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

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Abstract

This paper explores the origins and effects of truth-in-advertising regulation during the Progressive Era. Was advertising regulation adopted in response to rent seeking on the part of firms that sought to limit the availability of advertising as a competitive device, or was advertising regulation desired because it furnished a mechanism through which firms could improve the credibility of advertising? We find the available evidence to be more consistent with the latter hypothesis.

1. Introduction

State regulation of advertising emerged in the early twentieth century. These laws represented the first broad effort to regulate commercial speech and formed the foundation of subsequent advertising regulation in America. Under the rubric of the truth-in-advertising movement, a coalition of reformers representing manufacturing, retailing, and publishing interests lobbied state governments to enact legislation that made false advertising a misdemeanor. In this paper, we explore why these regulations emerged, why these particular interests sought regulation, and what effects these regulations had.

Regulation often is viewed as the product of rent seeking by producer interests seeking entry barriers that increase their profits at the expense of overall welfare

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(Stigler 1971; Peltzman 1976).[1] Politically organized producers may seek regulation to reduce the number of firms in a market, limit the availability of substitutes, or constrain the strategic options available to competing firms. In the context of truth-in-advertising regulation, we examine two such hypotheses. The first argues that regulation served the interests of a broad coalition of producers and retailers that collectively sought to limit the use of advertising as a competitive device. The second explanation posits that regulation was desired by a subset of smaller, local producers that wanted to competitively disadvantage the growth of larger, national brands through the regulation of advertising copy.

An alternative explanation for the emergence of truth-in-advertising regulation posits that the pressure for state-level advertising regulation reflected a real, albeit subtle, concern about the potentially negative consequences of misleading advertising. The rotten-apple hypothesis, which has been advanced by historical literature on the advertising industry, argues that advertising regulation was adopted because it furnished a mechanism through which firms could improve collectively the credibility of advertising (Kenner 1936; Pease 1958; Pope 1983). During this period, false advertising was perceived to be harmful not only to consumers, who might be misled, but also to businesses, because it created a negative externality that reduced the returns from all advertising. Thus, regulation was sought by a broad coalition of business interests that sought to contain the negative effects of untruthful advertising on advertising credibility. This hypothesis, like the first two, is based on rent seeking because it involves producers lobbying the state for regulation that would create private benefits, but, in this case, rent seeking also generated benefits for consumers by way of improved information about product quality.

To test these hypotheses, we take advantage of cross-state and temporal variations in the introduction of advertising regulation at the state level. We investigate the causal relationships among advertising regulation, the level of advertising expenditures (a proxy for total investment in advertising by firms), and the composition of advertising expenditures. According to the first hypothesis, regulation should reduce the level of investment in advertising. The second hypothesis argues that advertising regulation should shift advertising away from national outlets (magazines) and toward more local outlets (newspapers). The last hypothesis posits that, by improving the credibility of advertising, regulation should increase investment in advertising. We find that state advertising legislation significantly increased the level of real advertising expenditures per capita at the state level, after controlling for other factors. We find no evidence that regulation shifted advertising away from magazines and toward newspapers. Finally, we find that the Federal Trade Commission (FTC) Act of 1914 (15 U.S.C. secs. 41–58) had a more positive effect on real advertising expenditures per capita

[1] Since publication of Kolko (1963), scholars have argued that Progressive Era regulations such as railroad regulation, meat inspection, antitrust laws, and blue sky laws were enacted to tilt the competitive playing field in ways that benefited certain producer groups, harmed consumers, and lowered welfare (Gilligan, Marshall, and Weingast 1989; Libecap 1992; Mahoney 2003).

in states that had already enacted a truth-in-advertising law. We believe that this body of evidence supports the third hypothesis, because it suggests that regulation increased firms' willingness to invest in advertising.

2. Historical Background

Falling transportation costs during the late nineteenth and early twentieth centuries made possible tremendous increases in specialization (Kim 1998, 2000). Although specialization increases the gains from trade, specialization also comes at the cost of asymmetric information about product quality. 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). Market mechanisms play a key role in reducing informational asymmetries. Nonsalvageable investments in reputation, such as brand-name development and advertising, are important factors in the signaling of quality to consumers (Nelson 1974; Schmalensee 1978; Klein and Leffler 1981; Milgrom and Roberts 1986). Thus, it is not surprising that the widespread use of advertising and the proliferation of brand names and multiunit retail chains occurred during this period of rapid specialization and increased asymmetric information about product quality (Kim 2001).[2] In fact, during this period, a new group of middlemen—namely, advertising agents—emerged first to negotiate advertising rates with newspapers and magazines on behalf of manufacturers and distributors and later to develop more persuasive forms of advertising copy (Pease 1958).

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, more than 40 percent of all advertising was placed in newspapers and magazines, and direct-mail advertising comprised another 30 percent (Borden 1942, p. 54). Although information on advertising costs is limited, the available evidence indicates that costs were not substantial. Local and national firms advertised widely, as did firms that produced products of varying qualities. In fact, products like patent medicines, which often were produced by very small firms, were among the most heavily advertised products (Young 1967; Pope 1983). Although the low cost of advertising and the tremendous growth in its volume suggest that, in general, business found advertising to be an effective marketing device, reservations about the truthfulness of advertising copy were expressed increasingly by a broad coalition of business in-

[2] Although accurate estimates of the growth of advertising are scarce, the available figures do suggest its rapidly growing importance. For instance, according to estimates reported by Borden (1942, p. 48), advertising revenues per capita for periodicals and newspapers in America increased dramatically, from 78¢ per capita in 1899 to more than $5 per capita in 1919. This increase in advertising revenues was not due merely to increases in the price of advertising space but to increases in quantities. In Boston, the total lines of advertising in four major daily newspapers increased from approximately 25 million lines in 1914 to 46 million lines in 1924 (Boston Globe 1925, p. 10). *Printers' Ink* (1914, p. 100) reported that, between 1911 and 1914, the number of agate lines of July advertising in 16 major women's magazines increased from 178,000 to 212,000.

terests. From the late 1880s onward, this coalition, which was spearheaded by advertising agents and publishers of newspapers and magazines, began to call for greater monitoring of advertising claims. These concerns were expressed repeatedly in trade publications like *Printers' Ink*, the most widely distributed advertising journal.

In this milieu, the call for truth-in-advertising regulation was born. In the early 1900s, advertising groups like the Association of Advertising Clubs of America were formed to encourage advertisers to shun false or misleading advertising and to educate firms about the benefits of truthful advertising. Diverse interests, including manufacturers, retailers, publishers, and advertising agents, that had a stake in the quality of advertising were members of these groups. Important leaders included Samuel Dobbs, sales manager for Coca-Cola; John Romer, editor of *Printers' Ink*; Joseph Appel, advertising manager for the retail chain John Wanamaker's; and H. J. Kenner, a former reporter and advertising manager (Kenner 1936; Pope 1983; Borden 1942). By 1910, these groups began to urge their members to press for state regulation of advertising. In 1911, *Printers' Ink* hired H. D. Nims, a New York lawyer, to author a model truth-in-advertising statute that made deceptive advertising a misdemeanor. This statute included the following:

> 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 groups that supported advertising regulation, and, throughout the 1910s and early 1920s, an overwhelming majority of state governments enacted some version of it (Table 1). Enforcement of these laws was left mostly to local advertising clubs (which later became known as the Better Business Bureaus [BBBs]). These BBBs monitored local advertising, received complaints from consumers and other producers, investigated suspect advertisements, and used the threat of prosecution under these truth-in-advertising laws to induce compliance by firms (Kenner 1936; Pope 1983). Because the BBBs were able to threaten misleading advertisers with prosecution under truth-in-advertising regulation, compliance was achieved mostly without lawsuits.[3] The

[3] For instance, in Minneapolis in 1917, only three of 137 cases investigated by the local Better

Table 1
Adoption of Truth-in-Advertising Regulation, by Year

Year	States Enacting Regulation
1912	Massachusetts[a,b]
1913	Connecticut,[b] Iowa,[b] Indiana,[b] Michigan,[b] Minnesota, North Dakota, Nebraska, New Jersey, Ohio, Pennsylvania,[a,b] South Dakota,[a] Utah,[a] Washington,[b] and Wisconsin
1914	Louisiana, Maryland,[a] and Rhode Island
1915	Alabama, California,[a] Colorado,[b] Idaho, Illinois, Kansas,[b] Missouri,[b] Montana,[a] North Carolina,[a] New York, Oklahoma, Tennessee,[a] and West Virginia
1916	Virginia
1917	Kentucky, Oregon,[b] and Wyoming[b]
1919	Arizona[a]
1921	Texas[a]
1924	South Carolina[a]
1925	New Hampshire[a]
1927	Florida[a]
1931	Vermont[a]
After 1931	Maine and Nevada

Sources. Information on the year in which legislation was adopted is taken from the *State Session Reports* for the various states. Information on whether fraud needed to be proved was taken from Roper (1945).
Note. In New York and Connecticut, the law initially required that intent to defraud the consumer be proved but was later changed, in 1921 and 1923, respectively, to require only that the consumer be deceived.
[a] The law required that intent to defraud the consumer be proved for successful prosecution of misleading advertising.
[b] Publishers were exempt from liability.

fact that the constitutionality of state truth-in-advertising legislation was challenged in state courts suggests that the efforts of the BBBs to enforce these laws against misleading advertisers were quite effective (Pannell 2002). The constitutionality of these laws was never overturned in state or federal courts. Thus, while enforcement of truth-in-advertising regulation was mostly informal, it was quite successful.

3. Three Hypotheses for Advertising Regulation

The first hypothesis that we examine argues that truth-in-advertising regulation conferred competitive advantages on producers by collectively limiting the use of advertising as a competitive device. A significant body of evidence demonstrates that the prices of goods and services in places that restrict advertising tend to be higher than those in places that do not restrict advertising (Benham 1972; Cady 1976; Kwoka 1984; Milyo and Waldfogel 1999). This evidence is sometimes invoked as an explanation for why associations representing doctors, lawyers, and other professional groups often seek regulation that limits adver-

Business Bureau (BBB) resulted in prosecution; in 1920, only six of 241 cases investigated were prosecuted (Pannell 2002, p. 13). For the year ending May 1921, only 51 of the 6,815 cases handled by local BBBs throughout the country resulted in prosecution (Pease 1958, p. 46).

tising. Although organized producers such as professional associations may be able to obtain advertising regulation specific to their industry, a general truth-in-advertising law has the potential to benefit a broader group of producers and may be easier to cloak in the public interest. If truth-in-advertising regulation also succeeded in reducing the extent of advertising by raising the cost of advertising, firms in many industries might have an incentive to seek such regulation because it would result in less competition and higher retail prices. Under this hypothesis, advertising regulation should shift inward the derived demand for advertising space and should reduce the quantity of advertising, if other factors are held constant.

A second hypothesis posits that regulation was desired by a subset of smaller, local producers that wanted to competitively disadvantage the growth of larger, national brands through the regulation of advertising copy. The early twentieth century witnessed the rise of large, national firms that were able to obtain economies of scale and scope in the production of a wide range of goods and services. Smaller, local producers often found themselves at a competitive disadvantage with respect to these larger firms. State-level regulations such as meat inspection, antitrust laws, and chain-store taxes often were sought by local firms seeking to stem the competitive threat posed by these larger firms (Ross 1986; Libecap 1992). Kim (1999) demonstrates that large, multiunit firms obtained significant economies of scale by marketing and advertising their products. Was truth-in-advertising regulation motivated by a desire on the part of small, local firms to limit the competitive advantage enjoyed by larger, national brands?

To evaluate this hypothesis, we examine how advertising regulation affected the composition of advertising volumes. If state-level advertising regulation disadvantaged national brands, we would expect the share of advertising by national brands to decline and the share of advertising by local producers to increase. Unfortunately, systematic data on the national versus local composition of advertising are not available. However, we were able to collect advertising revenue data separately for newspapers and magazines. Since magazine advertising consisted primarily of national brands, while local firms dominated newspaper advertising, we can create a proxy for national and local advertising shares (Pease 1958). Under this second hypothesis, the share of total advertising placed in magazines should decline after the enactment of advertising regulation.

A third hypothesis is that regulation was sought by various interests to eliminate rotten-apple advertisements that threatened the credibility of all advertising. According to this hypothesis, advertising regulation was desired as a solution to a negative externality problem caused by a few misleading advertisements. Because advertising was inexpensive and widely available to most firms, the mere expenditure of resources on advertising was not a reliable signal of quality. In such an environment, much of advertising's value depended on its credibility as a mechanism for conveying information about product characteristics. Misleading advertisements that reduced the credibility of advertising were perceived to be harmful not only to consumers but also to other businesses, since they

reduced the value of advertising as a marketing device.[4] Regulations that made it more costly to place misleading or untruthful advertisements were desired in order to eliminate this negative externality.[5]

With regard to advertising regulation, a refutable implication of the rotten-apple hypothesis is that regulation should improve the credibility of advertising. It is not possible to directly measure the credibility or truthfulness of advertising in an objective manner. However, we can indirectly infer the effect of regulation on the credibility of advertising by examining the relationship between regulation and the level of investment in advertising (Sauer and Leffler 1990). If regulation improves the credibility of advertising, it should increase returns from advertising, shift outward the derived demand for advertising space, and increase the quantity of advertising, other factors being equal.

4. Empirical Analysis

4.1. Effects of State-Level Advertising Regulation

The three hypotheses outlined generate different predictions regarding the relationship between advertising regulation and the quantity of advertising. The testable implication of the first hypothesis is that regulation limits competition and reduces the level of advertising. According to the second hypothesis, regulation shifts advertising away from national media (magazines) and toward local media (newspapers). The third hypothesis predicts that, by improving the credibility of advertising, regulation increases the level of advertising. In this section, we test these hypotheses by taking advantage of cross-state and temporal variations in the adoption of state-level truth-in-advertising regulation. Our data consist of a balanced panel of state-year observations taken from the Census of Manufactures for 1899, 1909, 1914, 1919, 1923, and 1929.

To test these hypotheses, we examine the effects of advertising regulation on the level and composition of advertising revenues. Ideally, we would analyze the impact of regulation on the quantity of advertising placed by producers and

[4] In 1894, *Printers' Ink* argued that "[i]f every newspaper advertisement were strictly legitimate, the returns from advertising would show a marked improvement" (quoted in Pope 1983, p. 192). Advertising industry executives apparently believed that untruthful advertising was a negative externality for all advertising. Although certain retailers and publishers attempted to self-censor their advertising copy (Pope 1983, p. 188), it soon became clear that it was costly for any individual business to improve the credibility of its own advertising. First, for publishers, forgone advertising revenues were substantial. Officials from *Good Housekeeping* magazine estimated that their losses from refusing to print suspect advertising exceeded a million dollars between 1912 and 1930 (Pease 1958, p. 82). Second, for products like patent medicines, foods, textiles, and furniture, the benefits of short-term deception about product quality were large (Watkins 1940; Young 1967). Thus, trade associations were unwilling to discipline their members for misleading advertisements. Self-censure at the firm or industry level, therefore, was not a viable solution.

[5] The potential to be sued in the courts for selling defective products to customers also should discipline firms. However, during the Progressive Era, the courts generally did not protect the rights of consumers who were harmed by producers. Glaeser and Shleifer (2003), for instance, argue that the disproportionate influence of large business during the Progressive Era made the court system an unsuitable arena for the resolution of disputes between consumers and firms.

retailers. Although we do not have systematic data on advertising quantities, it is sufficient for our purposes to examine the effect of regulation on advertising revenues.[6] When the supply curve for advertising space is constant, an inward shift in derived demand for advertising space should reduce the quantity of advertising and total advertising revenues, and an outward shift in derived demand should increase both the quantity of advertising and total advertising revenues. Thus, we can identify changes in quantities by examining changes in revenues.

This seems like a plausible empirical framework because truth-in-advertising laws made it more costly for manufacturers and retailers to advertise but did not make the printing of false advertisements more costly for publishers. In fact, in many states, publishers were explicitly exempt from liability under the law. In other words, the laws targeted the demanders of advertising space (manufacturers and retailers) but not the suppliers of advertising space (publishers and advertising agents). This implies that regulation should affect the derived demand for advertising space but not the supply.

Data on total advertising revenues across all forms of advertising media, by firms or by states, are not available for this period. However, we do have census data on the advertising revenues of newspapers and magazines in each state in each census year. We believe that these data represent a reasonable proxy for the volume of advertising during this time, since print media earned the largest portion of total advertising revenues.[7]

The primary outcome variable that we examine is the level of real advertising revenues per capita at the state-year level.[8] To make valid causal inferences about the effect of advertising legislation on advertising expenditures, we need to establish that the timing of regulation was exogenous with respect to other factors that may have influenced the level of advertising. In particular, we are concerned that states that adopted advertising regulation earlier were also states in which advertising was more prevalent. To investigate this possibility, we estimated Weibull hazard regressions that explain the timing of state truth-in-advertising laws as a function of time-invariant state-level conditions before the introduction of advertising regulation (see Table A1). The hazard regressions indicate that the level of advertising expenditures per capita in 1909 did not have a statistically

[6] Various sources, including *Ayers* and *Printers' Ink*, reported some data on the number of agate lines of advertising in selected newspapers and magazines. Unfortunately, these data sets did not overlap sufficiently with the period under investigation to be useful in our regression analysis.

[7] Henceforth, we use the terms "advertising expenditures" and "advertising revenues" interchangeably. By definition, total expenditures by firms on advertising in newspapers and magazines must equal total advertising revenues earned by newspapers and magazines.

[8] We divided total advertising expenditures by state population, to normalize for differences in market size across states, and converted these figures to real 1967 dollars. We could not control more directly for market size by using circulation data because circulation figures were not reported consistently across different years of the *Census of Manufactures*.

significant influence on the timing of advertising legislation.[9] The coefficients for urbanization, manufacturing per capita, and income per capita are statistically significant, but, for manufacturing per capita and income per capita, the hazard ratio is close to unity. Accordingly, we also control directly for these factors when we examine the effects of regulation on advertising. Two variables that measure reform sentiment in the Progressive Era are also significant. It appears that states with higher Progressive Party vote shares in 1912 and states that enacted civil service merit reform before 1909 were more likely to be early adopters of regulation. By including state and year fixed effects in our empirical model of the effects of regulation on advertising, we can control for state-specific factors, such as political sentiment, that evolve similarly across all states over time. In this framework, identification of the effects of regulation on advertising comes from within-state variation in advertising revenues.

Our basic regression model is as follows:

$$y_{it} = \alpha + \beta R_{it} + \boldsymbol{X}_{it}\gamma + T_t + S_i + \varepsilon_{it}\ , \tag{1}$$

where y_{it} is the outcome variable in state i during year t (either real advertising expenditures per capita or the share of total revenues from advertising placed in magazines), R_{it} is an indicator variable that equals one if a state has adopted regulation by a given census year or zero otherwise, $\boldsymbol{X}_{it}$ is a vector of state-year control variables, T_t represents year fixed effects, S_i represents state fixed effects, and ε_{it} is an error term. The coefficient of interest is β, which shows the effect of regulation on the outcome variable. As control variables, we include real income per capita, the urbanization rate, and the level of real manufacturing per capita, since they are likely to be correlated with the level of economic development in a state and the extent of advertising.[10] Descriptive statistics are given in Table 2.

Columns 1 and 2 of Table 3 show the effects of advertising regulation on the level of real advertising expenditures per capita in newspapers and magazines. The coefficient for the advertising regulation indicator variable is positive and statistically significant in both specifications. The coefficient estimates indicate that the introduction of advertising regulation increased the value of real advertising expenditures per capita by approximately 80¢, which represents an increase of 10 percent above the average level during this period. This is an economically significant magnitude. These preliminary results support the rotten-apple hypothesis, which posits a positive relationship between regulation

[9] We estimated a time-invariant hazard model because our goal was to determine the effect of preexisting conditions in a state on the time until advertising regulation was adopted. Qualitatively similar results were obtained when we estimated a discrete time logit model that allowed for time-varying state-level conditions.

[10] We also estimated our regressions by specifically controlling for those manufacturing industries (such as patent medicines, confectioneries, tobacco, and prepared foods) that advertised heavily during this period. Controlling for manufacturing in this way did not change the sign or significance of the relationship between state-level advertising regulation and advertising.

Table 2
Descriptive Statistics

Variable	Mean	SD	*N*
Real advertising expenditures per capita ($)	7.34	5.61	288
Magazine share of total advertising expenditures (%)	.16	.22	240[a]
Real manufacturing per capita ($)	310.31	236.29	288
Real income per capita ($)	1260.52	506.37	288
Urbanization rate (%)	40.35	21.01	288
Advertising regulation indicator [0, 1]	.44	.50	288
Strict advertising regulation indicator [0, 1]	.30	.46	288

Sources. Data on advertising expenditures and manufacturing are from U.S. Bureau of the Census (1899, 1909, 1914, 1919, 1923, 1929). Urbanization rates were taken from U.S. Department of Commerce (1976). Real income per capita were taken from Kuznets and Brady (1965). Urbanization values for 1914 and 1923 and income per capita for 1909, 1914, and 1923 were estimated by means of linear interpolation. Data on advertising regulation were constructed from *State Session Reports* and Roper (1945).

[a] Sample sizes are smaller because these figures were not available in the 1899 Census of Manufactures.

and the level of advertising, and are inconsistent with the first hypothesis, which argues that regulation should reduce advertising.

Although our fixed-effects framework controls for state-specific political tastes that change similarly across all states, it is possible that liberal reform sentiment evolved differently in different places. Our solution to this problem is to include indicator variables for Progressive Era reforms like civil service merit reform, initiatives and referenda, direct primaries, and child labor laws that were adopted at different times in different states. The regressions displayed in Table 4 include state-level indicator variables for Progressive Era reform measures as additional control variables. We find no statistically significant correlation between these Progressive Era reform measures and the level of advertising expenditures per capita. In addition, the sign, statistical significance, and magnitude of the relationship between advertising regulation and the level of advertising expenditures per capita survive the inclusion of these variables.

A potential problem is that the advertising regulation indicator variable that we use treats all states that regulated advertising as having the same regulatory regime. To reduce this possible source of measurement error, we take advantage of information about the nature of state advertising laws. In particular, we create an alternative advertising regulation indicator variable that equals one if the state introduced a strict advertising law that did not require the prosecution to prove intent to defraud and zero otherwise. Coding the advertising regulation indicator variable in this way reduces the measurement error that could arise from the fact that the ability of state and local officials to enforce regulation may have depended on the standard of proof required for a successful prosecution. Results for regressions using this alternative measure of regulation are given in columns 3 and 4 in Table 3. We continue to find a positive and statistically significant relationship between advertising regulation and the level of real advertising expenditures per capita. The magnitude of this effect is similar as well. As shown

Table 3
Effect of State Advertising Regulation on Advertising Expenditures per Capita, 1899–1929

Variable	(1)	(2)	(3)	(4)
Advertising regulation	.84* (.41)	.81* (.39)	. . .	. . .
Strict advertising regulation	. . .	. . .	1.08+ (.59)	.80+ (.48)
Urbanization	. . .	−.01 (.05)	. . .	−.009 (.05)
Real income per capita	. . .	.004** (.001)	. . .	.004** (.001)
Manufacturing per capita	. . .	.009** (.002)	. . .	.009** (.002)
Adjusted R^2	.86	.89	.87	.89
F-statistic	37.41**	35.47**	33.05**	36.32**

Note. The dependent variable is real advertising expenditures per capita in newspapers and magazines. State and year fixed effects are included in the estimation. Robust standard errors are reported in parentheses. Advertising regulation is a binary variable that equals one if a state had enacted a truth-in-advertising law by a certain census year. Strict advertising regulation is a binary variable that equals one if a state had enacted a strict version of the truth-in-advertising law. We define a strict law as one that did not require the prosecution to prove intent to mislead. $N = 288$.

+ Statistically significant at the 10% level.

* Statistically significant at the 5% level.

** Statistically significant at the 1% level.

in column 2 of Table 4, this result is also robust to the inclusion of state-specific Progressive Era reform measures.

Although our hazard regressions suggest that endogeneity is not a problem, we also conducted a variety of additional robustness checks to help establish that the relationship between advertising regulation and advertising revenues per capita is in fact causal.[11] First, we find that accelerated regulation does not affect the level of real advertising revenues per capita but that delayed regulation does. The accelerated-regulation variable is constructed by coding a state as having introduced advertising regulation 5 years before regulation actually was introduced, while the delayed-regulation variable codes a state as having introduced advertising regulation 5 years after regulation actually was introduced.[12] An accelerated-regulation variable not equal to zero suggests that the true advertising regulation variable is picking up some other trend in the data and that our estimates based on the actual advertising regulation variable are biased. Since the estimated coefficient for the accelerated-regulation variable is statistically insignificant from zero, we are more confident that we have identified the actual effect of regulation. In contrast, the delayed-regulation variable is positive and significant, as expected. In addition, we reestimated our regression using other outcome variables. We find that regulation does not affect the level of tax revenues per capita or manufacturing per capita, which are two variables that might be correlated with both the propensity to regulate and the level of economic development. These results help us establish that we have correctly identified the effect of advertising regulation.

[11] The results from these robustness checks are given in Hansen and Law (2006).

[12] For instance, if Kentucky enacted an advertising law in 1917, the accelerated-regulation variable codes Kentucky as having introduced a law in 1912, while the delayed-regulation variable codes Kentucky as having introduced a law in 1922.

Table 4
Effect of Advertising Regulation after Controlling for Progressive Era Political Reform, 1899–1929

Variable	(1)	(2)
Advertising regulation	.79* (.40)	. . .
Strict advertising regulation	. . .	.96^{+} (.53)
Civil service merit reform	.54 (1.14)	1.70 (1.14)
Initiatives and referenda	.30 (.47)	−.02 (.49)
Direct primaries	−.37 (.39)	−.29 (.41)
Child labor reform	−.41 (.46)	−.54 (.59)
Adjusted R^2	.90	.88
F-statistic	33.44**	34.52**

Note. The dependent variable is real advertising expenditures per capita in newspapers and magazines. State and year fixed effects are included in the estimation. Robust standard errors are reported in parentheses. Advertising regulation is a binary variable that equals one if a state had enacted a truth-in-advertising law by a certain census year. Strict advertising regulation is a binary variable that equals one if a state had enacted a strict version of the truth-in-advertising law. We define a strict law as one that did not require the prosecution to prove intent to mislead. Other covariates that were included but are not reported are real income per capita, real manufacturing per capita, and the level of urbanization. $N = 288$.

$^{+}$ Statistically significant at the 10% level.

* Statistically significant at the 5% level.

** Statistically significant at the 1% level.

The evidence presented so far is consistent with the third hypothesis, which argues that regulation should increase advertising, but does not support the first hypothesis, which posits that regulation should reduce advertising. As a test of the second hypothesis, we examined the relationship between advertising regulation and the share of total print advertising in national magazines, since the second hypothesis argues that regulation shifted the composition of advertising revenues away from national and toward local brands. The results of regressions in which the dependent variable is the share of total advertising revenues for magazines are given in Table 5. Because the 1899 Census of Manufactures did not report data for newspaper and magazine advertisements separately, these regressions are estimated using a smaller sample. Accordingly, these estimates are less precise. The coefficient for the advertising regulation indicator variable is never statistically significant, which indicates that advertising regulation did not influence the composition of advertising revenues. These results are unaffected by how we measure advertising regulation. Thus, to the extent that our dependent variable is a proxy for the share of national brand advertising, these regression results do not support the second hypothesis, which argues that advertising regulation reduced competition from national brands.

Because the share of advertising in magazines is an imperfect proxy for the presence of national brands, we also analyzed a sample of court cases from 1910 to 1930 to determine whether local firms or state authorities used truth-in-advertising regulation to prosecute the producers of larger, national brands. Very few prosecutions were pursued under these statutes. Among those prosecutions,

Table 5
Effect of Advertising Regulation on the Share of Magazine Advertising, 1909–1929

Variable	(1)	(2)	(3)	(4)
Advertising regulation	.003	.006	. . .	. . .
	(.02)	(.02)		
Strict advertising regulation	. . .	. . .	−.02	−.02
			(.03)	(.03)
Urbanization	. . .	−.001	. . .	−.001
		(.001)		(.001)
Real income per capita	. . .	6.0×10^{-5}	. . .	7.0×10^{-5}
		(6.0×10^{-5})		(7.0×10^{-5})
Manufacturing per capita	. . .	5.0×10^{-5}	. . .	5.0×10^{-5}
		(7.0×10^{-5})		(7.0×10^{-5})
Adjusted R^2	.81	.81	.81	.81
F-statistic	33.49**	27.67**	31.96**	27.07**

Note. The dependent variable is share of advertising expenditures in national magazines. State and year fixed effects are included in the estimation. Robust standard errors are reported in parentheses. Advertising regulation is a binary variable that equals one if a state had enacted a truth-in-advertising law by a certain census year. Strict advertising regulation is a binary variable that equals one if a state had enacted a strict version of the truth-in-advertising law. We define a strict law as one that did not require the prosecution to prove intent to mislead. $N = 240$.
** Statistically significant at the 1% level.

it did not seem that large, national brands were being targeted in any systematic way. Thus, the qualitative evidence is not consistent with the second hypothesis.

4.2. Effects of the Federal Trade Commission Act of 1914

In 1914, the U.S. federal government enacted the FTC Act, which created the FTC as a regulatory agency. Although this act gave the commission broad authority over various aspects of competition, it did not specifically mention advertising until the Wheeler-Lea Amendment of 1938. Nevertheless, the FTC soon became interested in fraudulent advertising because of its authority to regulate unfair and deceptive selling practices. An important question for us is what additional effect enforcement of the FTC Act may have had on advertising.

We can analyze the effect of the FTC Act on advertising by taking advantage of two facts, both of which suggest that federal regulation served as a complement to state regulation. First, the FTC Act provided state authorities and the BBBs with an additional lever for enforcing truth-in-advertising regulation. The FTC Act enhanced state-level enforcement capabilities by giving groups involved in the enforcement of state laws an additional stick with which to enforce truth-in-advertising regulation, particularly with respect to firms involved in interstate trade. State-level regulations could not be applied easily to firms engaged in interstate commerce. Indeed, the evidence indicates that, in general, authorities enforcing state laws were unsuccessful in imposing sanctions on national firms prior to the FTC Act (Pease 1958, p. 48). Second, by 1914, some but not all states had already enacted a truth-in-advertising law. Enforcement of advertising regulation was better organized in states that adopted legislation early than in late-adopting states. Cooperation between the FTC and state-level enforcement

organizations, which was encouraged by the FTC's first commissioner (according to Pope 1983, p. 207), was therefore more likely in states adopting legislation early. Since the FTC's enforcement strategy with respect to advertising cases was to rely on complaints from local and state authorities before mounting an investigation, it seems reasonable to think that the effect of the FTC Act on enforcement should have been larger in states adopting legislation early (U.S. Federal Trade Commission 1919, 1921). Accordingly, by comparing the effect of the law on states that had already enacted advertising legislation by 1914 (where enforcement was better organized) with the effect on states that had not enacted a law by 1914 (where enforcement was new), we can use a difference-in-differences (DID) estimator to determine the effect of the FTC on advertising.[13]

To make valid causal inferences about the additional effect of the FTC Act on advertising, we need to establish that the FTC Act was exogenous with respect to advertising. We are confident that, in fact, this was the case. First, the historical literature does not suggest that advertising interests played any role in the enactment of the FTC Act (Watkins 1940). The legislation that created the FTC never mentioned advertising explicitly; the FTC's interest in advertising regulation was an unintended outcome of the 1914 law. Second, results of a logistic regression analysis of Senate voting on the bill that became the FTC Act show no statistically significant relationship between measures of advertising interest at the state level and the likelihood that a senator from a given state voted in favor of the bill. The relationship between Senate voting on the FTC bill and neither the per capita value of advertising in 1909 nor the presence of a state-level truth-in-advertising law by 1914 was statistically significant.[14] Accordingly, we believe that a DID estimator will yield valid causal inferences about the additional effect of the FTC Act on advertising.

The DID regression equation is as follows:

$$y_{it} = \alpha + \beta R_{it} + \delta \mathrm{FTC}_t + \phi(R_{it})(\mathrm{FTC}_t) + \boldsymbol{X}_{it}\gamma + T_t + S_i + \varepsilon_{it} ,$$

where R_{it} is an indicator variable that equals one if a state had adopted regulation prior to 1914 and zero otherwise, FTC is an indicator variable that equals one for all years in which the FTC Act was in effect and zero otherwise, and the other variables are defined as in equation (1). In this regression, the coefficient

[13] The view that the Federal Trade Commission (FTC) Act of 1914 was a complement to state truth-in-advertising regulation contrasts sharply with much of the literature, which argues that state and federal laws are substitutes. In some instances, federal regulation subsumes state regulation, in which case federal and state laws are substitutes. An example of this is furnished by Gruber and Madrian's (1995) analysis of state and federal continuation of health insurance coverage mandates. In the case of advertising, however, federal regulation was specific to interstate commerce, and federal regulators relied on complaints from local regulators before engaging in enforcement actions. Therefore, the FTC acted as a collaborator, rather than as a competitor, in regulatory enforcement.

[14] The first-dimension D-nominate score (which measures a legislator's ideology across economic issues) and the Republican Party indicator variable are the only variables that are statistically significant determinants of Senate voting on the FTC bill across various regression specifications. Other controls included the urbanization rate, the value of manufacturing per capita, and the Progressive Party vote share in 1912. The results of these regressions are given in Hansen and Law (2006).

Table 6
Effect of the Federal Trade Commission (FTC) Act, 1909–1923

	Real Advertising Expenditures per Capita		Share of Advertising in Magazines	
Variable	(1)	(2)	(3)	(4)
Advertising regulation by 1914	10.10**	−6.76	.03	−.07
	(.69)	(4.52)	(.06)	(.23)
FTC indicator	2.46**	1.23	−.02	−.03
	(.42)	(.78)	(.03)	(.06)
FTC indicator × Advertising regulation by 1914	1.39**	1.09*	.04	.05+
	(.50)	(.47)	(.03)	(.03)
Urbanization	. . .	.17*	. . .	.002
		(.08)		(.004)
Real income per capita	. . .	.001	. . .	1.0×10^{-5}
		(.002)		(8.0×10^{-5})
Manufacturing per capita	. . .	.006**	. . .	−.0001
		(.001)		(9.0×10^{-4})
Adjusted R^2	.92	.93	.83	.83
F-statistic	65.52**	69.48**	81.29**	49.62**

Note. State and year fixed effects are included in the estimation. Robust standard errors are reported in parentheses. Advertising regulation by 1914 is an indicator variable used to identify those states that had enacted a truth-in-advertising law by 1914. The FTC indicator variable equals one for the years 1914, 1919, and 1923. The interaction term is the product of these two indicator variables and is the variable of interest. $N = 192$.

+ Statistically significant at the 10% level.
* Statistically significant at the 5% level.
** Statistically significant at the 1% level.

of interest is ϕ, which is the coefficient for the interaction term. This coefficient shows the additional effect that the FTC Act had on the outcome variable (either real advertising expenditures per capita or the share of total advertising in magazines) in states that enacted an advertising law prior to 1914.

Columns 1 and 2 of Table 6 give regression estimates in which the level of advertising expenditures per capita is the dependent variable. The coefficient for the interaction term is positive and significant in both regressions, which suggests that the FTC Act increased advertising more in those states that adopted advertising regulation early. This result is consistent with the third hypothesis but is inconsistent with the first hypothesis. In columns 3 and 4, the dependent variable is the share of magazine advertising. We find no evidence that the FTC Act shifted the composition of advertising away from magazines and toward newspapers more in those states that adopted regulation early. In fact, the regression results reported in column 4 suggest that the FTC Act may have shifted advertising toward magazines. Therefore, our DID analysis of the effect of the FTC Act furnishes additional support for the rotten-apple hypothesis, which posits that advertising regulation increased advertising volume by improving the credibility of advertising.[15]

[15] Evidence from the FTC's caseload also supports this view. According to Watkins (1940), more than 11 percent of the FTC's caseload was related to product misrepresentation by 1919, and this share increased dramatically over the next decade.

5. Conclusion

In this paper, we examined three competing hypotheses regarding the adoption of truth-in-advertising regulation in the early twentieth century. We find that the data do not support the two anti-competition-based explanations for advertising regulation. Truth-in-advertising regulation did not reduce the overall extent of advertising, nor did it shift the composition of advertising in ways that benefited local firms. This suggests that advertising regulation did not function as a device that either limited competition directly or hampered the growth of national brands. Instead, we uncovered a robust positive and statistically significant effect of regulation on advertising expenditures in newspapers and magazines. We interpret these results as supporting the rotten-apple hypothesis, which posits that regulation increased overall investment in advertising by improving the credibility of advertising.[16]

This study contributes to the growing literature on the nature of Progressive Era regulation. Recent studies of Progressive Era reform indicate that broader coalitions in favor of regulation increase the likelihood that regulation will be adopted (Fishback and Kantor 1998, 2000; Law 2003; Mahoney 2003). In the context of truth-in-advertising regulation, a broad coalition of business interests sought advertising regulation, and, as shown in Table 1, regulation was diffused across states very quickly. In addition, although studies of Progressive Era regulations such as chain-store taxes, meat inspection, and blue sky laws have suggested that many regulations were enacted in order to tilt the competitive playing field in ways that benefited specific producer groups (Ross 1986; Libecap 1992; Mahoney 2003), another set of studies have found that other Progressive Era regulations—specifically, those related to food, drugs, and professional quality—were motivated primarily by a desire to reduce informational asymmetries and that an intent to tilt the competitive playing field through the introduction of entry barriers was secondary (Law 2003; Law and Kim 2005; Law and Libecap 2006). In these instances of relatively benign regulation, producer interests usually were the most important supporters of reform, but consumers also benefited from the regulation. Our account of the history of truth-in-advertising regulation appears to be more consistent with this second set of studies. Although business interests were the key constituencies in favor of truth-in-advertising regulation, it appears that consumers were not harmed. To the extent that these regulations succeeded in improving the truthfulness of advertising, consumers may have benefited. Truth-in-advertising regulation therefore furnishes an example of suc-

[16] The rotten-apple hypothesis is also better able to account for the nature of the political constituency in favor of regulation. Publishers and advertising agents, which were key players in the truth-in-advertising movement, clearly would be most affected by broad regulation that improves the credibility of advertising if misleading advertising in fact reduced returns from advertising overall. Although producers and retailers might benefit from a reduction in the extent of competition caused by advertising regulation that limits the amount of advertising or changes its composition, publishers and advertising agents certainly would not benefit because earnings from advertising constituted an increasingly large percentage of total newspaper and magazine revenues.

cessful Progressive Era regulation in that it was adopted rapidly and may have generated important benefits for both consumers and producers.

Appendix

Table A1
Hazard Models for the Timing of Truth-in-Advertising Regulation

Variable	Hazard Ratio (1)	Coefficient (2)	Hazard Ratio (3)	Coefficient (4)
Advertising expenditures per capita	1.01	.01	.79	−.24
		(.25)		(.17)
Manufacturing per capita	.98*	−.02*	.96**	−.04**
		(.01)		(.01)
Income per capita	1.00	.00	.99**	-6.0×10^{-3}*
		(.01)		(2.0×10^{-3})
Urbanization	1.08*	.08*	1.13**	.12**
		(.03)		(.04)
Progressive Party vote share in 1912	. . .	. . .	1.07**	.07**
				(.02)
Civil service merit reform	. . .	. . .	6.44+	1.87+
				(1.09)
Initiatives and referenda	. . .	. . .	1.05	.05
				(.45)
Direct primaries	. . .	. . .	1.16	.15
				(.43)
Child labor reform	. . .	. . .	1.99	.68
				(.97)
Log-likelihood	−41.3	−41.3	−34.2	−34.2
χ^2	13.9**	13.9**	37.3**	37.3**

Sources. Data on Progressive Party vote share in 1912 were from the U.S. Department of Commerce (1976). Data on Progressive Era reform measures such as civil service merit reform, initiatives and referenda, direct primaries, and child labor reform were provided by Price Fishback.
Note. Robust standard errors are in parentheses. $N = 41$.
+ Statistically significant at the 10% level.
* Statistically significant at the 5% level.
** Statistically significant at the 1% level.

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