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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 impact of "truth-in-advertising" regulation during the Progressive era. Was advertising regulation adopted in response to rent-seeking on the part of firms who 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 qualitative and quantitative evidence to be more consistent with the latter hypothesis.

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I. Introduction

State regulation of advertising emerged in the early twentieth century. 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. These state laws represented the first broad effort to regulate commercial speech and formed the foundation of subsequent advertising regulation in America. In this paper we explore why these regulations emerged, why these particular interests sought regulation, and what effects these regulations may have had.

In an environment where the quality of goods is relatively easy to discern and where the court system operates effectively, there is no obvious public interest rationale for regulating advertising (Rubin 2000). Reputation mechanisms combined with the threat of punishment in the courts should discipline firms to be truthful in their claims about product quality (Klein and Leffler 1981). It is therefore not surprising that many economists are skeptical of regulation aimed at policing the content or truthfulness of advertising, particularly if producer interests are the main proponents of regulation. Indeed, the importance of producers as a political constituency in favor of regulation has led many scholars to argue that much regulation serves the interests of certain producers, who "capture" regulation in a quest for monopoly rents at the expense of overall efficiency (Stigler 1971). Could such rent-seeking motivations furnish an explanation for the adoption of state-level truth-in-advertising regulation?

We consider two variants of the industry capture hypothesis which seem most plausible in the context of truth-in-advertising regulation. The first argues that regulation

served the interests of a broad coalition of producers and retailers who sought to collectively limit the use of advertising as a competitive device. A second explanation posits that regulation was desired by a subset of smaller, local producers, who wanted to competitively disadvantage the growth of larger, national brands through the regulation of advertising copy. In our view, the available qualitative and quantitative evidence is not consistent with the predictions of either of these rent-seeking accounts for the emergence of state-level advertising regulation.

If advertising regulation did not advance the interests of certain producers seeking competitive advantages, then why was it desired by such a broad coalition of producer groups? An alternative explanation for the emergence of this regulation posits that the pressure for state-level advertising regulation reflected a real, albeit subtle, concern about the potentially negative consequences of misleading advertising. It is generally believed that advertising, as a costly signal, serves as a mechanism for solving the asymmetric information problem about product quality (Nelson 1974; Schmalensee 1978; Milgrom and Roberts 1986). However, in an environment where it was easy and inexpensive for any firm to advertise its products, 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. The "rotten-apple" hypothesis, which has been advanced by the historical literature on the advertising industry, argues that advertising regulation was adopted because it furnished a mechanism through which firms could collectively improve the credibility of advertising (Kenner 1936; Pease 1958; Pope 1983). During this period, it was widely believed by

advertising interests—who consisted of manufacturers of highly advertised products, retailers, publishers, and advertising agents—that untruthful advertising imposed a negative externality on all advertising, and that bad advertising was a "rotten-apple" that reduced the credibility of all advertising. False advertising was therefore perceived to be harmful not only to consumers, but also to other businesses since it reduced the returns to advertising. Consumers lacked the organization to effectively punish false advertisers either through private action or the court system, and businesses could not easily use the court system to sue other businesses for the negative externality caused by false advertising by others. Hence, regulation was desired as the solution to this market failure. This hypothesis explains why business interests were the main constituency in favor of regulation, and why publishers, in particular, were the focal point of this constituency. While it is difficult to test this hypothesis directly, the evidence we present supports this perspective.

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). Accordingly, 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 non-salvageable investments in reputation—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. Indeed, it was during this period that a new group of middlemen—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).

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 revenues of

periodicals and newspapers in America increased dramatically, from 78 cents per capita in 1899 to over $5 per capita in 1919. Borden (1942, p. 54) estimates that by 1935, over 40 percent of advertising was in newspapers and magazines, with direct mail advertising comprising another 30 percent. Frederick (1925) estimates that total advertising revenues increased from $30 million in 1880 to $850 million in 1920. It would appear that this increase in advertising revenues was not merely due to increases in the price of advertising space, but rather, due to increases in quantities. According to the Printer's Ink General Index of Advertising Activity, advertising volumes (*i.e.* quantities) approximately doubled between 1914 and 1920 (Borden 1942, p. 57). Within 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 Databook, 1925). *Printer's Ink* (vol 88, no. 7, July 2nd, 1914) reports that between 1911 and 1914, the number of agate lines of advertising in sixteen major women's magazines increased from 178,000 to 212,000. Hence, many sources point to significant growth in advertising during turn of the century America.

While this growth in advertising would appear to suggest that business in general found it to be an effective marketing device, reservations were increasingly expressed by a broad coalition of producer interests representing manufacturers, retailers, publishers, and advertising agents about the truthfulness of advertising copy. From the late 1800s 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 repeatedly expressed in trade publications like *Printer's Ink*, the most widely distributed advertising journal during this time.

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. 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. Important leaders included Samuel Dobbs, sales manager for Coca-Cola, John Romer, editor of *Printer's Ink*, Joseph Appel, advertising manager for the retail chain John Wanamaker's, and H.J. Kenner, a former newspaper man 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, *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). Enforcement of these laws was largely left to local advertising

clubs (which later became known as the Better Business Bureaus or BBBs). 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). Indeed, because the BBBs were able to threaten misleading advertisers with prosecution under truth-in-advertising regulation, much compliance was achieved without lawsuits. For instance, in Minneapolis in 1917, out of 137 cases investigated by the local bureau, only three resulted in prosecution. In 1920, only six cases were prosecuted out of a total of 241 cases investigated (Pannell 2002). For the year ending in May, 1921, only 51 of the 6815 cases handled by local BBBs throughout the country resulted in prosecution (*Printer's Ink*, June 16th, 1921). Although the total number of prosecutions under these state laws was low, the available qualitative evidence indicates that the mere threat of a criminal case provided the BBBs with the moral authority to correct advertising abuses (Pope 1983; Pease 1958). Indeed, the fact that the constitutionality of state truth-in-advertising legislation was challenged in state courts suggests that the BBBs' efforts to enforce these laws against misleading advertisers were indeed effective (Pannell 2002). The constitutionality of these laws, however, was never overturned in state or federal courts. Hence, it would appear that while enforcement of truth-in-advertising regulation was largely informal, it was quite successful.

III. Rent-seeking explanations for advertising regulation

It is widely believed that regulation is enacted to confer competitive advantages on certain producers. Politically organized producers often have an incentive to seek

regulation to limit the number of firms in a market, the availability of substitutes, or to constrain the other strategic options available to competing firms. Regulation that serves these purposes increases the profits of these firms, but generally reduces overall economic efficiency (Stigler 1971, Peltzman 1976). A large literature, taking its cue from Kolko (1963), argues that Progressive Era regulations ranging from railroad regulation (Gilligan, Marshall and Weingast 1989) to meat inspection and antitrust (Libecap 1992) were all enacted in response to the rent-seeking efforts of key producer interests to tilt the playing field in ways that furnished competitive advantages and harmed overall welfare. In this section, we argue that the most obvious rent-seeking accounts for regulation cannot explain the adoption of truth-in-advertising regulation during this period.

A. Did truth-in-advertising regulation reduce advertising expenditures?

One possible way truth-in-advertising regulation may have conferred competitive advantages on producers is by collectively limiting the use of advertising as a competitive device. A significant body of evidence suggests that the prices of goods and services tend to be higher in places that restrict advertising than in places that do not (Benham 1972; Cady 1976; Kwoka 1984). This evidence is sometimes invoked as an explanation for why associations representing doctors, lawyers, and other professional groups often seek regulation that limits advertising. While organized producers like 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, by raising the cost of advertising, also succeeded in reducing its extent, firms in many

industries might have an incentive to seek such regulation since it would result in less competition. Under this version of the rent-seeking hypothesis, advertising regulation should shift inward the derived demand for advertising space and thus reduce the quantity of advertising, other things held constant.

To test this hypothesis, we analyze the impact of advertising regulation on advertising revenues. Ideally, we would like to analyze the impact of regulation on the quantity of advertising placed by producers and retailers. Although we do not have systematic data on advertising quantities, for our purposes, it is sufficient to examine the effect of regulation on advertising revenues. Holding constant the supply curve for advertising space, an inward shift in the derived demand for advertising space should reduce the quantity of advertising and total advertising revenues. Hence, we can identify changes in quantities by examining changes in revenues. By exploiting cross-state and intertemporal variation in the adoption of advertising regulation and the value of advertising per capita, we can determine whether this condition holds.

This seems like a plausible framework for thinking about the rent-seeking hypothesis. This is because truth-in-advertising laws made it more costly for manufacturers and retailers to advertise but they did not make it more costly for publishers to print false ads. In fact, in many states, publishers were explicitly exempted from liability under the law. In other words, the laws targeted the demanders of advertising space (manufacturers and retailers), 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.

We do not have direct information on total advertising revenues across all forms of advertising media by firms or by states. However, 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 (approximately 40 percent as late as 1935, as discussed earlier) was earned by these forms of print media during this period, this should be a reasonable proxy for the volume of advertising investments. Accordingly, we collected data on advertising revenues in newspapers and magazines in 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 rent-seeking hypothesis implies that, other factors held constant, advertising regulation should reduce real per capita advertising revenues.

Table 2 presents descriptive statistics for our regression variables. We control for 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, retail chains, which utilized advertising heavily (Kim 2001), were 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. Presumably, advertising in newspapers and magazines was directed at the literate population. Hence, lower levels of illiteracy should imply a reduced intensity of advertising in these media. Real per capita income is also included to account for the possibility that advertising per capita was higher in states with

higher income and consumption levels. Finally, we include state fixed effects and year fixed-effects to sweep out any additional factors that influenced the level of advertising expenditures per capita.

Table 3 displays ordinary least squares estimation results with state fixed effects. We control for the presence of truth-in-advertising regulation in two ways. The first way is through a binary variable that equals 1 if a state had introduced the *Printer's Ink* model statute and 0 otherwise. Since, with the exception of New York and Connecticut, these laws were not revised or repealed during the period under investigation, we believe that a binary variable representation of regulation is sufficient. For New York and Connecticut, the initial laws were strengthened in 1921 and 1923, respectively. (Changing the timing of adoption for these years does not affect our results materially). While this approach is widely used, a potential problem is that it fails to control for variation across states in the nature of state regulation. Although each state's truth-in-advertising regulation was modeled after the *Printer's Ink* Model Statute, these regulations differed in terms of whether or not fraud needed to be proven and the size of the fines that could be imposed on false advertisers. Hence, we also control for regulation using a composite variable that incorporates information on these other characteristics. For more information on how this variable was constructed, see the notes to Table 2.

We use data from census years 1909, 1919 and 1929 to estimate the model. We leave out the 1919 census year data in the model estimated in the second column since real per capita advertising expenditures and real per capita income data from 1919 are likely to be affected by World War One. Our results indicate that the presence of advertising regulation had a positive impact on real advertising revenues per capita and

this impact was statistically significant in the smaller sample. Similar results were obtained when we used the composite variable to control for advertising regulation. The coefficient estimates also show that increases in real per capita income increased the level of advertising expenditures as expected. Advertising may have been more intensive in urban areas although its effect is not precisely estimated and the higher illiteracy rate appears to increase the per capita real advertising expenditures, contrary to our expectations. These results show that advertising regulation did not reduce the volume of advertising; in fact, it may have been effective in increasing the per capita real adverting. Thus, our regression results are not consistent with this version of the rent-seeking hypothesis.

An endogeneity problem may 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 (perhaps because advertising interests are more influential in such states). A positive correlation may therefore exist between the regulation indicator variable and the error term causing OLS estimates of the effect of state advertising regulation on advertising revenues to be biased. Although state fixed effects may partially address this concern, we also re-estimated our model using instruments 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. Toward this objective, we looked for variables that would proxy for the political supply of regulation in general as opposed to the political demand for truth-in-advertising regulation specifically. Variables representing the presence of other kinds of regulation in a state are

potentially good instruments since they may be indicative of a hospitable climate for all forms of regulation and the political constituencies in favor of these other forms of regulation are likely to be different from those interested in advertising regulation.

We considered several variables that have been used in the literature to measure the degree of Progressive regulation and the pro-regulation political climate in each state. These include the presence and timing of school attendance laws, a state welfare agency, civil service merit reform, initiative and referendum reform, direct primaries for elections, child labor legislation, and electricity regulation (Fishback and Kantor 2000). In addition, we constructed an index that 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 2005). The first stage regressions indicated that, individually and jointly, most of these variables were not well correlated with advertising regulation. The two variables that were most significantly correlated with advertising regulation were the variables measuring the presence of electric utility regulation and the occupational licensing index. Since instruments with little explanatory power increase the size of the bias of 2SLS estimates, we restricted our attention to these two instruments (Hahn and Hausman 2002). The F-statistics for these identifying instruments, reported at Table 4A, show that the hypothesis that the coefficients of these instruments are jointly zero are strongly rejected in two out of four models estimated.

The 2SLS regression results along with the first stage regressions are displayed in Table 4. The results are qualitatively similar to the results from the OLS estimation. The coefficient estimates of advertising regulation are positive and larger in absolute value

but not statistically significant, regardless of how we control for advertising regulation. Hence, we find no evidence that advertising regulation reduced advertising volumes during this period. This implies a rejection of the view that producers sought regulation in order to limit advertising and thus reduce competition. Indeed, another important fact which is inconsistent with this version of the rent-seeking hypothesis is that publishing interests and advertising agents were key players—perhaps even the most important players—of the pro-regulation coalition (Pease 1958; Pope 1983). While producers and retailers might benefit from a reduction in the extent of competition brought about by advertising regulation that limits the amount of advertising, publishers and advertising agents certainly would not. In fact, 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). Regulation that reduced the amount of advertising would likely be opposed by these groups. The fact that publishers and advertising agents were a key lobby group in favor of regulation therefore casts some doubt on the validity of this hypothesis.

B. Did advertising regulation disadvantage large, national brands?

An alternative rent-seeking explanation posits that regulation was desired by a subset of smaller, local producers, who wanted to competitively disadvantage the growth of larger, national brands through the regulation of advertising copy. As noted earlier, the early twentieth century witnessed the rise of large, national firms who 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 like meat inspection, antitrust, chain store taxes, were often sought by local firms seeking to stem the competitive threat posed by these larger firms (Libecap 1992; Ross 1986). Evidence presented by Kim (1999) suggests that large, multiunit firms were able to obtain economies of scale in 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 would like to determine how advertising regulation affected the composition of advertising volumes. If state-level advertising regulation disadvantaged national brands, we would expect to see the share of advertising by national brands to decline and the share of advertising by local firms to rise. Unfortunately, systematic data on the composition of advertising is not available. However, we were able to collect advertising revenue data separately for newspapers and magazines. If magazine advertising is more likely to consist of national brands and newspaper advertising was largely from local firms, then we can proxy for national and local advertising shares (Pease 1958). Under this hypothesis, the share of magazine advertising should fall or remain constant following the enactment of advertising regulation.

Table 5A displays the fixed-effect regressions of the relationship between advertising regulation and the share of advertising in magazines. The results, although not precisely estimated, indicate that advertising regulation did not influence the composition

of advertising revenues toward newspapers and away from magazines. In addition, our results in Table 5B indicate that per capita real advertising revenues in magazines were also unaffected by truth-in-advertising regulation. Qualitatively similar results were obtained when we instrumented for advertising regulation in a 2SLS framework, using the same instrumental variables discussed earlier. Hence, to the extent that our dependent variable proxies for the share of national advertising, these regression results are not consistent with the hypothesis that advertising regulation reduced competition from national brands.

Two additional pieces of evidence suggest that this version of the rent-seeking hypothesis is unlikely to be the correct explanation for state advertising regulation. First, as discussed earlier, publishers and advertising agents were key components of the political coalition pushing for advertising regulation. While local producers might find it advantageous to have regulation that can reduce the advertising of larger, national producers, publishers and advertising agents would presumably be harmed by such regulation. Thus, it seems unlikely that publishers and advertising agents would find it in their interests to support advertising regulation that served these purposes.

Second, we were unable to find any evidence that local firms or state authorities used truth-in-advertising regulation to prosecute the producers of larger, national brands. An examination of state court cases during the period from 1910 to 1930 revealed very few prosecutions under these statutes. Among those few prosecutions, it did not seem that large national brands were being targeted in any systematic way. Thus, the legal records are also unsupportive of this hypothesis.

IV. The “rotten-apple” hypothesis for advertising regulation

If advertising regulation did not confer competitive advantages on firms, why did publishers, advertising agents, and certain producers seek such regulation? An alternative hypothesis, which is suggested by historical accounts of the truth-in-advertising movement, is that regulation was sought by these groups to improve the credibility of all advertising. According to this view, advertising regulation was desired to solve a perceived market failure arising from asymmetric information about the informational content of advertising. Misleading advertising was perceived to be harmful not only to consumers but also to other businesses since it reduced the value of advertising. By policing the informational content of advertising, regulation was sought to reduce this negative externality.

Specialization and technological change during the Progressive Era gave rise to asymmetric information about product quality. Market mechanisms such as advertising functioned as a partial solution to the lemons problem that can arise when consumers are less informed about product quality than producers. Hence, it is not surprising that this period witnessed a significant growth in advertising and branding of products. However, market solutions like advertising 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). Additionally, in cases where goods are not purchased repeatedly or fly-by-night operators are common, market forces may fail to solve the asymmetric information problem (Darby and Karni 1973; McCluskey 2000).

In theory, the potential to be sued in the courts for selling defective products to customers, should also discipline firms to supply goods of the right quality level. The court system therefore provides another mechanism for solving the asymmetric information problem. The evidence, however, indicates that, at least 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 resolving disputes between consumers and firms. Landes and Posner (1985) note that the evolution of products liability law from contract principles to tort principles did not occur until the 1940s. These factors, combined with the fact that consumers were a large, heterogeneous group facing high collective action costs, made it very difficult for consumers to sue producers for harms caused by faulty products.

In addition, 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, 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, because certain product characteristics were often difficult to verify, and because the court system at the time made it difficult for individual consumers to successfully sue firms for fraudulent advertising, it is unlikely that reputation mechanisms or the courts would have been sufficient to ensure the truthfulness of advertising. Hence, the credibility of advertising was 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 case 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. Because there was generally no way for businesses to use the court system to reduce the negative externality caused by other businesses' untruthful advertising, other measures had to be taken to deal with this problem. For instance, members of the advertising trade attempted to control the quality of their advertisements. 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. In testimony to Congress, 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). 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). Consider, for instance, B & M's External Remedy, a liniment composed of turpentine, ammonia, water and eggs that was advertised as a cure for tuberculosis, pneumonia, cancer, diabetes, whooping cough, diphtheria, asthma, bronchitis, and laryngitis, or Microbe Killer, a tonic consisting of 99 percent water and 1 percent sulfuric acid that claimed to release a gas within the stomach that would cure headaches, worms, measles, malaria, consumption, small pox and leprosy (Lamb 1936; Young 1967). 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.

Misleading advertising was not unique to the patent medicine industry. It was also common in textiles, food manufacturing, and furniture, among other industries. A famous case concerned the Winsted Hosiery Company, a garment manufacturer that regularly marketed and advertised its products as "Men's Knit Merino," "Cashmere," and "Australian Wool," although its products were overwhelmingly cotton based. Similarly, in food manufacturing, oleomargarine was advertised as butter, while "natural" flavorings in beverages and other items were found to be made from coal-tar derivatives. In furniture manufacturing, veneer wood was advertised as more expensive "mahogany" or "walnut" (Watkins 1940). In each of these cases, because it was difficult for the consumer to detect cheating, producers and retailers faced a strong incentive to advertise their products misleadingly.

For these reasons, industry groups 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. Truth-in-advertising regulation may therefore have arisen as a solution to this collective action problem.

One refutable implication of the rotten-apple hypothesis for advertising regulation is that regulation should improve the credibility of advertising. Unfortunately, it is not possible to directly measure the credibility or truthfulness of advertising in an objective fashion. An indirect method for inferring the effect of advertising regulation on credibility is to examine the relationship between regulation and advertising quantities. If regulation improves the credibility of advertising, it should increase the returns to advertising, shift outward the derived demand for advertising space, and hence increase the quantity of advertising as well as total advertising revenues. The regression results presented in Table 3A show that, in some specifications, the introduction of state advertising regulation positively affected real advertising revenues per capita, controlling for other factors. Hence, there is some indirect evidence suggestive of an increase in advertising credibility.

Additional evidence for the rotten-apple hypothesis can be found by looking at the political economy of the truth-in-advertising movement. Publishers and advertising agents would clearly be most affected by regulation that improves the credibility of advertising. Broad regulation aimed at improving the perceived credibility of advertising across the board would presumably increase the earnings of publishers and advertising agents if in fact misleading advertising was a “rotten apple” that reduced the returns to advertising overall. The fact that these groups were the key leaders of the political constituency in favor of regulation is consistent with the rotten-apple explanation, but as noted earlier, inconsistent with either of the rent-seeking explanations for regulation. The

rotten-apple story for advertising regulation is therefore better able to account for the nature of the political constituency in favor of regulation than either of the rent-seeking hypotheses discussed earlier.

More systematic evidence consistent with this view can be found through an empirical analysis of the factors influencing the adoption and nature of truth-in-advertising regulation. In order to examine the hypothesis that advertising interests were indeed the key players in the truth-in-advertising movement, 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 use data from the 1909 *Census of Manufacturers*. Specifically, we use real advertising revenues in newspapers and magazines per capita *prior to* the enactment of legislation to capture the influence of advertising interest groups, in particular, publishers and advertising agents. The value of patent medicines, confectionary, tobacco and prepared foods per capita are included to measure the influence of these particular manufacturers. Patent medicine manufacturers were identified as the most likely group to be adversely affected by advertising regulation in historical accounts. The other manufacturing industries had nationally marketed and highly advertised products, and are included to proxy the influence these groups may have had on state advertising regulation (Borden 1942, p. 67).

Ideally, we would like to include separate proxies for retailers, manufacturers, and publishers and advertising agents 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 influence of publishers and advertising agents 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. This variable may also reflect the influence of other businesses since these revenues also reflect the total advertising expenditures by retailers and manufacturers. In addition to the influence of business lobby on adoption of truth-in advertising regulation, we include other controls such as whether the presence of other regulation or of Progressive reformers had any effect in adoption of the truth-in-advertising regulation. These variables can help us identify whether the Progressive era reformist spirit of the time or other state level preferences toward regulation had any effect on the adoption of advertising regulation.

Table 2 displays descriptive statistics for each of these variables. Regulation 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. Composite is a variable that incorporates information on the size of fines in addition to the strength of a state's truth-in-advertising law. State level 1909 real per capita manufacturing values are used to control for each of the manufacturing industries. We use the percentage of the popular vote in favor of the Progressive Party in 1912 to measure the influence of Progressive era

reformers. The occupation and electricity regulation variables are as discussed earlier, but are included only as of 1910.

Coefficient estimates are displayed in Table 6. To take advantage of the information we have on the characteristics of state advertising regulation, we estimated two different econometric models. In the first model, we estimate an ordered probit regression where the dependent variable is regulation strength. In the second model, we estimate an ordinary least squares regression using the composite variable as the dependent variable. Column (1) of each model contains only the industry variables and column (2) for both displays the results with other controls included.

If advertising interests were important determinants of regulation and they were seeking regulation to increase the perceived credibility of advertising as suggested by the rotten-apple-hypothesis, we expect the coefficient on real advertising per capita to be positive and statistically significant for both models. States where advertising per capita were greater should be more likely to adopt regulation and should be more likely to enact strong regulation. Since patent medicine manufacturers were likely to be adversely affected by truth-in-advertising regulation, the coefficient on this variable should be negative. Presumably, patent medicine manufacturers would have lobbied against legislation. On the other hand, if other businesses were concerned about the negative influence of advertising by patent medicine manufacturers, especially in states where patent medicines were relatively important, we may expect to see a positive relationship between the extent of patent medicine manufacturing in each state and the adoption of strong advertising regulation. The manufacturers of highly advertised products, such as tobacco, prepared foods and confectionary would likely to lobby for this regulation under

the rotten-apple-hypothesis. Overall, our results from column (1) of each model 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. In particular, the coefficient on real advertising per capita is positive and statistically significant as expected. We find that the real per capita value of patent medicines, tobacco, and prepared foods did not have a statistically significant effect on the adoption and nature of advertising regulation. Curiously, we find a negative and significant relationship between advertising regulation and confectionery production. The manufacturing figures used in these models may not be the best proxies reflecting the influence and the role of the business lobby for the advertising regulation, which may explain why only confectionery appears to be significant but has the wrong sign.

The full models display similar results. Advertising agents and publishers were the strongest supporters of truth-in-advertising regulation. Progressive reform interests and the extent of regulation in each state appear not to have been important determinants of the adoption and nature of regulation. In terms of economic significance, the ordered probit coefficient estimates indicate that a $1 increase in real per capita advertising raised the probability of enacting a *strong* law by 3.5 percent, and reduced the probability of enacting no law by 1.1 percent. This would suggest that what advertising interests sought was a strong law that would allow for the effective prosecution of misleading advertisers.

In summary, we find evidence that advertising interests were systematic determinants of the characteristics of state advertising regulation. Progressive reform interests do not appear to have influenced the adoption or the strictness of these

regulations, but it is likely that the aligned incentives of business groups and Progressives were influential in the political economy of the state advertising regulation.

V. 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 furnished an efficient medium through which producers could communicate aspects of product quality to consumers. Hence, it is not surprising that this period of rapid technological and organizational change also witnessed a dramatic increase in the volume of advertising.

The value of advertising as a communication device was well understood by a coalition of producers, retailers, and publishers. Indeed, these groups quickly perceived that the usefulness of advertising would be undermined if advertising was believed to be misleading or deceptive, and they argued that false advertising by one advertiser had the potential to undermine the credibility of all advertising. Thus, advertising interests organized rapidly to curb misleading and untruthful advertising, first through self-censure, and later, through government regulation.

In this paper we present evidence which suggests that truth-in-advertising regulation was indeed sought by advertising interests in an effort to curb the negative effects of misleading advertising. While it is difficult to determine whether regulation truly improved the credibility of advertising overall, we have some evidence that is

consistent with this perspective. We also find that the data do not support the two most plausible rent-seeking explanations for advertising regulation. In particular, our findings do not suggest that truth-in-advertising regulation reduced the extent of advertising overall or shifted the composition of advertising in ways that benefited local firms. Accordingly, the standard account of regulation, which emphasizes the role of regulation in tilting the competitive playing field in ways that benefit certain producers at the expense of consumers, does not explain the adoption of these laws.

We believe this study complements and contributes to a 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; 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 diffused across states very quickly. In addition, while studies of Progressive Era regulations like chain store taxes, meat inspection, and "blue sky laws" suggest that many regulations were enacted to tilt the competitive playing field in ways that benefited specific producer groups (Ross 1986; Libecap 1992; Mahoney 2003), another set of studies finds that other Progressive Era regulations, specifically those related to food, drugs, and professional quality, were primarily motivated by a desire to reduce informational asymmetries, and only secondarily, to tilt the competitive playing field through the introduction of entry barriers (Law 2003; Law and Kim 2005; Law and Libecap 2005). In these instances of relatively more benign regulation, producer interests were usually the most important supporters of reform, but consumers also benefited from 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 would not appear that consumers were harmed. Indeed, to the extent that these regulations succeeded in improving the credibility of advertising, consumers may have also benefited. Truth-in-advertising regulation therefore furnishes an example of successful Progressive Era regulation in that it was adopted rapidly and may have generated benefits for both consumers and producers.

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

Year	States enacting legislation
1912	MA[a, c]
1913	CT[b, 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]
After 1931	ME, NV

[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 and CT, the law initially required that the intent to defraud the consumer be proven, but this was later changed in 1921 and 1923, respectively, 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 needs to be proven was taken from Roper (1945).

Table 2: Descriptive statistics

	Impact Regressions (No of Obs.: 144)		Political Economy Regressions (No of Obs.: 48)	
Variable	*Mean*	*Std. Dev.*	*Mean*	*Std. Dev.*
Real per capita advertising	8.37	6.20	6.23	4.19
Real per capita patent medicine	2.28	3.57	1.95	2.68
Real per capita confectionary	7.71	10.48	3.93	4.34
Real per capita tobacco	11.15	32.73	12.02	19.59
Real per capita prepared foods[a]			3.20	4.24
Percent of Progressive Votes in 1912[a]			24.44	10.25
Urbanization Rate	0.42	0.21	0.36	0.21
Per capita Real Income	1128.4	392.9	1002.2	347.8
Illiteracy Percentage	6.45	5.87	8.36	7.32
Occupation Regulation	5.42	2.11	3.79	1.66
Electricity Regulation	0.53	0.51	0.15	0.36
Advertising Legislation (binary variable)	0.52	0.50	0.90	0.31
Strength of Advertising Legislation (count variable)	0.86	0.90	1.46	0.68
Composite Regulation Index (continuous variable)[b]	1.13	1.14	1.87	0.81

Notes: Data on advertising and the manufacturing volumes for patent medicines, tobacco, confectionary and prepared foods are from the *Census of Manufactures* (1909, 1919, and 1929). Illiteracy percentage and urbanization rates were taken from *Census of Population* (1909, 1919, and 1929). Per capita real income values are from Kuznets and Brady (1965). 1910 values were imputed. Occupation regulation was constructed using data in Council of State Governments (1952) while electricity regulation was obtained from Stigler and Friedland (1962). Data on progressive votes of 1912 were from the *Historical Statistics of the United States*. Data on advertising legislation and the strength of advertising legislation are constructed from *State Session Reports* and Roper (1945).

[a] There are only 48 data points available for these variables: 1919 and 1929 censuses do note report manufacturing volumes of prepared foods.

[b] The composite regulation variable combines the information on the strength of advertising legislation and the size of fines for misleading advertising in each state. It is simply the sum of strength of advertising legislation, which takes the value of 0 for no legislation, value of 1 for legislation that requires the intent to defraud consumers to be proven and value of 2 for legislation that does not require fraud to be proven for successful prosecution, and the weighted level of fine. Fines are categorized into 4 levels: 1 if the fine is not specified, 2 if it is less than $500, 3 if the fine is $500, and 4 if the fine is greater than $500. The weight used for each level of fine is 0.2. For instance, a state with a strong law and the highest level of fines, the composite index will be equal to 2 + 0.2 *4 = 2.8. Although the selection of weights does not significantly affect the results, these weights are chosen so that a weak law with the strongest fine (which would have a composite index value 1.8) will always be lower than a strong law with any level of fine.

Table 3: Ordinary Least Squares Regression Results with State Fixed Effects

Dependent Variable: Per capita Real Advertising (in newspapers and magazines)				
	OLS FE (1)	OLS FE (2)	OLS FE (3)	OLS FE (4)
Advertising Legislation	0.72	3.62***		
	(0.80)	(1.29)		
Composite Regulation Index			0.47	1.55***
			(0.36)	(0.53)
Urbanization Rate	4.21	1.82	3.83	0.85
	(3.21)	(4.57)	(3.22)	(4.60)
Per capita Real Income	0.01***	0.01***	0.01***	0.01***
	(0.002)	(0.002)	(0.002)	(0.002)
Illiteracy Percentage	0.23*	0.22	0.22*	0.21
	(0.12)	(0.14)	(0.12)	(0.14)
Year dummy_1919	-1.66*		-1.86**	
	(0.87)		(0.84)	
Year dummy_1929	3.51***	0.92	3.31***	1.44
	(1.06)	(1.49)	(1.01)	(1.31)
Number of Observations	144	96	144	96
R-squared (overall)	0.64	0.68	0.64	0.68

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.

Table 4A: First-Stage regressions for 2SLS Models: Linear Probability Model Results for Advertising Regulation

	Linear Probability Model for 2SLS FE (1)	Linear Probability Model for 2SLS FE (2)	Linear Probability Model for 2SLS FE (3)	Linear Probability Model for 2SLS FE (4)
Urbanization Rate	0.46	0.43	1.44	1.61
	(0.42)	(0.54)	(0.91)	(1.29)
Per capita Real	-0.1 E-3	-0.1 E-3	0.3 E-3	0.3 E-3*
Income	(0.2 E-3)	(0.3 E-3)	(0.5 E-3)	(0.7 E-3)
Illiteracy Percentage	0.02	0.02	0.05	0.05
	(0.02)	(0.02)	(0.03)	(0.04)
Year dummy_1919	0.62***		1.22***	
	(0.12)		(0.26)	
Year dummy_1929	0.72***	0.73***	1.36***	1.36***
	(0.16)	(0.19)	(0.34)	(0.44)
Occupation	0.01	0.02	0.02	0.02
Regulation	(0.03)	(0.04)	(0.06)	(0.08)
Electricity	0.21**	0.16	0.57***	0.51**
Regulation	(0.08)	(0.01)	(0.18)	(0.24)
Number of Observations	144	96	144	96
F-Test (instruments)	F(2,89) = 3.1**	F(2,42) = 1.27	F(2,89) = 4.8***	F(2,42) = 2.26
F-Test (model)	F(7,89) = 42.1***	F(6,42) = 40.7***	F(7,89) = 41.8***	F(6,42) = 33.2***

Table 4B: Two Stage Least Squares Regression Results with State Fixed Effects

Dependent Variable: Per capita Real Advertising (in newspapers and magazines)				
	2SLS FE	2SLS FE	2SLS FE	2SLS FE
	(1)	(2)	(3)	(4)
Advertising Legislation	1.63	8.89		
(Instrumented)	(3.17)	(6.36)		
Composite Regulation Variable			0.60	2.73
(Instrumented)			(1.14)	(1.79)
Urbanization Rate	3.72	-1.23	3.62	-1.51
	(3.64)	(6.47)	(3.68)	(5.92)
Per capita Real Income	0.01***	0.01***	0.01***	0.01***
	(0.002)	(0.003)	(0.002)	(0.002)
Illiteracy Percentage	0.22	0.12	0.21	0.15
	(0.14)	(0.20)	(0.14)	(0.17)
Year dummy_1919	-2.37		-2.07	
	(2.56)		(1.96)	
Year dummy_1929	2.70	-3.84	3.08	-0.67
	(2.96)	(5.85)	(2.21)	(3.33)
Number of Observations	144	96	144	96
R-squared (overall)	0.65	0.68	0.65	0.69

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.

Table 5A: Change in the Composition of Advertising after the Truth-in-Advertising Legislation

Dependent Variable: Share of Advertising in Magazines				
	OLS FE (1)	OLS FE (2)	2SLS FE (1)	2SLS FE (2)
Advertising Legislation	2.56	4.11	13.23	19.25
(Instrumented in 2SLS models)	(1.94)	(3.29)	(8.84)	(16.84)
Urbanization Rate	1.21	-0.86	-4.63	-9.64
	(7.80)	(11.7)	(1.17)	(17.13)
Per capita Real Income	0.008*	0.006	0.01*	0.01
	(0.004)	(0.006)	(0.005)	(0.008)
Illiteracy Percentage	-0.20	-0.15	-0.42	-0.44
	(0.29)	(0.35)	(0.38)	(0.54)
Year dummy_1919	-3.27		-11.64	
	(2.12)		(7.14)	
Year dummy_1929	-4.35	-5.01	-13.97*	-18.70
	(2.58)	(3.80)	(8.26)	(15.50)
Number of Observations	144	96	144	96
R-squared (overall)	0.11	0.13	0.10	0.11

Table 5B: Effect of the Truth-in-Advertising Legislation on Per capita Magazine Advertising

Dependent Variable: Value of Per capita Real Advertising in Magazines				
	OLS FE Model (1)	OLS FE Model (2)	2SLS FE Model (1)	2SLS FE Model (2)
Advertising Legislation	0.45	1.53	3.53	8.04
(Instrumented in 2SLS models)	(0.50)	(0.95)	(2.34)	(5.76)
Urbanization Rate	0.33	-0.76	-1.36	-4.54
	(2.00)	(3.38)	(2.69)	(5.86)
Per capita Real Income	0.004***	0.004**	0.005***	0.006**
	(0.001)	(0.002)	(0.001)	(0.003)
Illiteracy Percentage	0.07	0.06	0.002	-0.06
	(0.08)	(0.10)	(0.10)	(0.18)
Year dummy_1919	-0.70		-3.10*	
	(0.54)		(1.89)	
Year dummy_1929	0.24	-0.65	-2.53	-6.54
	(0.66)	(1.10)	(2.19)	(5.30)
Number of Observations	144	96	144	96
R-squared (overall)	0.25	0.28	0.22	0.20

Table 6: Determinants of state advertising regulation

	Ordered Probit (Strength of regulation)		OLS (Composite index)	
	(1)	(2)	(1)	(2)
Real per capita advertising	0.13**	0.09	0.07**	0.05*
	(0.06)	(0.06)	(0.03)	(0.03)
Real per capita patent medicine	0.003	0.06	0.04	0.06
	(0.04)	(0.09)	(0.03)	(0.05)
Real per capita confectionary	-0.06**	-0.07**	-0.04**	-0.04**
	(0.03)	(0.03)	(0.01)	(0.02)
Real per capita tobacco	0.002	0.0001	0.002	0.002
	(0.007)	(0.006)	(0.005)	(0.004)
Real per capita prepared foods	0.07	0.07	0.02	0.02
	(0.05)	(0.05)	(0.03)	(0.03)
Urbanization Rate		-0.002		-0.004
		(0.01)		(0.007)
Share of Progressive Votes		-0.80		0.16
		(1.65)		(1.15)
Occupation Regulation		0.22*		0.11
		(0.13)		(0.07)
Electricity Regulation		-0.62		-0.29
		(0.76)		(0.50)
Number of Observations	48	48	48	48
Pseudo- R^2 / Adjusted-R^2	0.10	0.14	0.16	0.22

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.