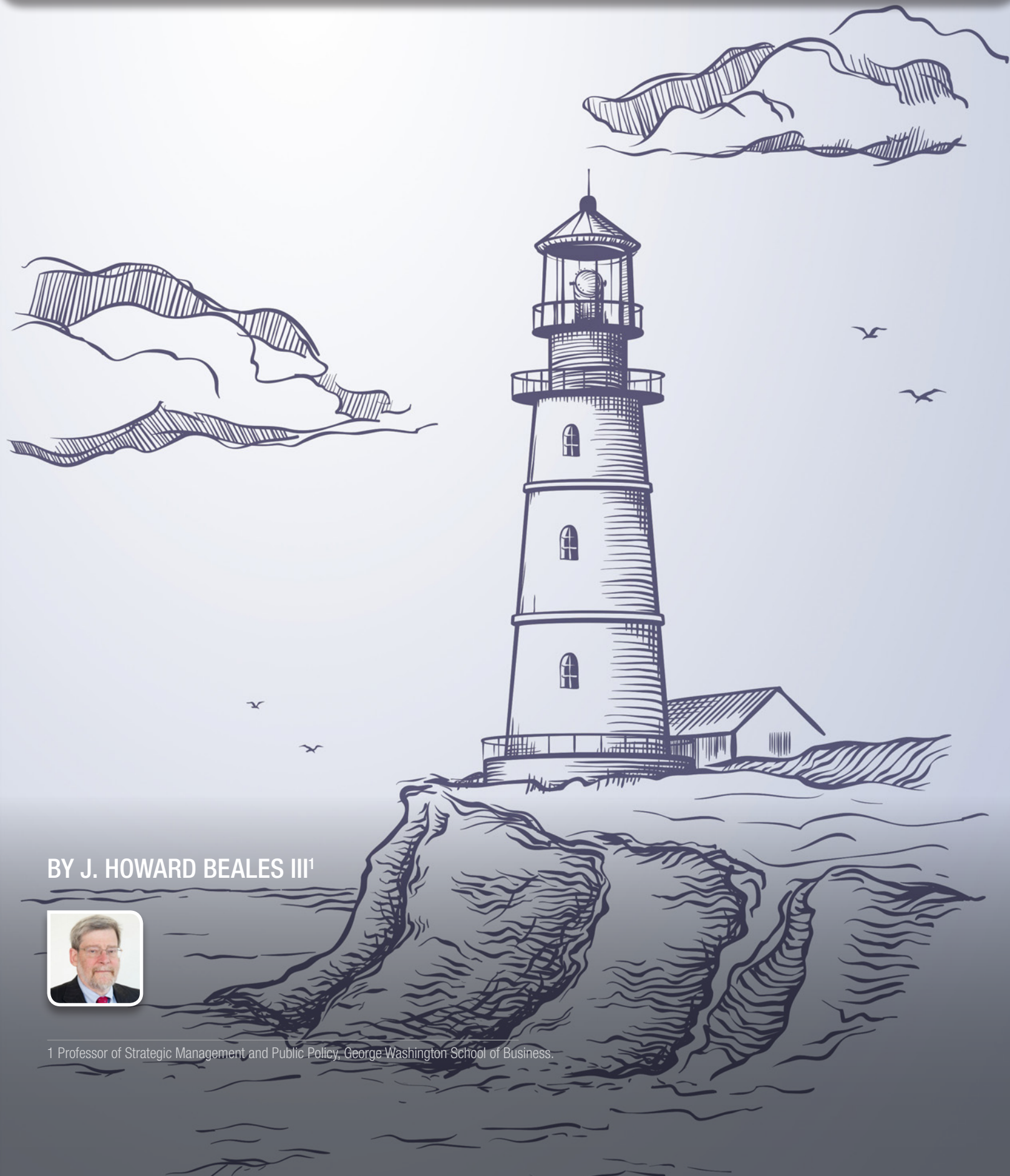


# PUBLIC GOODS, PRIVATE INFORMATION: PROVIDING AN INTERESTING INTERNET



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## APRIL 2019

### Big Data and Online Advertising: Emerging Competition Concerns

By Hon. Katherine B. Forrest (fmr.)



### Public Goods, Private Information: Providing an Interesting Internet

By J. Howard Beales III



### What *Times-Picayune* Tells Us About the Antitrust Analysis of Attention Platforms

By David S. Evans



### Online Advertising and Antitrust: Network Effects, Switching Costs, and Data as an Essential Facility

By Catherine E. Tucker



### Attention Oligopoly: Comments on the Paper by Prat & Valletti

By David Parker & Federico Bruni



### Competition in Display Ad Technology: A Retrospective Look at *Google/DoubleClick* and *Google/Admob*

By Dan Bitton, David Pearl, Maurits Dolmans & Henry Mostyn



### Advertising as Monopolization in the Information Age

By Ramsi A. Woodcock



### A New Digital Social Contract to Encourage Internet Competition

By Dipayan Ghosh



### From Demoting To Squashing? Competitive Issues Related to Algorithmic Corrections: An Application to the Search Advertising Sector

By Frédéric Marty



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## I. INTRODUCTION

The growth of the Internet has enriched all of our lives. Some, and perhaps most, of its most interesting content is available without charge. Understanding the crucial role of online advertising in making this possible requires we recognize three fundamental propositions.

First, internet content is a public good: it is not used up in consumption. Private market provision of such public goods has generally depended on revenue from advertising, as does internet content today. Second, the value of advertising depends critically on the availability of information about the likely viewer. When information is available, advertising prices are roughly 3 times higher than when there is no information about the viewer. Impairing the flow of information would significantly reduce the revenues available to support internet content, an impact that would be particularly problematic for smaller publishers. Third, advertising is actually beneficial to consumers. It leads to more competitive markets, with lower prices and more product improvements, and it narrows the gaps between different demographic groups.

## II. INTERNET CONTENT IS A PUBLIC GOOD

The Internet has allowed an unprecedented diffusion of information to consumers. Among a nearly infinite variety of possibilities, consumers can now listen to radio broadcasts, watch television programs, read the daily paper, or just hang out with their friends online. Although these activities have considerable value to consumers, they are frequently supplied to consumers free of charge. Instead, Internet content is largely funded by advertisers who pay to have their ads included along with the online content.

From an economic perspective, many types of Internet content are a “public good.” Unlike private goods, public goods are not “used up” in consumption, and instead remain available for other consumers to enjoy. A classic example of a public good is free broadcast radio or television. Any number of consumers can enjoy the content, without any additional costs to providing it. News and entertainment online are completely analogous. There may be congestion costs, as there are with a highway, but content viewed by one is still available for viewing by others. Moreover, like many public goods, it can be difficult to exclude consumers from consuming content. Editorial or programming content is easily copied and relayed to family, friends, and others.

There are, of course, internet-based services that are not public goods. Email, for example, requires an arrangement between the consumer and the service provider and excludes others from using the service. An email account can be shared among multiple users, but it cannot be used by the public at large.

Long before the Internet, publishers developed effective mechanisms to finance content that consumers wanted despite the public good nature of their product. Conventional media markets face the same underlying economic issues, and offer valuable insights into successful models for the provision of content.

The most common market mechanism for providing public goods is advertising. In effect, advertising converts the public good of media content into a private good of exposure to advertising. Content becomes a way for the publisher to attract an audience that in turn can be sold to advertisers. Because advertisers ultimately want to reach individual consumers, a larger audience is more valuable than a smaller one – it produces more advertising exposures available for sale.

The business of producing content and selling advertising is a “two-sided” or “platform” market. Content must attract an audience, but the platform must also attract advertisers. The financial support for the content comes from advertising revenue. In some circumstances, such as directories or fashion magazines, advertising may increase the overall value of the product to consumers. In other circumstances, however, advertising is a nuisance: Too much advertising, or advertising that is too intrusive or offensive to consumers, may drive away some of the audience, thereby reducing the number of advertising exposures that can be sold. Nuisance effects from advertising are more likely in media like radio and television where, digital video recorders aside, consumers must wait through that advertising for the programming to resume. They are likely less significant in print media, where consumers can more easily skip over the advertisements and simply ignore them. The publisher must consider both sides of the market in deciding what content to provide and how much advertising to offer.

Throughout history, advertiser support has been a vital revenue source for media companies. Many, such as free broadcast radio or television, depend almost entirely on advertising revenue for survival. Also common are mixed models, such as the typical magazine or newspaper, or cable television programming, where subscription payments from consumers provide some revenue, but advertising revenue remains vital and is frequently the largest source of revenue.

There are, of course, some models that are purely supported by subscription revenues, such as satellite radio, premium cable TV channels, or some “over-the-top” services such as Netflix. Market behavior makes clear, however, that most consumers are not willing most of the time to pay a premium price to avoid advertising content. They would rather avoid the direct costs of a subscription, and suffer the usually minor distraction of advertising intrusions to either subsidize or cover entirely the cost of the content.

There is nothing fundamentally different in the provision of online content from providing similar content in conventional media markets. Publishers, ranging from major media companies to specialty sites that focus on particular niches, must cover the costs of producing the content they provide. Although there are other models, by far the most common business model supporting the provision of Internet content is advertising-based.

Recently, some have argued for a different, subscription-based model of internet content provision. Concerned about the sharing of information that, as discussed below, is a key characteristic of online advertising markets, they have suggested that a subscription model would avoid the privacy problems that online advertising may appear to create.

Given the long history of conventional media markets, however, there is little reason to think that a subscription only, or even a subscription-mostly mode, would be successful. There is nothing different about the economics of providing internet content that would lend support to the notion that a business model that has consistently been eclipsed in the provision of editorial and entertainment content in the real world will suddenly become more successful online. Although examples exist in conventional media, subscription models have generally been rejected by consumers. There is every reason to expect that same result online.

### III. THE VALUE OF ADVERTISING DEPENDS ON INFORMATION

In conventional media markets, the price of an advertisement depends on the size of the audience that it reaches: larger audiences, other things being equal, command higher prices. But the price of an advertisement also depends on the characteristics of the audience. Not surprisingly, some audiences are more valuable than others, because more advertisers are interested in reaching them, or they are harder to attract to programming and therefore relatively scarce. Indeed, some programming, such as the original “soap operas,” was created specifically to attract a particular audience that advertisers sought. Advertising prices therefore depend on audience demographics, estimated through survey research, as well as the sheer number of viewers.

Online advertising is typically served to one person at a time when they visit a particular website, so audience size is not directly relevant. What advertisers are willing to pay for that slot, however, depends critically on what they know about the viewer. And in turn, what advertisers are willing to pay determines the resources available to support the content of that particular website. Anonymity may appear attractive to an individual viewer, but because it reduces the price of the advertisement, it reduces the revenue available to support the content of the website that the viewer is enjoying. It is, in short, a subtle form of free riding on the contributions of others.

There are two predominant forms of online advertising: search advertising and, broadly speaking, display advertising. Search advertising is purchased based on the keywords that a consumer has just entered in a search engine and is usually sold on a cost per click basis. That is, the web page is paid based on the number of clicks on the advertisement, rather than the number of consumers who see it. Advertisers bid for keywords, and the search engine provider will select which advertisements to include in the results based on the bid price and its own estimate of the likelihood that this consumer will find the advertisement sufficiently interesting to click on it. Information that enables the search provider to make better estimates of the likelihood that a consumer will click on the link will increase the provider’s revenue.

The other major category of online advertising is display advertising, which includes display and banner ads, rich media, and digital video ads. Display advertising is generally sold on a cost per thousand (“CPM”) basis. Large web publishers maintain their own sales forces, and sell much of their available inventory directly to advertisers, usually at a premium price. Third party intermediaries, including advertising networks and ad exchanges, are key participants in this marketplace. Advertising networks pool inventory from numerous, usually small publishers, along with unsold inventory from larger publishers. Increasingly, however, advertising is sold in real-time auctions, with advertisers bidding for particular advertising availabilities based on what, if anything, they know about the viewer. In the auction, the highest bidder wins the advertisement, at the price offered by the second highest bidder. Information about the viewer is obtained through cookies, which enable advertising networks and others to determine what other websites that particular user has visited and may enable either networks, publishers, potential advertisers to match the consumer with other information they have about that particular person. Cookies also enable “capping” advertising frequency, so that a consumer does not repeatedly see the same advertisement.

In conventional media, advertisers choose to advertise to an audience that the publisher has curated, because of the audience’s interest in that publisher’s particular content. In online markets, advertisers select their own audience, conveying their message to consumers who meet their criteria, wherever those consumers might be online. Information about the consumer’s interests and characteristics is clearly crucial to that effort.

In two separate studies, I have examined the impact of better information on the price of digital advertising. In a 2010 study, I surveyed 12 of the 15 largest advertising networks to determine the impact of behavioral targeting, which uses data based on user browsing behavior across multiple web sites to categorize likely consumer interest in a given advertisement. I compared the price of advertising on a CPM basis when it was sold based on behavioral targeting with the price when the advertisement was sold on a “run of network” basis, meaning that it could appear anywhere on the network with no specification as to the characteristics of the user. I found that the CPM for behaviorally targeted advertising was roughly 3 times higher than the price of run-of-network advertising — a substantial price premium. I also found that the majority of advertising revenue was passed through to the publisher.<sup>2</sup>

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2 Howard Beales, “The Value of Behavioral Targeting,” published online by Network Advertising Initiative, available at [http://www.networkadvertising.org/pdfs/Beales\\_NAI\\_Study.pdf](http://www.networkadvertising.org/pdfs/Beales_NAI_Study.pdf), March, 2010.



A second study, with Jeffrey Eisenach, analyzed 2013 impression-level data from two anonymous operators of automated advertising exchanges to determine the influence of additional information on the auction price. We found that more information led to a price premium that was both statistically and economically significant. If there was a cookie available with the impression, the price was roughly 3 times higher than if there was no cookie. Moreover, the longer the cookie had been in place, the greater the increase in price was. The price of an impression with a cookie that had been in place for 90 days was 3.7 times higher than the price with no cookie on one exchange, and 7.1 times higher on the other.<sup>3</sup>

Eisenach and I also used data from Adomic to assess the importance of third-party advertising, such as that sold through the auction markets, to publishers of different sizes. Adomic examines the source of advertising served on a particular web page to measure the relative prevalence of different advertising sales models across the top 4,000 Internet publishers. Even the largest publishers sold about half of their advertising availabilities through third-party intermediaries, while smaller, “long-tail” publishers relied on these approaches for up to two thirds of their advertising sales.

One might imagine a world in which web sites obtain information about the characteristics of their viewers in the same way that conventional media do, through surveys. That may be a feasible alternative for CNN or the New York Times, but it is hard to imagine a survey sufficiently large to form the basis of a reliable estimate of the demographic characteristics of the audience for a particular “cute kitten” video on YouTube. For smaller publishers in particular, there is little practical alternative to the cookie-based exchange of information to enhance the value of their advertising availabilities, and hence to enhance the revenue available to support their content.

Other studies support the same conclusion: the value of online advertising, and hence the revenue available to support the production and development of online content, depends critically on the availability of information about the likely viewer of the ad. Regulatory requirements that impair the flow of information will significantly reduce the revenue available to online content producers, leading to a less vibrant Internet. The impact will be greatest on the smaller publishers, who are most dependent on third-party technologies for advertising revenue.

It is also vital to recognize that regulatory rules are likely to have very different impacts on different companies. Companies that utilize sign-ins are likely to have the most information, because they can typically observe the consumer’s behavior whenever he or she is signed in to the service. Thus, Facebook and Google likely have significant informational advantages over other participants in the online advertising marketplace. Some large publishers with many different content pages will gather information regarding behavior as the consumer moves around their various offerings. Other important participants in the online marketplace, however, are not consumer-facing at all. Instead, they work with publishers or advertisers to observe behavior across independent websites through the use of cookies. There are numerous such companies, most of whom consumers have never heard of — for example, 33across, Accuen, Acuity, and Adara, which happen to be the first four names on the list of members of the Network Advertising Initiative. More elaborate consent requirements could seriously disadvantage these companies, and help protect the market shares of the current leaders in the online advertising market, Facebook and Google. As in many other areas, large players in online advertising markets have incentives to agree to regulatory requirements that they can satisfy more easily than their smaller competitors. And as in any other market, creating regulatory barriers that have the effect of protecting market leaders from competition is bad for consumers.

## IV. ADVERTISING PROVIDES IMPORTANT BENEFITS FOR CONSUMERS

Many discussions of online advertising proceed from the premise, often unstated, that advertising is somehow a harm to consumers or to economic performance. Certainly, as individuals, we may think of advertising as a nuisance, and many times it is. The ability to advertise, however, is critical to maintaining effective competition in markets for goods and services.

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3 J. Howard Beales & Jeffrey A. Eisenach, “An Empirical Analysis of the Value of Information Sharing in the Market for Online Content,” published online by Digital Advertising Alliance, available at <http://www.aboutads.info/resource/fullvalueinfostudy.pdf>, January, 2014.

The competitive benefits of advertising are by now well known. In the words of Nobel Laureate George Stigler, “advertising is an immensely powerful instrument for the elimination of ignorance.”<sup>4</sup> Informed consumers drive the competitive process, benefitting all consumers as sellers compete for the informed minority.<sup>5</sup> Numerous economic studies have shown that restrictions on advertising increase prices to consumers, even when advertising does not mention price.<sup>6</sup>

Advertising also stimulates innovation. If sellers cannot advertise innovative products, or if they cannot tell consumers why new product characteristics are important, there is less incentive to make improvements in the first place.<sup>7</sup> One of the best studied examples involves Kellogg’s 1984 claims for All Bran cereal, conveying the then novel recommendation of the National Cancer Institute (“NCI”) that diets high in fiber may reduce the risk of some cancers.<sup>8</sup> The science, which was based largely on epidemiology rather than human clinical trials, was uncertain. Citing these uncertainties, the FDA threatened to seize All Bran as an unapproved new drug. When the FTC and the NCI defended Kellogg, the FDA changed course.

An FTC Staff Report documented the impact of the Kellogg campaign and its aftermath.<sup>9</sup> Increased advertising about fiber content and its relationship to cancer risks led to significant changes in cereals.<sup>10</sup> Claims about the relationship between diet and disease increased elsewhere as well, with similar marketplace impacts. For example, claims about the relationship between diet and heart disease rose from less than 2 percent of food advertising in 1984 to more than 8 percent in 1989;<sup>11</sup> consumption of fat and saturated fat, the primary dietary risk factors for heart disease, fell far more sharply after 1985.<sup>12</sup> Again, advertising led to beneficial changes in diet.

Advertising is particularly important to less advantaged groups. The FTC Staff Report documented that although fiber consumption increased for all groups, it increased more among racial minorities and single parent households.<sup>13</sup> Another study has shown that the least educated paid the highest increase in prices when eyeglass advertising was restricted.<sup>14</sup>

Online advertising can be expected to have similar effects to any other advertising, and those effects are generally good for consumers. Advertisers choose to advertise online because it is a cheaper way to reach potential customers than conventional media, or to supplement conventional campaigns. Restrictions that impair its effectiveness can only reduce those benefits.

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4 George J. Stigler, “The Economics of Information,” 64 J. POL. ECON. 213, 220 (1961).

5 See, e.g. Alan Schwartz & Louis L. Wilde, “Intervening in Markets on the Basis of Imperfect Information: A Legal and Economic Analysis,” 127 U. PA. L. REV. 630 (1978-1979).

6 The FTC has summarized the empirical evidence regarding the impact of advertising on prices. See *In re Polygram*, 2003 WL 21770765 (FTC), Docket No. 9298 (July 24, 2003), at note 52.

7 Advertising is an intangible investment, whose value can only be recovered through repeat sales. Sellers invest in and maintain product quality to generate repeat business. See Phillip Nelson, “Advertising as Information,” 82 J. POL. ECON. 729 (1974).

8 The Kellogg incident is discussed in J. Howard Beales, Timothy J. Muris & Robert Pitofsky, “In Defense of the Pfizer Factors,” in James C. Cooper, Ed., *The Regulatory Revolution at the FTC: A Thirty-Year Perspective on Competition and Consumer Protection* (Oxford University Press, 2013), pp. 83-108.

9 Pauline Ippolito & Alan Mathios, “Health Claims in Advertising and Labeling: A Study of the Cereal Market,” FTC Staff Report (1989), available at <http://www.ftc.gov/be/econrpt/232187.pdf>.

10 For example, the fiber content of new cereals increased 52 percent, and the weighted average content of cereals (reflecting both product changes and changes in consumer choices) increased at a significantly higher rate than before health claim advertising began. Ippolito & Mathios, *supra* note 8.

11 Pauline Ippolito & Janice Pappalardo, “Advertising Nutrition & Health: Evidence from Food Advertising, 1977–1997,” FTC Staff Report (2002), available at <http://www.ftc.gov/opa/2002/10/advertisingfinal.pdf>.

12 Pauline Ippolito & Alan Mathios, “Information and Advertising Policy: A Study of Fat and Cholesterol Consumption in the United States,” 1977–1990, FTC Staff Report (1996), available at [http://www.ftc.gov/be/consumerbehavior/docs/reports/lppolitoMathios96\\_fat\\_long.pdf](http://www.ftc.gov/be/consumerbehavior/docs/reports/lppolitoMathios96_fat_long.pdf).

13 Ippolito & Mathios, *supra* note 8.

14 Lee Benham & Alexandra Benham, “Regulating through the Professions: A Perspective on Information Control,” 18 J.L. & Econ. 421 (1975).

## V. CONCLUSION

Providing public goods is always a challenge in a market economy. For centuries, the most common mechanism for doing so has relied on advertising support for the public good to attract an audience for a private good — advertising messages. That system has worked remarkably well; there is little reason to think that there is significant under-provision of news or entertainment content. Online markets are no different. Advertising support is currently the primary mechanism for funding internet content, and although other models exist, and may even thrive, advertising is likely to remain a critical revenue source for the foreseeable future.

The viability of advertising support, however, likely depends on the ability to share information that enables the identification of viewers most likely to be interested in the message. With such information, prices are substantially higher than when information is not available. In a famous New Yorker cartoon, a dog at a computer announces that the beauty of the internet is that no one knows you are a dog. Unfortunately, however, few advertisers want to reach dogs. Third party advertising intermediaries that collect and use such information are also particularly important to smaller internet publishers.

Like other forms of advertising, online advertising enhances competitive market performance. Free or subsidized content and enhanced product market performance seems a fair trade for anonymized information that helps to predict what advertising might be of greatest interest to consumers.



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