

# 9

## Tobacco advertising and promotion

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**If tobacco advertising and promotion increase cigarette consumption, they are issues for public health policy. Although public health advocates assert that tobacco advertising does increase cigarette consumption, there is a significant empirical literature that finds little or no effect of tobacco advertising on smoking. In this chapter, these empirical studies are examined more closely with several important insights emerging from the analysis. The chapter also provides new empirical research from 102 countries on the effect of tobacco advertising. The primary conclusion of this research is that a comprehensive set of tobacco advertising bans can reduce tobacco consumption and that a limited set of advertising bans will have little or no effect. The policy options that have been proposed for the control of tobacco advertising include limitations on the content of advertisements, restrictions on the placement of advertising, restrictions on the time that cigarette advertising can be placed on broadcast media, total advertising bans in one or more media, counter-advertising and the taxation of advertising. This analysis concludes that neither restrictions on the content and placement of advertising, nor bans in only one or two media, are effective. However, comprehensive control programs, including comprehensive advertising bans, do reduce cigarette consumption. Counter-advertising, which is the use of media to promote public health, also reduces cigarette consumption. The taxation of advertising also reduces total advertising with the additional advantage of raising revenue that could be used to fund counter-advertising.**

### 9.1 Introduction

If tobacco advertising and promotion increase tobacco consumption, they are public health issues. Although public health advocates (see, for example, Roemer 1993) claim that tobacco advertising and promotion do increase cigarette consumption, there is a significant empirical literature that finds no effect of tobacco advertising on smoking (see, for example, Duffy 1996) and there is very little empirical research on other promotional activities.<sup>1</sup> The empirical literature on advertising provides the basis for the tobacco industry's claim that its advertising only affects market share between various competing brands. This chapter will examine more closely the existing literature on tobacco advertising. Several important guidelines emerge from this analysis. These

<sup>1</sup> Since there is little research on the direct effects of these other promotional activities, the literature review emphasizes advertising. Other promotional activities generally either lower the full price of cigarettes or are sponsorships of public events (see Table 9.1). Economists define the full price as the money price, as well as the utility or disutility, of all non-pecuniary aspects of the purchase. Lower full prices result from placement fees paid to retailers, bundling the product with accessories and volume discounts. There are a number of studies (see Chaloupka and Warner, in press) which show that lower full prices increase consumption.

guidelines are used to re-evaluate previous studies, which results in a new and more critical view. This chapter also examines the experience of developing countries with tobacco advertising and promotion controls and reviews the merits and disadvantages of available policy options.

Before examining the prior empirical research on tobacco advertising, it is important to clarify what advertising and promotion are. Advertising can be defined as the use of media to create positive product imagery or positive product associations or to connect the product with desirable personal traits, activities, or outcomes. Promotion, also called marketing, can be defined as the mix of all activities that are designed to increase sales. In the United States, federal law requires that cigarette companies report their 'current practices and methods of cigarette advertising and promotion'. As of 1996, the five major American tobacco companies reported expenditures on 12 categories of advertising and promotion. These categories can be divided into advertising and other promotion activities. The data in Table 9.1 are reported by the Federal Trade Commission (FTC) (1998) and include all categories and the reported spending in each category.

Some additional perspective on the data reported in Table 9.1 is provided by com-

**Table 9.1** US tobacco advertising and promotion activities (thousands of 1996 \$US)

	1986	1996	Growth rate (%)
Newspapers	140289	14067	-90
Magazines	470874	243046	-48
Outdoor	423446	292261	-31
Transit	58855	28865	-51
Point of sale	294800	252619	-14
<b>Total advertising</b>	<b>1388265</b>	<b>830858</b>	<b>-40</b>
Promotional allowances (expenditures paid to retail outlets for favorable positioning of the product)	1166662	2150838	84
Sampling distributions (the cost of providing free samples to the public)	98816	15945	-84
Specialty item distribution (the cost of consumer accessories with brand names)	251982	544345	116
Public entertainment (the cost of sponsorship of sports ad cultural events)	116801	171177	47
Direct mail	56423	38703	-31
Coupons and retail value added (price reductions, two for the price of one and offers of merchandise)	1159267	1308708	13
All other promotional activities (includes endorsements in 1986 and Internet 1996)	104832	47128	-55
<b>Total other promotional</b>	<b>2954784</b>	<b>4276844</b>	<b>45</b>
<b>Total advertising and other promotional activities (includes a miscellaneous category)</b>	<b>4343049</b>	<b>5107702</b>	<b>18</b>

paring the level of tobacco advertising to advertising expenditures for other products and by examining the time trend in advertising and other promotion activities. Advertising expenditures are typically analyzed as a percentage of sales, which is known as the advertising-to-sales ratio. Schonfeld and Associates (1997) report that advertising-to-sales ratios, at the level of the whole industry (defined as all products, all brands, and all members of brand families sold) are for most industries less than 4%, averaging around 2% to 3%. The advertising-to-sales ratio for cigarettes in 1997 was relatively high at 5.9%. The time-trend in the advertising-to-sales ratio has been relatively stable, with Schonfeld reporting an advertising-to-sales ratio for cigarettes in 1980 of 6.3%. Both advertising expenditure and sales revenue have decreased over time, leaving the advertising-to-sales ratio relatively stable. However, according to the FTC data reported in Table 9.1, other promotional spending has increased over time. For the United States, when advertising and other promotion are added, the total is both high and has been increasing.

## 9.2 Review of economic issues in advertising<sup>2</sup>

Advertising is an important method of competition in industries that are highly concentrated, such as the cigarette industry. A highly concentrated industry is characterized by a small number of relatively large firms. Firms in industries of this type tend not to compete by price, but try to increase sales with advertising. According to Becker and Murphy (1993), advertising is an information complement to the good itself.<sup>3</sup> Cigarette advertising is not designed to convey information about the physical characteristics of the product. Information about these characteristics is easily obtained. Cigarette advertising is designed to create a fantasy of sophistication, pleasure, and social success. This becomes the product 'personality', which the advertisers expect will appeal to specific segments of the market. In developing countries, this imagery can be designed to associate the product with a glamorous fantasy of American or European life-styles. The relatively small expenditure on tobacco provides a link to this fantasy life-style.

The importance of advertising in opening new foreign markets is understood by the tobacco companies. Bogart (1986) reviews Peckham's rule, which suggests that, for new brands, advertising during the first two years should be 150% of desired sales. After the first two years, advertising should be set at whatever level is required to maintain sales. Philip Morris and British American Tobacco (BAT) are the largest international tobacco companies. *Advertising Age* reports that in 1996, for advertising outside the United States, Philip Morris was the ninth largest advertiser in the world, and BAT was the forty-fourth largest advertiser in the world.<sup>4</sup> In addition, an *Advertising Age* survey of Europe, Asia, and the Middle East finds that tobacco companies are listed in the top 10 advertisers in 21 out of 50 countries. The effectiveness of this advertising is illustrated by Chaloupka and Laixuthai (1996). They found that for four Asian

<sup>2</sup> For a discussion of other econometric issues in advertising, see Saffer (1995).

<sup>3</sup> Economists define goods that are often consumed together as complements. An example of complements are cameras and film.

countries, total tobacco advertising increased when US cigarette companies entered and total tobacco use increased by 10%.<sup>5</sup>

Measuring the effect of advertising on consumption can be problematic. Economic theory provides some important insights into how econometric studies of cigarette advertising should be conducted. The most important economic aspect of advertising is the concept of diminishing marginal product.<sup>6</sup> This concept is the basis of the advertising response function. Advertising response functions have been used in brand-level research (that is, research on products that are identifiable by a known name, such as Marlboro) to illustrate the effect of advertising on consumption at various levels of advertising (Ackoff and Ernschoff 1975; Rao and Miller 1975). Economic theory suggests that, due to diminishing marginal product, advertising-response functions flatten out at some point. That is, after a certain point, consumption becomes ever less responsive to increases in advertising. Ultimately consumption is completely unresponsive to additional advertising. One important implication of diminishing marginal product is that, since media are not perfect substitutes, media diversification increases the effect of a given advertising budget.

The same theory that describes the brand-level advertising response function can be applied to the industry level. The industry level is defined as all tobacco products, and includes all brands and all members of brand families sold. The industry-level advertising-response function is similar to the brand-level function and is graphed in Fig. 9.1(a). The vertical axis measures industry-level consumption and the horizontal axis measures industry-level advertising. The industry-level response function is different from the brand-level response function in that advertising-induced sales must come at the expense of sales of products from other industries or savings. Increases in consumption come from new consumers or from increases by existing consumers. In the case of cigarettes, new consumers are often uninformed adolescents. The uptake of smoking by adolescents creates serious health risks for them in adulthood.

A second important aspect of advertising is that its effects linger over time. That is, advertising in period one will have a lingering, although smaller effect, in period two. Although the rate of decline over time remains an arguable issue, research such as Boyd and Seldon (1990) finds that cigarette advertising fully depreciates within a year. The lingering effect of advertising is the basis for a widely used advertising technique known as pulsing. A pulse is a burst of advertising, in a specific market, that lasts for a short time and then stops.<sup>7</sup> After a period of time with no advertising, the market will be exposed to another pulse of advertising. The length and intensity of a pulse will vary due to a number of factors, including the specific media, the specific advertisers, and advertising costs in the specific market.

The two response functions represented in Fig. 9.1(a) and (b) help to illustrate the likely outcome of alternative methods of measuring advertising in econometric studies. There are four methods of measuring advertising used in econometric studies of advertising and industry-level consumption. These four categories are:

<sup>4</sup> Under a 1900 agreement BAT is not allowed to sell in the US or in Britain.

<sup>5</sup> A considerable backlash against this advertising developed in Thailand and Taiwan.

<sup>6</sup> The theory that the continued addition of increments of an input to a process will at some point lead to ever smaller increments in output is known as diminishing marginal product.

<sup>7</sup> This practice is also known as *flighting* and the advertising period is known as a *flight*.

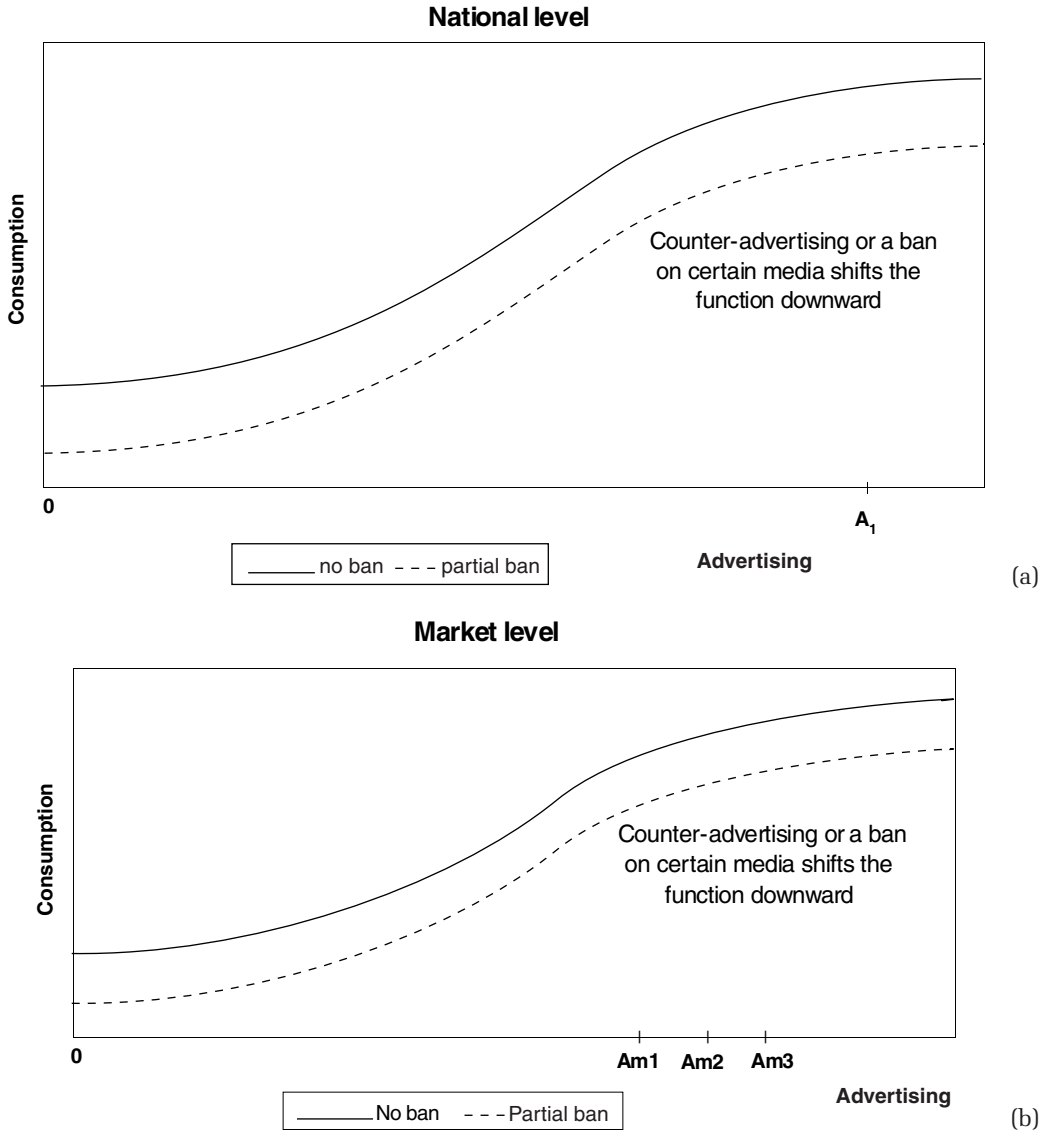


Fig. 9.1 The industry-level advertising-response function at (a) national level and (b) market level.

- (1) studies that use annual or quarterly national aggregate expenditures as the measure of advertising;
- (2) studies that use cross sectional measures of advertising;
- (3) studies of advertising bans; and
- (4) studies of counter-advertising.

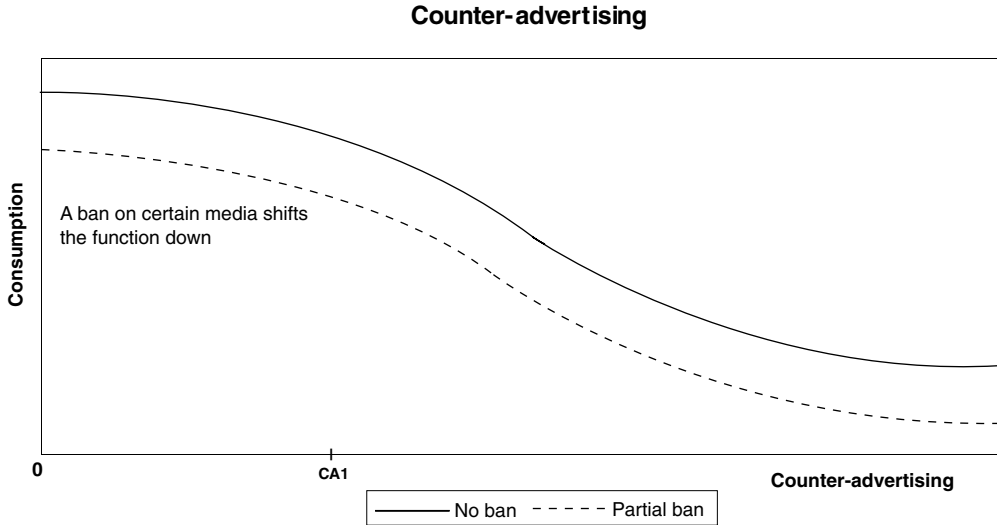
Consider first, studies that use annual national expenditures as the measure of advertising. Annual national advertising expenditures are the yearly total of all cigarette advertising expenditures, for all advertisers, in all media, for all geographic market areas. This is a high level of aggregation of the advertising data and, as a result, the data have very little variation. Since cigarettes are heavily advertised, the marginal product of advertising may be very low or zero. In Fig. 9.1(a), this is equivalent to measuring advertising in a small range around  $A_1$ . The loss of variance due to aggregation leaves little to correlate with consumption and, since the advertising occurs at a level where the marginal effect is small, it is not likely that any effect of advertising will be found.

Consider next, studies that use cross-sectional data as the measure of cigarette advertising. This type of data can differ but would typically be gathered at local level, such as a Metropolitan Statistical Area, for periods of less than a year. This type of data can have greater variation than national-level data for several reasons. One reason for the variation in this type of data is pulsing. The pattern of these pulses varies over local areas. Another reason for variation in advertising levels is that the cost of advertising varies across local areas. This is illustrated in Fig. 9.1(b) by the three data points  $A_{m1}$ ,  $A_{m2}$ , and  $A_{m3}$ . An econometric study that uses monthly or quarterly local-level data would include a relatively larger variation in advertising levels and in consumption data. When the data are measured over a relatively larger range, there is a greater probability that the sample data will fall within an upward-sloping portion of the response function. Local-level advertising data are thus more likely to find a positive relationship between advertising and consumption.

Consider next, studies of advertising bans. The potential effect of a ban on certain media is shown as a downward shift of the response function in Fig. 9.1. An advertising ban may not reduce the total level of advertising but will reduce the effectiveness of the remaining non-banned media. The reason for this is as follows. A ban on one or more media will result in substitution into the remaining media. However, each medium is subject to diminishing marginal product. The increased use of the non-banned media will result in a lower average product for these media. This shifts the response function downward. Firms may or may not respond to this decrease in effectiveness of their advertising expenditures. Some may try to compensate with more advertising, which would be illustrated by moving to a higher level of advertising on a lower advertising response function.<sup>8</sup> Others may increase the use of other promotional techniques such as promotional allowances to retailers.

Finally, consider counter-advertising. Counter-advertising, which is the use of media to promote public health, is subject to the same law of diminishing marginal product as advertising. Figure 9.2 illustrates the effect of counter-advertising on consumption. The vertical axis measures consumption and the horizontal axis measures counter-advertising. The response function is downward sloping, indicating that increases in counter-advertising reduce consumption. Again, the response function flattens out at high levels of counter-advertising due to diminishing marginal product. The level of counter-advertising is usually low and irregular over time. Counter-advertising will,

<sup>8</sup> In a simple model, the decrease in marginal product would reduce the use of the input. However, in an oligopoly model, with response to rivals, one reaction to reduced sales is to increase advertising. Recall Peckham's rule that advertising should be set at whatever level is required to maintain sales.



**Fig. 9.2** The effect of counter-advertising on consumption.

therefore, be measured over a range that is sufficiently wide to reveal a slope and is measured in an area of the function where the slope is decreasing (see Fig. 9.2). It is likely that a negative relationship between counter-advertising and consumption will be found.

### 9.3 Prior econometric studies<sup>9</sup>

In this section, the prior econometric studies of the effect of cigarette advertising on cigarette consumption are reviewed. These studies are grouped into the four categories noted above. The four data categories, which are based on the type of data used to measure advertising and consumption, are listed in Table 9.2. They are:

- (1) national expenditure data;
- (2) cross-sectional data;
- (3) advertising bans; and
- (4) counter-advertising.

The industry-level response function predicts the likely outcome of these econometric studies based on the type of data used. We will see in this section that the results in each study are very much dependent on the type of data used. A similar conclusion, based on type of data, is found in reviews of alcohol-advertising research (see Saffer 1995).

<sup>9</sup> The 1989 US Surgeon General's report on tobacco reviews various mechanisms by which tobacco advertising and promotion increase tobacco use (USDHHS 1989).

**Table 9.2** Prior empirical studies of the effects of advertising on tobacco consumption

Study	Data	Conclusion
Time series studies		
Hamilton (1972)	US 1925–70	No effect of advertising
Grabowski (1976)	US 1956–72	No effect of advertising
Schmalensee (1972)	US 1955–67	No effect of advertising
Schneider <i>et al.</i> (1981)	US 1930–78	No effect of advertising
Baltagi and Levin (1986)	US 1963–80	No effect of advertising
Johnson (1986)	Australian 1961–86	No effect of advertising
Porter (1986)	US 1947–82	No effect of advertising
Wilcox and Vacker (1992)	US quarterly 1961–90	No effect of advertising
Duffy (1995)	UK quarterly 1963–88	No effect of advertising
Bishop and Yoo (1985)	US 1954–80	Small positive effect of advertising
Abernethy and Teel (1986)	US 1949–81	Small positive effect of advertising
Valdes (1993)	Spanish 1964–88	Small positive effect of advertising
Chetwynd <i>et al.</i> (1988)	New Zealand quarterly 1973–85	Small positive effect of advertising
McGuinness and Cowling (1975)	UK quarterly 1957–68	Small positive effect of advertising
Seldon and Doroodian (1989)	US 1952–84	Small positive effect of advertising
Cross-sectional studies		
Lewit <i>et al.</i> (1981)	7000 youths 1966–70	Positive effect of advertising
Goel and Morey (1995)	US States 1959–82	Positive effect of advertising
Roberts and Samuelson (1988)	1971–82 for five firms	Positive effect of advertising
Ban studies		
Hamilton (1975)	11 OECD countries	No effect of a ban
Laugesen and Meads (1991)	22 OECD countries 1960–86	Negative effect of a ban
Stewart (1993)	22 OECD countries 1964–90	No effect of a TV ban
Counter-advertising studies		
Schneider <i>et al.</i> (1981)	US	Negative effect of counter-advertising
Lewit <i>et al.</i> (1981)	US	Negative effect of counter-advertising
Porter (1986)	US	Negative effect of counter-advertising
Hu <i>et al.</i> (1995)	California	Negative effect of counter-advertising
Pierce <i>et al.</i> (1990)	Australia	Negative effect of counter-advertising
Abernethy and Teel (1986)	US	Negative effect of counter-advertising
Pekurinen (1989)	Finland	Negative effect of counter-advertising
Flay (1987)	International review	Negative effect of counter-advertising
Goldman and Glantz (1998)	California	Negative effect of counter-advertising
Baltagi and Levin (1986)	US	Negative effect of counter-advertising

The first category of studies reviewed are those using national-aggregate advertising data as the measure of advertising. The industry-level response function presented above suggests that this type of study will not find any effect of advertising. There will be no effect found since the level of cigarette advertising is relatively high and national-level data may not provide sufficient variance to find any effect.<sup>10</sup> That is, the real expenditure on advertising may not vary enough from year to year to estimate any effect. These studies typically employ annual or quarterly data from one country with between 20 and 90 observations. Advertising is usually measured by expenditures, with control variables, such as price and income, included.

Schmalensee (1972) and Duffy (1996) make the interesting and almost universally ignored point that a study of cigarette advertising should control for changes in the level of advertising in all industries. The level of advertising in all industries is defined as external advertising. The effect of external advertising can be explained with a simple example. Assume that savings are held constant. If all industries, including cigarettes, doubled advertising, cigarette sales would not increase.<sup>11</sup> This is because the effects of spending increases in advertising, in each industry, would be mutually canceling. Cigarette advertising should be measured relative to external advertising.

Table 9.2 lists 15 cigarette advertising expenditure studies that use national, annual, or quarterly time-series data. As expected, all of these studies find either no effect or a small effect of advertising on cigarette demand. Chetwynd *et al.* (1988) find a small effect with quarterly data that is lost when aggregation is increased to the annual level. This supports the theory that annual data have too little variance for effects to be detected. Duffy (1996) reviews these studies and a few more that also use national-level advertising data. He also reports that these studies find either no effect or a small effect and concludes that these studies show that cigarette advertising has no effect on cigarette consumption. An alternative conclusion, as noted by Warner *et al.* (1986), is that studies which use a single time-series of national-level data are inappropriate to measure the effect of advertising on consumption.

The second category of studies includes those that measure advertising at a local cross-sectional level. There are only three studies that use cross-sectional data. The reason for their scarcity is that the data are expensive and difficult to assemble. Cross-sectional data measure advertising over a range, such as that shown in Fig. 9.1(b), which shows an industry-level advertising response function at the market level. Another advantage of cross-sectional data over time-series data is that external advertising does not need to be controlled. The study by Roberts and Samuelson (1988) is somewhat different, but may still be classified as cross-sectional. In this study the cross-sectional unit is the firm. These authors conclude that advertising increases market size, and that market share is related to the number of brands. They show that when advertising is measured over a wide range, such as with cross-sectional data, a significant positive effect of advertising is observed.

The third category of studies examines the effect of advertising bans on various aggregate measures of tobacco use. Advertising bans shift the function in Fig. 9.1(a) downward. Three studies of cigarette advertising bans using pooled international data

<sup>10</sup> A flat portion of the function has a zero slope, which means a zero regression coefficient, and no relationship between consumption and advertising.

<sup>11</sup> This assumes that there is no change in the relative effectiveness of all advertising.

sets have been published. Hamilton (1975) used data on 11 countries over the period from 1948 to 1973. Hamilton presents a set of regressions using pooled data of countries with bans and countries without bans. The regressions show no effect of a ban. Laugesen and Meads (1991) used data from 22 high-income countries for the period 1960 to 1986. Like Hamilton, these authors also find that, before 1973, cigarette advertising bans had no effect on consumption. However, they find that after 1973, cigarette advertising bans have had a significant negative effect on consumption. Laugesen and Meads argue that, before 1973, manufacturers were able to respond to broadcast advertising restrictions by increasing their marketing efforts in alternative media. These shifts to alternative media are unmeasured in the data set and offset the effect of the broadcast bans. However, after 1972, more comprehensive anti-smoking legislation was enacted in most of the countries. These newer laws restricted advertising efforts to a greater degree and resulted in lower cigarette consumption. The third study of cigarette advertising bans was done by Stewart (1993) who analyzed data from 22 high-income countries for the period 1964 to 1990, and found that a television advertising ban had no effect. This study does not control for other offsetting increases in advertising in other media and does not separately examine the more restrictive period after 1973.

A new study by Saffer and Chaloupka (in press) specifically addresses this issue. The empirical work employs an international data set of 22 high-income countries over the period from 1970 to 1992. Tobacco consumption data from several sources are used. The primary conclusion of this research is that a comprehensive set of tobacco advertising bans can reduce tobacco consumption and that a limited set of advertising bans will have little or no effect. The regression results indicate that a comprehensive set of tobacco advertising bans can reduce consumption by 6.3%. The regression results also indicate that the new European Commission (EC) directive, which will end tobacco advertising in the EU countries, will reduce tobacco consumption by about 6.9% on average in the EU. The regression results also indicate that the ban on outdoor advertising, included in the settlement by the US tobacco industry, will probably not result in much change in advertising expenditures or in tobacco use, since the total number of bans is still relatively limited. However, under the settlement, the tobacco industry would also contribute \$1.5 billion over five years for public education on tobacco use. This counter-advertising could reduce tobacco use by about 2%.

The fourth category of advertising studies includes those that examine the effect of counter-advertising on consumption. From 1967 to 1970, broadcasters in the United States were required to donate air time to counter-advertising. At its peak, the ratio of counter-advertising to advertising was one-third. This period, therefore, provides a good opportunity for measuring the impact of counter-advertising. In Fig. 9.2, studies of counter-advertising measure advertising in a range around CA1 (counter-advertising). This type of study is likely to find a significant relationship and, in fact, a considerable number do find that counter-advertising reduces consumption. Warner (1981), Lewit *et al.* (1981), Schneider *et al.* (1981), and Baltagi and Levin (1986), all included measures of counter-advertising, and all concluded that counter-advertising was effective in reducing cigarette consumption. The cigarette companies finally came to the conclusion that the negative effect of counter-advertising on consumption was

greater than the positive effect of their advertising. The cigarette companies gave up broadcast advertising so that they would not have to fund more counter-advertising.

A series of local counter-advertising campaigns has also been analyzed. A study by Pierce *et al.* (1990) finds that counter-advertising reduced smoking in two Australian cities. Hu *et al.* (1995) find that counter-advertising reduced smoking in California. Goldman and Glantz (1998) find that counter-advertising in California and Massachusetts reduced smoking. Flay (1987) reviews the results of local counter-advertising campaigns in Finland, Greece, the United Kingdom, Norway, Israel, Austria, and Canada, and concludes that counter-advertising is effective in reducing cigarette consumption.<sup>12</sup>

## 9.4 Non-economic evidence

Evidence from a number of other disciplines supports the argument that cigarette advertising and promotion directly and indirectly increase cigarette demand (Chaloupka and Warner, *in press*). A major source of non-economic evidence is survey research and experiments that assess recall of cigarette advertising and smoking behavior, particularly among children. These studies have concluded that cigarette advertising is effective in getting children's attention and that the level of advertising recall is positively correlated with current or anticipated smoking behavior or smoking initiation. However, these studies generally cannot assess the potential endogeneity between an interest in smoking and recall. In other words, such studies cannot rule out the possibility that children who had greater recall of smoking advertisements did so because they were already more interested in smoking anyway, and not because the advertisements stimulated their interest. In addition, Chaloupka and Warner (*in press*) note that cigarette advertising and promotional activities are not consistent with the tobacco industry's claim that the market for tobacco products is mature and that marketing activities are designed to promote brand share, rather than market expansion. If the industry is a mature or declining one, retaining existing consumers and recruiting new ones would be particularly important in the cigarette market in which about 5% of consumers are lost annually, either through quitting or because they die. Finally, while the overall market may be mature, there are segments of the market that appear to have potential for growth, such as youth in the United States, for whom smoking prevalence rose throughout most of the 1990s, or specific minority groups, such as Hispanic females, for whom smoking rates are well below those of other groups of women.

The content of cigarette advertisements has also been analyzed. Content analysis involves defining a set of coding criteria that are designed to produce numerical data on the visual elements of the advertising. One focus of content analysis is on whether the content of cigarette advertising is designed to appeal to specific demographic groups, such as adolescents. Because most adults who smoke begin to do so as adolescents, and few subsequently switch cigarette brands, this age group forms an important segment of the market and has, therefore, been studied more than other

<sup>12</sup> See also Chapter 8.

demographic groups. Pierce *et al.* (1994) studied data from the National Health Interview Surveys and found that after the introduction of cigarette advertising targeted at women, the smoking uptake rates of adolescent girls increased. The Surgeon General's review of advertising content (USDHHS 1994) finds that youth-oriented magazines contained cigarette advertising with themes of adventure and risk. However, McDonald (1993) complains that content studies on advertising and smoking initiation by adolescents do not show causality. Pierce *et al.* (1998) studied a sample of adolescents in California and found that tobacco-promotional activities had a positive effect on the onset of smoking in this group.

## 9.5 The theory of brand proliferation and market size

Brand proliferation is defined as an increase in the number of brands available to consumers. Brand proliferation, which requires market segmentation, branding, and targeted advertising content, can increase the size of the market. Market segmentation involves dividing the market into a number of segments. These segments can be defined according to four classification systems. The first, geographic segments, are defined by region, size of residential community, etc.. The second, demographic segments, are defined by characteristics such as age, gender, race, and religion. Behavioristic segments are defined by characteristics such as frequency of purchase, the occasion of purchase, and the readiness to purchase. Finally, psychographic segments are defined by values, attitudes, personality, and life-style. Branding consists of creating distinguishable products with unique packaging or with unique product features. Single firms can create separate individual brands, such as *Marlboro* and *Virginia Slims*, which have no association with each other. Branding can also be done with 'brand families'. The brands in a cigarette brand family will all have the same name, but will have different attributes, such as king-sized, filter-tipped, hard pack, menthol, and so on. Wilcox (1991) reports that there was a considerable increase in the number of brands of cigarettes sold in the United States during the 1970s and 1980s. Data from the US Federal Trade Commission indicate that the number of cigarette brands increased from 370 in 1988, to 1249 in 1995. Targeted advertising content refers to the imagery used to create the 'personality' for each brand. These personalities are designed to appeal to specific market segments. For example, *Marlboros* are portrayed through the models in the advertisements as rugged, independent and self-sufficient and by a location that is awesome and unspoiled. Meanwhile, *Virginia Slims* are portrayed through the models in the advertisements as sassy, bold, slim, and exuberantly independent. Use of these products connects the consumer's fantasies to these fantasy images.

A company with a large portfolio of brands can achieve a larger market share than a company with a limited number of brands. Each brand is designed to provide an increased utility to the individuals in a specific market segment and is more likely to be purchased than a less differentiated product.<sup>13</sup> A new brand may take some cus-

<sup>13</sup> Knight (1933, p.261), commenting on product branding, writes: 'The morally fastidious (and naïve) may protest that there is a distinction between "real" and "nominal" utilities; but will find it very dangerous to their optimism to attempt to follow the distinction very far. On scrutiny it will be found that most of the things that we spend our incomes for and agonize over, and notably practically all the higher "spiritual"

tomers from an existing brand and may also induce some individuals who are not consumers into the market. In the case of cigarettes, new brands may also induce individuals who might have quit smoking to continue. An increase in the number of brands can, therefore, increase the company's total sales. The theory suggests that the size of the market may increase with the number of brands offered. The brand-proliferation technique may be employed by Western tobacco companies when entering markets in developing countries. The economic feasibility of this strategy is limited by the size of the market, the cost and availability of media to advertise in, and by the cost and creative abilities of the available advertising firms. Also, the cost of launching a new individual brand is larger than the cost of launching a new member of a brand family. In order to justify the cost of creating the new brand and its advertising, a market must be sufficiently large to contain adequate numbers of potential customers in each segment. Also, the media must be available to, and used by, a large number of potential customers in the market segment. The advertising content that is created must also be effective in each market segment.

An interesting example of the industry's use of market segmentation, branding, and targeted advertising content can be seen in Philip Morris's first attempt to enter the Brazilian market. In the early 1980s, Brazil was one of the world's largest tobacco markets. Philip Morris wanted to enter the market but found its competitors well entrenched. Market research by Philip Morris revealed a significant market segment that wanted cigarettes that had less nicotine and that did not irritate the throat. The company created a new brand, which it named *Galaxy* for this market segment. *Galaxy* was launched with heavy advertising that concentrated on the low-nicotine feature. However, *Galaxy* was a failure. Brazilians had perceived it as a 'diet' cigarette and were ashamed to be seen with it. Additional research found that the advertising of the low-nicotine feature was not connected to any outcome: for example, consumers might have experienced some different physical effects, such as reduced throat irritation, from the brand. But because such effects were not made explicit in the advertisements, consumers did not associate the low-nicotine feature with any physical state except dieting. A new advertising campaign was created that repositioned the low-nicotine feature as an intelligent choice for intelligent consumers. After the new campaign, attitudes and sales improved dramatically.

Simonich (1991) finds that the introduction of new brands is associated with increased overall demand for cigarettes but not with an increase in advertising. He estimates that, for every 10 new brands introduced, the market increases by 4%. Roberts and Samuelson (1988) also provide support for the theory of brand proliferation and market size. They studied the competitive behavior of six US tobacco firms from 1971 to 1982. Roberts and Samuelson found that companies increased their market share when they increased the number of brands that they offered. The researchers concluded that an important method of competition for US tobacco firms is through brand proliferation. They also found that advertising which accompanies new brands, increases the size of the total cigarette market. Wilcox (1991) studied the sales of 10 US brand families from 1949 to 1985. He also reported that the number of brands

values, gravitate swiftly into the second class.' What Knight means is that a consumer's satisfaction with a product is subjective. The fantasies associated with the product can provide the consumer with as much satisfaction as any objective product attribute.

increased during this period, and found that advertising and sales were positively related for five brands. Nguyen (1987) studied the effect of advertising by four US tobacco companies. He used data from 1956 to 1979 for 12 brands and concluded that: advertising a brand increased its sales; it had no effect on sales of its brand family, but decreased the sales of other companies' brands. Pollay *et al.* (1996) studied advertising and sales to adults and adolescents for nine brands from 1974 to 1993. They found that brand-level advertising increased market share and that the measured elasticity of market share with respect to advertising was three times larger for adolescents than for adults.

## 9.6 World data on tobacco advertising bans

A number of countries have successfully passed partial limitations on tobacco advertising. Studies have found that partial bans have no effect on sales. For example, Stewart (1993) found no effect of television advertising bans and concluded that advertising does not affect sales. Alternatively, Stewart's study might be interpreted as evidence that partial advertising bans simply result in substitution to other media or promotional methods. Tobacco companies and advertising agencies have shown great creativity in partial ban situations. For example, a 1976 French law banning tobacco advertising resulted in advertising for matches and cigarette lighters with the company logo. Also, in the United States, after the broadcast ban was adopted, the advertising-to-sales ratio initially fell but climbed back to its 'pre-ban' level within a few years. These data show that advertising bans must be comprehensive to have any effect. The advertising response function shows that partial bans may reduce the effectiveness of a given level of advertising spending. The level of spending is not fixed, however, and may increase if sales fall.

A number of countries have passed comprehensive advertising bans. These countries are listed in Table 9.3.<sup>14</sup> Comprehensive bans include bans on the use of the names, logos, and trademarks of tobacco products in any medium under any circumstances, including advertising for any product or event. These names may be used as part of the product packaging. Games, prizes, and free distribution are also prohibited. The ideal approach to estimating the effects of comprehensive bans is an econometric model, which would hold constant all other factors that affect consumption, such as price, income, and other economic or cultural variables (see Saffer and Chaloupka, *in press*). In addition, comprehensive bans are most likely to be legislated along with a series of other restrictions on tobacco, such as limitations on places where smoking is allowed, health promotion sponsorship foundations, health education programs, and counter-advertising. However, for many countries these data are not available, thus limiting econometric studies to samples such as the high-income countries. Even within these countries there are limits to the availability of data that can bias econometric studies.

Although econometric modeling of tobacco advertising for a large sample of countries may not be feasible, descriptive statistics of the data from around the world can

<sup>14</sup> Roemer (1993) presents time-series charts of per capita tobacco use in Norway and Finland. These charts indicate that following the enactment of advertising restrictions, tobacco consumption declined.

also provide evidence of the effects of comprehensive bans. Descriptive statistics do not control for other factors, but existing econometric studies also do not control for all other factors, and suffer from various other specification problems. Data on advertising bans were taken from WHO (1997) and from Chapman and Wong (1990). The data on advertising bans have been coded as either comprehensive tobacco advertising ban or not. The WHO also provides cigarette consumption data per adult aged 15–64 for 110 countries during 1980–82 and 1990–92. A cigarette consumption growth rate between the two periods was computed with these data.

There are 102 countries that have both advertising ban data and consumption data. These countries are divided into three categories. The three categories are:

- (1) countries that have comprehensive bans;
- (2) countries without comprehensive bans; and
- (3) the former communist countries.

The former communist countries are treated as a separate category since there is an important difference between no advertising in any industry and a ban on tobacco advertising. This is a variant of the external advertising problem discussed by Schmalensee (1972) and Duffy (1996). Advertisers are competing, not only with each other but, with all other industries that advertise. A ban on all advertising might have no effect on the distribution of consumption across all industries. However, a ban on advertising in one industry could reduce sales in that industry in favor of increases in the non-banned industries. Since the link between advertising and consumption for the time period of the data is different for the former communist countries, they are treated as a separate category.

Table 9.3 shows the growth in cigarette consumption for 102 countries. The first four columns show the country name and growth rates for non-communist countries organized by comprehensive ban and no comprehensive ban. The average rate of growth and the population weighted rate of growth for each category are reported.<sup>15</sup> The table shows that per capita cigarette consumption for countries with comprehensive bans has decreased by about 8%, while consumption for countries without comprehensive bans has decreased by only about 1%. Figure 9.3 shows the per capita consumption level, over the sample period, for all countries with a comprehensive ban and without such a ban. The slope of the line indicates that the rate of decrease in consumption for the ban group is higher than the non-ban group. It is interesting that the group with the comprehensive bans starts at a higher consumption level than the non-ban group but ends the period with a lower consumption level. The change is due to the higher negative growth rate in the ban countries.

Table 9.3 also shows the rate of growth of tobacco consumption for the former communist countries. Roemer (1993) reports that in 1990, 27 countries had comprehensive advertising bans. Of the 27 countries, nine were formerly communist and had no advertising at all. Table 9.3 reports only seven countries because of missing consumption data. Table 9.3 shows that the former communist countries increased cigarette consumption over the data period. The weighted average for the communist countries

<sup>15</sup> A population weighted average gives a larger weight to countries with a larger population. It is computed by multiplying the country's population divided by the total population of all the countries in the group times the country's growth rate and summing for all countries in the group.

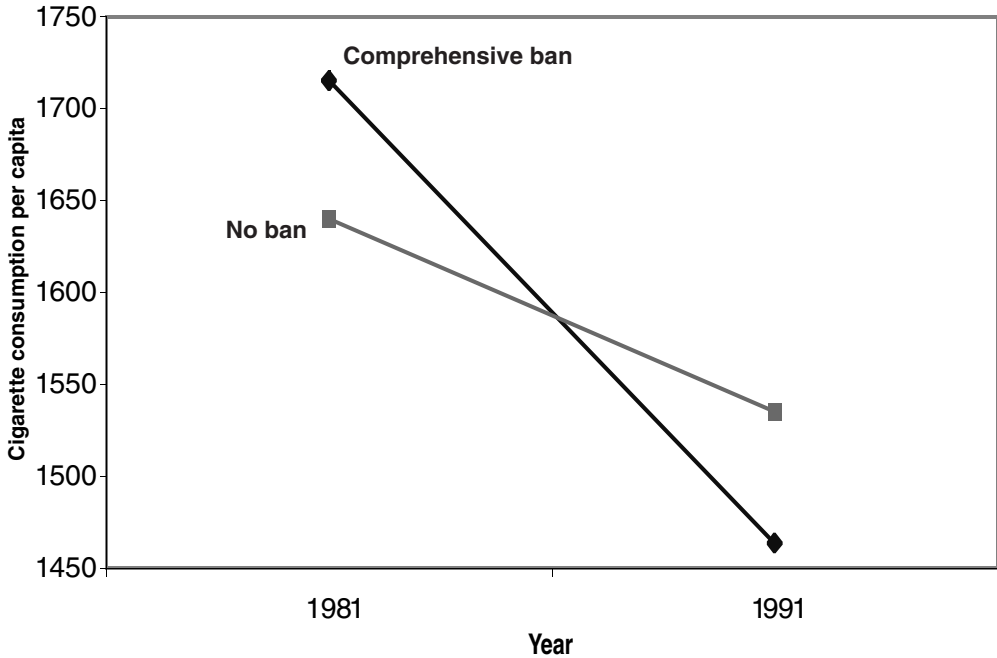


Fig. 9.3 Cigarette consumption per capita, various countries, weighted, ages 15–64.

reflects the large increase in consumption in China and its large population. Only Yugoslavia legislated a tobacco advertising ban during the data period. During this period Yugoslavia had a decrease in cigarette consumption. Also, during the period, these countries were experiencing major changes in economic institutions, which might have affected cigarette consumption. Because of these changes, the data should be interpreted only cautiously as indicating that the abandonment of bans increases consumption.

## 9.7 Policy options and conclusions

The policy options for the control of tobacco advertising include limitations on the content of advertisements, restrictions on the placement of advertising (such as in certain magazines), restrictions on the time that cigarette advertising can be placed on broadcast media, total advertising bans in one or more media, and counter-advertising. Experience has shown that restrictions on content and placement of advertising, and bans in only one or two media, are not effective. Prior research and the WHO data suggest that comprehensive control programs, including comprehensive advertising bans, reduce cigarette consumption. Usually comprehensive control programs include comprehensive advertising bans. Since they are enacted together, it is difficult to partition the effect of each component of a comprehensive control program. Prior research has shown that counter-advertising can also reduce cigarette consumption.

**Table 9.3** Growth in cigarette consumption (per capita growth rate) in adults aged 15–64 during the period 1981–91

Non-communist countries				Former communist countries	
Comprehensive ban		No ban		Country	Growth rate
Country	Growth rate	Country	Growth rate		
Average	-0.082	Average	-0.023	Average	0.033
Weighted average	-0.088	Weighted average	-0.009	Weighted average	0.432
Afghanistan	-0.125	Albania	-0.008	Bulgaria	0.191
Algeria	0.013	Argentina	-0.090	China	0.473
Canada	-0.332	Australia	-0.212	Cuba	-0.133
Finland	-0.033	Austria	-0.156	Hungary	-0.018
Iceland	-0.115	Bangladesh	0.456	Poland	0.065
Iraq	0.174	Belgium	-0.198	Romania	-0.272
Italy	-0.169	Benin	-0.156	Yugoslavia (former)	-0.076
Jordan	-0.087	Bolivia	-0.232		
New Zealand	-0.131	Brazil	-0.143		
Norway	-0.062	Cambodia	-0.032		
Portugal	0.117	Cameroon	0.254		
Singapore	-0.369	Chile	-0.181		
Sudan	0.000	Colombia	-0.022		
Thailand	-0.028	Congo	0.011		
		Costa Rica	-0.118		
		Côte d'Ivoire	-0.123		
		Denmark	-0.054		
		Dominican Rep.	0.000		
		Ecuador	0.048		
		Egypt Arab Rep.	0.025		
		El Salvador	-0.019		
		Ethiopia	0.286		
		France	0.019		
		Germany	-0.025		
		Ghana	-0.432		
		Greece	0.044		
		Guatemala	-0.469		
		Honduras	-0.213		
		India	0.046		
		Indonesia	0.242		
		Iran Islamic Rep.	-0.198		
		Ireland	-0.201		
		Israel	-0.046		
		Jamaica	-0.131		
		Japan	-0.055		
		Kenya	-0.107		
		Korea Rep.	0.095		
		Lao PDR	0.000		

**Table 9.3** (Cont.)

Non-communist countries		Former communist countries			
Comprehensive ban		No ban		Country	Growth rate
Country	Growth rate	Country	Growth rate		
		Madagascar	-0.021		
		Malawi	0.000		
		Malaysia	-0.205		
		Mauritius	-0.057		
		Mexico	-0.292		
		Morocco	-0.179		
		Mozambique	0.000		
		Myanmar	0.071		
		Nepal	1.000		
		Netherlands	-0.143		
		Nicaragua	0.014		
		Niger	0.700		
		Nigeria	0.057		
		Pakistan	-0.111		
		Panama	0.011		
		Paraguay	0.068		
		Peru	-0.103		
		Philippines	-0.196		
		Saudi Arabia	0.098		
		Senegal	0.382		
		Sierra Leone	0.000		
		South Africa	0.075		
		Spain	0.094		
		Sri Lanka	-0.173		
		Sweden	-0.158		
		Switzerland	-0.049		
		Tanzania	0.000		
		Togo	0.021		
		Trinidad	-0.092		
		Tunisia	0.101		
		Turkey	-0.067		
		Uganda	0.000		
		United Kingdom	-0.193		
		United States	-0.250		
		Uruguay	-0.012		
		Venezuela	-0.131		
		Vietnam	0.000		
		Yemen Rep.	0.421		
		Zambia	0.000		
		Zimbabwe	-0.348		

According to Tobacco Alert (World Health Organization 1996), the World Health Assembly has urged all member states to adopt comprehensive tobacco control programs, including advertising restrictions. Resolution WHA43.16 in 1990 recommends actions to eventually eliminate all direct and indirect advertising, as well as promotion and sponsorships concerning tobacco. While the resolution was adopted without dissent, not many member states have enacted these comprehensive advertising bans.

Two notable new comprehensive advertising ban initiatives were enacted by Thailand (see Chapter 14) and the European Parliament. The European Parliament voted in late 1997 to ban all tobacco advertising and sponsorship in all 15 countries of the EU. The ruling will not go fully into effect until 2006. Print advertising will be phased out over four years, sponsorships over six years, and car racing will have eight years to cease. Tobacco advertising on TV was banned in the EU in 1989.

Four tobacco companies have begun a legal challenge against the European directive banning tobacco advertising and sponsorship. A High Court judge in the United Kingdom has ruled that there is a question over the legal validity of the directive, which should be referred to the European Court of Justice. The tobacco companies are Gallaher, Imperial Tobacco, British American Tobacco, and Rothmans (UK). They challenged the directive on six grounds, each of which was found to be arguable by the court. Although the United Kingdom's courts do not have the power to overturn European legislation, they can refer it back to the European courts for clarification. The tobacco manufacturers claim that the legal question mark hanging over the European directive means that the EU governments should hold back from introducing legislation until the matter is settled in the European courts.

Econometric analyses of counter-advertising have generally concluded that these expenditures significantly reduce cigarette smoking (Chaloupka and Warner, in press). Much of the econometric evidence is based on two major counter-advertising campaigns in the United States. However, econometric evidence from Greece (Stavrinos 1987), Finland (Pekurinen 1989), Turkey (Tansel 1993), and the United Kingdom (Townsend 1998), indicates that the US experience is not unique. In each of these studies, mass-media campaigns aimed at reducing cigarette smoking by providing information on the health consequences of smoking were estimated to have led to significant reductions in smoking prevalence and in cigarette consumption. Saffer and Chaloupka (in press) estimate that counter-advertising messages set at about 15% of the total number of advertising messages can reduce smoking by about 2% each year.

Counter-advertising has been an important part of California's new tobacco control program. An interesting study by Goldman and Glantz (1998) has analyzed the effectiveness of different counter-advertising messages. They find that counter-advertising messages are most effective when they focus on the tobacco industry's manipulation of its customers. In such 'industry-manipulation' messages, tobacco executives are depicted as as deceitful, manipulative, dishonest, and greedy. According to the authors, this type of advertising helps adults to change their self-image of smoking from 'guilty addict' to 'innocent victim'.

The least effective counter-advertising portrays smoking as unhealthy and unromantic. The health messages do not convey any new information and, for people with

only a dim view of the future, are meaningless. The romantic-rejection themes do not work because people believe that an individual's smoking status could be overlooked if they were otherwise desirable.

The taxation of advertising is not often included as an advertising control option. However, Erlich and Fisher (1982) and Saffer (1997) show that the demand for advertising is responsive to price changes. The taxation of advertising has the dual advantages of preventing media substitution and raising revenue. Media substitution would not be induced by a tax that applied equally to all media. Revenue would be generated either by a direct tax on advertising or by eliminating the tax deductibility of advertising. While advertising is price-responsive, the level of advertising chosen by individual companies is also dependent on the behavior of rivals. The demand for advertising could increase if sales were to fall. In this case, taxation might not reduce advertising but would raise more revenue than if the demand for advertising did not increase. Cigarette-advertising tax revenue could be used to fund counter-advertising.

## References

- Abernethy, A. and Teel, J. E. (1986). Advertising for cigarettes. *Journal of Advertising*, **15**(4), 51–5.
- Ackoff, R. L. and Ernshoff, J. R. (1975). Advertising research at Anheuser-Busch, Inc. (1963–68). *Sloan Management Review*, **16**(3), 1–15.
- Advertising Age. [www.adage.com](http://www.adage.com)
- Baltagi, B. H. and Levin, D. (1986). Estimating dynamic demand for cigarettes using panel data: the effects of bootlegging, taxation, and advertising reconsidered. *Review of Economics and Statistics*, **68**(1), 148B55.
- Becker, G. S. and Murphy, K. (1993). A simple theory of advertising as a good or a bad. *Quarterly Journal of Economics* (November 4): 941–64.
- Bishop, J. A. and Yoo, J. H. (1985). 'Health scare,' excise taxes and advertising ban in the cigarette demand and supply. *Southern Economic Journal*, **52**(2), 402B11.
- Bogart, L. (1986). *Strategy in Advertising*. NTC Business Books: Lincolnwood IL.
- Boyd, R. and Seldon, B. (1990). The fleeting effect of advertising. *Economic Letters*, **34**, 375–9.
- Chaloupka, F. J. and Laixuthai, A. (1996). *Us Trade Policy and Cigarette Smoking in Asia*. National Bureau of Economic Research Working Paper 5543 1996 National Bureau of Economic Research.
- Chaloupka, F. J. and Warner, K. E. The economics of smoking. In *The Handbook of Health Economics*. (ed. A. J. Culyer and J. P. Newhouse), New York: North-Holland (In press.)
- Chapman, S. and Wong, W. L. (1990). *Tobacco Control in the Third World: a Resource Atlas*. Penang, Malaysia: International Organization of Consumers Unions.
- Chetwynd, J., Coope, P., Brodie, R. J., and Wells, E. (1988). Impact of cigarette advertising on aggregate demand for cigarettes in New Zealand. *British Journal of Addiction*, **83**, 409–14.
- Duffy, M. (1995). Advertising in demand systems for alcoholic drinks and tobacco: a comparative study. *Journal of Policy Modeling*, **17**(6), 557–77.
- Duffy, M. (1996). Econometric studies of advertising, advertising restrictions, and cigarette demand: a survey. *International Journal of Advertising*, **15**, 1–23.
- Erlich, I. and Fisher, L. (1982). The derived demand for advertising: a theoretical and empirical investigation. *American Economic Review*, **72**(3), 366–88.
- Federal Trade Commission (1998). *Federal Trade Commission Report to Congress for 1996: Pursuant to the Federal Cigarette Labeling and Advertising Act*. Washington: Federal Trade Commission.

- Flay, B. (1987). Mass media and smoking cessation: a critical review. *American Journal of Public Health*, **77**(2), 153–60.
- Goel, R. K. and Morey, M. J. (1995). The interdependence of cigarette and liquor demand. *Southern Economic Journal*, **62**(2), 451–9.
- Goldman, L. K. and Glantz, S. A. (1998). Evaluation of antismoking advertising campaigns. *Journal of the American Medical Association*, **279**(10), 772–7.
- Grabowski, H. G. (1976). The effect of advertising on the inter-industry distribution of demand. *Explorations in Economic Research*, **3**, 21–75.
- Hamilton, J. L. (1972). Advertising, the health scare, and the cigarette advertising ban. *Review of Economics and Statistics*, **54**: 401–11.
- Hamilton, J. L. (1975). *The Effect of Cigarette Advertising Bans on Cigarette Consumption*. Proceedings of the Third World Conference on Smoking and Health, Washington, D.C.: US DHEW.
- Hu, T.-W., Sung, H.-Y., and Keeler, T. E. (1995). Reducing cigarette consumption in California: tobacco taxes vs an anti-smoking media campaign. *American Journal of Public Health*, **85**(9), 1218B22.
- Johnson, L. W. (1986). Advertising expenditure and the aggregate demand for cigarettes in Australia. *International Journal of Advertising*, **1**, 45–58.
- Knight, F. H. (1933). *Risk Uncertainty and Profit*. The London School of Economics: London.
- Laugesen, M. and Meads, C. (1991). Tobacco advertising restrictions, price, income, and tobacco consumption in OECD countries 1960–1986. *British Journal of Addiction*, **86**, 1343–54.
- Lewit, E. M., Coate, D., and Grossman, M. (1981). The effects of government regulation on teenage smoking. *Journal of Law and Economics*, **24**(3), 545B69.
- McDonald, C. (1993). Children, smoking and advertising: what does the research really tell us? *International Journal of Advertising*, **12**, 279–87.
- McGuinness, T. and Cowling, K. (1975). Advertising and the aggregate demand for cigarettes. *European Economic Review*, **6**, 311–28.
- Nguyen, D. (1987). Advertising, random sales response, and brand competition: Some theoretical and econometric implications. *Journal of Business*, **60**, 259–79.
- Pekurinen, M. (1989). The demand for tobacco products in Finland. *British Journal of Addiction*, **84**, 1183–92.
- Pierce, J. P., Macaskill, P., and Hill, D. (1990). Long-term effectiveness of mass media led anti-smoking campaigns in Australia. *American Journal of Public Health*, **80**(5), 565–9.
- Pierce, J. P., Lee, L., and Gilpin, E. (1944). Smoking initiation by adolescent girls, 1944 through 1988. *Journal of the American Medical Association*, **271**(8), 607–11.
- Pierce, J. P., Choi, W. S., Gilpin, E. A. *et al.* (1998). Tobacco industry promotion of cigarettes and adolescent smoking. *Journal of the American Medical Association*, **279**(7), 511–5.
- Pollay, R. A. *et al.* (1996). The last straw? Cigarette advertising and realized market shares among youths and adults, 1979–1993. *Journal of Marketing*, **60**, 1–16.
- Porter, R. H. (1986). The impact of government policy on the US cigarette industry. In *Empirical Approaches to Consumer Protection Economics* (ed. P. M. Ippolito and D. T. Scheffman DT), pp. 447–84. Washington: US Government Printing Office.
- Rao, R. and Miller, P. (1975). Advertising/sales response functions. *Journal of Advertising Research*, **15**, 7–15.
- Roberts, M. J. and Samuelson, L. (1988). An empirical analysis of dynamic, nonprice competition in an oligopolistic industry. *RAND Journal of Economics*, **19**(2), 200–20.
- Roemer, R. (1993). *Legislative Action to Combat the World Tobacco Epidemic*, 2nd edn. Geneva: World Health Organization.
- Saffer, H. (1995). Alcohol advertising and alcohol consumption: Econometric studies. In *The Effects of the Mass Media on the Use and Abuse of Alcohol* (ed. S. E. Martin), pp. 83–99. Bethesda: National Institute on Alcohol Abuse and Alcoholism.

- Saffer, H. (1995). Alcohol advertising and highway fatalities. *Review of Economics and Statistics*, **79**(August), 351–25.
- Saffer, H. and Chaloupka, F. The effect of tobacco advertising bans on tobacco consumption. *Journal of Health Economic*, in press.
- Schmalensee, R. L. (1972). *On the Economics of Advertising*. Amsterdam: North Holland.
- Schneider, L., Klein, B., and Murphy, K. (1981). Government regulation of cigarette health information. *Journal of Law and Economics*, **24**, 575–612.
- Schonfeld and Associates (1997). *Advertising Ratios and Budgets*. Schonfeld and Associates, Lincolnshire IL.
- Seldon, B. J. and Doroodian, K. (1989). A simultaneous model of cigarette advertising: effects on demand and industry response to public policy. *Review of Economics and Statistics*, **71**, 673B7.
- Simonich, W. L. (1991). *Government Antismoking Policies*. New York: P. Lang.
- Stavrinou, V. G. (1987). The effects of an anti-smoking campaign on cigarette consumption: empirical evidence from Greece. *Applied Economics*, **19**(3), 323–9.
- Stewart, M. J. (1993). The effect on tobacco consumption of advertising bans in OECD countries. *International Journal of Advertising*, **12**, 155–80.
- Tansel, A. (1993). Cigarette demand, health scares and education in Turkey. *Applied Economics*, **25**(4), 521–9.
- Townsend, J. L. (1998). UK smoking targets: policies to attain them and effects on premature mortality. In *The Economics of Tobacco Control: Towards an Optimal Policy Mix* (ed. I. Abedian, R. van der Merwe, N. Wilkins, and P. Jha). Cape Town (South Africa): Applied Fiscal Research Centre, University of Cape Town.
- US Department of Health and Human Services (1994). *Preventing Tobacco Use Among Young People*. A Report of the Surgeon General. Office on Smoking and Health. Washington: US Government Printing Office.
- Valdes, B. (1993). Cigarette consumption in Spain: empirical evidence and implications for public health policy. *Applied Economics*, **20**, 149–56.
- Warner, K. E. (1981). Cigarette smoking in the 1970s: the impact of the antismoking campaign on consumption. *Science*, **211**, 729–31.
- Warner, K. E., Ernster, V. L., Holbrook, J.H. *et al.* (1986). Promotion of tobacco products: issues and policy options. *Journal of Health Politics, Policy and Law*, **11**, 367–92.
- Wilcox, G. B. (1991). Cigarette brand advertising and consumption in the United States: 1949–1985. *Journal of Advertising Research* (August/September), 61–7.
- Wilcox, G. B. and Vacker, B. (1992). Cigarette advertising and consumption in the United States. *International Journal of Advertising*, **11**, 269–78.
- World Health Organization (1996). *Tobacco Alert*. Geneva: World Health Organization.
- World Health Organization (1997). *Tobacco or Health: a Global Status Report*. Geneva: World Health Organization.