years, per capita advertising expenditures were \$7.26. The coefficient estimates also show that increases in real per capita income and urbanization levels increased the level of advertising expenditures as expected. Hence, these regression results are consistent with the rotten-apple hypothesis, which implies that advertising regulation should increase investment in advertising.

These regression results appear to be robust to alternative specifications. When we estimated the regressions using OLS as opposed to 2SLS, we still find the coefficient on advertising regulation to be positive and significant. Additionally, we also attempted to adjust for market size by scaling real advertising expenditures using data on newspaper and magazine circulation. Qualitatively similar results were obtained with this variable. Finally, we re-estimated our 2SLS model using a more inclusive binary variable for

advertising regulation which equals 1 if a state introduced any kind of truth-in-advertising law and found that regulation had a smaller effect (\$2.26) on per capita advertising revenues. Hence, the estimation results consistently support the predictions of the rotten-apple hypothesis.

V. Effects of the Federal Trade Commission (FTC) Act of 1914 on advertising expenditures

In 1914, the US federal government enacted the Federal Trade Commission Act (1914), which created the Federal Trade Commission as a regulatory agency. Although this act gave the commission broad authority over various aspects of competition, authority over advertising was not explicitly mentioned in this statute. Nevertheless, within a brief period of time, the commission became interested in fraudulent advertising. Although state and local advertising interests had played no role in lobbying for the FTC Act, by 1917 the FTC had met with state and local advertising clubs about the problem of misleading advertising. Evidence from FTC caseloads suggests that investigations into product misrepresentation became an increasingly important to the FTC. According to information presented in Watkins (1940), by 1919, over 11 percent of the FTC's caseload was related to product misrepresentation, and this share increased dramatically over the next decade. Hence, passage of the FTC Act may have had some effect on the credibility of advertising.

We can analyze the specific effect of the FTC Act on per capita advertising revenues by taking advantage of the fact that, prior to 1914, some states had already enacted state level truth-in-advertising regulation. By comparing the impact of the FTC Act on states that had introduced regulation prior to 1914 with those that had not, we can conduct a difference-in-differences (DID) analysis of the effect of federal advertising regulation. It is important to point out that advertising interests played virtually no role in the enactment of the FTC Act. Thus, we feel justified in treating the FTC Act as an exogenous shock to the advertising industry.

Table 6 shows displays the DID analysis of the effects of the FTC Act. We find that the 1919 level of real per capita advertising was greater than the 1914 levels in all states. Interestingly, we also find that the FTC Act increased the level of real per capita

advertising expenditures by more in states that had already enacted regulation than in states that had not. Controlling for illiteracy, urbanization, and real per capita income, does not change the results significantly. Why would the level of advertising increase by more in states that already had advertising regulation?

We believe that this result is suggestive of complementarities in enforcement of truth-in-advertising standards. Recall that local BBBs emerged in order to enforce state advertising regulations. These groups induced firms to improve the truthfulness of their advertising by using the threat of prosecution under state law. The enactment of the FTC gave these groups an additional stick to use in enforcement. The presence of a federal act was likely to serve as a more credible signal that misleading advertising was not acceptable. Additionally, local BBBs were limited in their ability to enforce state level truth-in-advertising regulation on firms that produced nationally distributed goods prior to the enactment of a federal law. Historical evidence suggests that local BBBs, through their national network, were often willing to support FTC investigations, and may have initiated complaints to the FTC about misleading advertising (Pope 1983; Pease 1958). Hence, it is not surprising that the FTC Act had its greatest impact on advertising in states where mechanisms for enforcement were already in place since there may have been complementarities in state and federal enforcement of truth-in-advertising standards.

VI. Conclusion

During the late 1800s and early 1900s, specialization, growing product sophistication, and the rise of impersonal exchange created a role for advertising as a mechanism through which producers could communicate aspects of product quality to consumers (Kim 2001). In a world where consumers knew less and less about the products they were purchasing, advertising was an efficient way through which producers could communicate aspects of product quality to consumers. Hence, it is not surprising that this period witnessed a dramatic increase in the volume of advertising.

The value of advertising of communication device was well understood by advertising interests. Indeed, these groups quickly understood that the usefulness of advertising would be undermined if advertising was perceived to be misleading or deceptive, and they argued that false advertising by one advertiser had the potential to

undermine the credibility of all advertising. Hence, advertising interests quickly organized to curb misleading and untruthful advertising, first through self-censure, and later, through government regulation.

In this paper we present evidence which suggests that regulation was demanded by advertising interests in order to curb bad advertising, and that truth-in-advertising regulation may indeed have improved the credibility of advertising overall. An empirical examination of the determinants of state-level truth-in-advertising statutes suggests that advertising interests were the key constituency behind regulation; more general Progressive reform interests played a more marginal role in influencing the enactment of state regulation. Additionally, we estimate the effect of state and federal advertising regulation on per capita advertising expenditures and find a positive relationship between regulation and the volume of advertising expenditures. We interpret these results as implying that truth-in-advertising regulation may have played an important role in improving the credibility of advertising.

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Table 1: Adoption of truth-in-advertising legislation by year

Year	States enacting legislation
1912	MA ^{a, c}
1913	CT ^{a, c} , IA ^c , IN ^c , MI ^c , MN, ND, NE, NJ, OH, PA ^{a, c} , SD ^a , UT ^a , WA ^c , WI
1914	LA, MD ^a , RI
1915	AL, CA ^a , CO ^c , ID, IL, KS ^c , MO ^c , MT ^a , NC ^a , NY ^b , OK, TN ^a , WV
1916	VA
1917	KY, OR ^c , WY ^c
1919	AZ ^a
1921	TX ^a
1924	SC ^a
1925	NH ^a
1927	FL ^a
1931	VT ^a

^a Denotes that the law required that the intent to defraud the consumer be proven for successful prosecution. States without a superscript did not require fraud to be proven to successfully prosecute misleading advertising

^b For NY, the law initially required that the intent to defraud the consumer be proven, but this was later changed in 1921 to require only that the consumer be deceived.

^c Indicates that publishers were exempted from liability.

Notes: Information on the year in which legislation was adopted is taken from the *State Session Reports* for the various states. Information on whether fraud be proven was taken from Roper (1945).

Table 2: Descriptive statistics

Variable	Mean	Std. Dev.	Min	Max
LEG	0.89	0.31	0	1
STRENGTH	1.44	0.68	0	2
ADS_PERCAP	6.23	4.19	0.89	21.08
LEG_YEAR	1915.73	4.16	1912	1931
PATENT_PERCAP	1.95	2.68	0	10.69
CANDY_PERCAP	3.93	4.34	0	19.38
PREPFOOD_PERCAP	3.20	4.24	0	16.31
TOBACCO_PERCAP	12.02	19.59	0	106.12
SHARE_PROGRESSIVE	0.25	0.10	0	0.50

Notes: Data on LEG, STRENGTH, and LEG_YEAR were taken from *State Session Reports* and Roper (1945). Data on SHARE_PROGRESSIVE were from the *Historical Statistics of the United States*. All other data are from 1909 *Census of Manufacturers*.

Table 3: Determinants of state advertising regulation

	(1) Logit estimates (LEG)	(2) Ordered probit estimates (STRENGTH)	(3) OLS estimates (LEG_YEAR)
ADS_PERCAP	0.87** (0.35)	0.12** (0.06)	-0.07 (0.13)
PATENT_PERCAP	0.29 (0.22)	-0.01 (0.05)	0.72 (0.46)
CANDY_PERCAP	-0.09 (0.10)	-0.06* (0.03)	-0.36*** (0.13)
PREPFOOD_PERCAP	-0.05 (0.16)	0.08 (0.06)	-0.34** (0.16)
TOBACCO_PERCAP	0.04 (0.03)	0.002 (0.007)	0.03 (0.04)
PERCENT_PROGRESSIVE	0.77 (4.71)	0.50 (1.62)	-10.76* (5.88)
Pseudo-R ² / Adjusted R ²	0.36	0.11	0.42
N	48	48	41

Notes: Robust-standard errors are reported in parentheses. Significance at the 10, 5, and 1 percent levels are denoted by *, **, and *** respectively. Constant terms were included but are not reported. The Pseudo-R² are reported in columns 1 and 2, while the Adjusted R² is reported in column 3.

Table 4: Descriptive statistics for fixed-effect regressions

Variable	Mean	Std. Dev.	Min	Max
ADS_PERCAP	7.27	5.88	0.50	39.56
PERCENT_ILLITERATE	7.85	7.76	0.80	38.50
URBANIZATION	0.39	0.21	.042	0.92
REAL_INC_PERCAP	1051.99	404.38	288.00	2269.01
OCCUP_REG	4.65	2.36	0	11
ELECTRICITY_REG	0.40	0.49	0	1

Notes: ADS_PERCAP was taken from the *Census of Manufactures* (1899, 1909, 1919, 1929). PERCENT_ILLITERATE and URBANIZATION were taken from *Census of Population* (1899, 1909, 1919, 1929). REAL_INC_PERCAP is from Kuznets and Brady (1965). 1910 values were imputed. OCCUP_REG was constructed using data in Council of State Governments (1952). ELECTRICITY_REG is from Stigler and Friedland (1962).

Table 5: Two stage least squares fixed effect regression estimates of the effects of state advertising regulation

	2SLS fixed effect estimates
ADVERTISING_REG	3.30** (1.54)
URBANIZATION	8.23** (3.90)
REAL_INC_PERCAP	0.009*** (0.002)
PERCENT_ILLITERATE	0.08 (0.07)
Number of observations	192
Overall R ²	0.59

Notes: Standard-errors are in parentheses. Fixed effects and a constant term were included but are not reported.

Table 6: Difference-in-difference analysis of the effects of the Federal Trade Commission Act

	States without advertising regulation by 1914 (1)	States with advertising regulation by 1914 (2)	Column (2) - Column (1)
Pre-FTC Advertising Regulation (1914)	5.66 (0.79)	7.56 (0.68)	1.89 (1.26)
Post-FTC Advertising Regulation (1919)	6.04 (0.78)	8.50 (0.87)	2.45* (1.30)
Post-FTC (1919) – Pre-FTC (1914)	0.38** (0.16)	0.94*** (0.31)	0.56* (0.31)
			DID estimate

Notes: Standard errors are in parentheses. Sample sizes are 33 for column (1) and 15 for column (2).