

Chapter 11

Health Claims in Food Advertising and Labeling

Disseminating Nutrition Information to Consumers

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The question of how best to get evolving scientific evidence linking diet and disease to consumers has been much debated in policy circles. At the core of this debate are widely varying presumptions about how effective food manufacturers are in reaching consumers compared with, or in addition to, government and other information sources, and about the best approaches for controlling misleading or deceptive claims. This chapter evaluates whether policy changes that took place in the mid-1980's, and allowed food manufacturers to explicitly link diet to disease risks in advertising and labeling, appear to have improved consumers' food choices (the information hypothesis), or as many critics fear, to have confused consumers sufficiently to slow improvements in diet that would otherwise occur (the consumer confusion hypothesis).

Introduction

In the last 30 years, scientific understanding of the role of diet in chronic disease risks has improved significantly. In the United States, diet is now believed to be linked substantially to 4 of the top 10 causes of death, and diet-disease research is continuing at a rapid

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pace. Individuals have much to gain from information that would allow them to incorporate this evolving science into basic dietary decisions.

The question of how best to get this information to consumers has been much debated in policy circles. At the core of this debate are widely varying presumptions about how effective food manufacturers are in reaching consumers compared with, or in addition to, government and other information sources, and about the best approaches for controlling misleading or deceptive claims.

The benefits of permitting diet-disease claims in food advertising and labeling depend, in part, on whether other sources of information are sufficient to inform consumers about the reasons for dietary change and to produce the competitive environment for food manufacturers to improve the nutritional characteristics of their food products. Public education efforts concerning diet-disease issues have been prominent for 20 years (see Appendix 1), and supplemented by private health organizations such as the American Heart Association and the American Cancer Institute. Yet, despite these efforts to communicate the link between diet and health, the typical American diet still deviates substantially from dietary recommendations (see chapters 3-6). While we cannot conclude that these consumption levels reflect a lack of information about diet and health (since many consumers may knowingly trade long-term health costs for taste and other things they value), dietary shortcomings raise the likelihood that public education campaigns have been relatively ineffectual.

From an economic perspective, a policy allowing a broad range of truthful diet-disease claims by producers should be beneficial to consumers since it would increase the opportunity, and thus the competitive pressure on manufacturers, to market the nutritional features of foods. Also, if producer claims are an important source of information for many consumers, a greater freedom to make valid claims could spread the information more effectively to a larger portion of the population. Whether the competitive process and the usual policies governing all marketing claims are sufficient to fill in missing information and to control deception is, of course, open to question and empirical test.

This chapter reports on one key aspect of this policy debate: the potential costs of regulatory policies that limit truthful health claims

in food labeling and advertising. In particular, this chapter evaluates whether policy changes that took place in the mid-1980's, and allowed food manufacturers to explicitly link diet to disease risks in advertising and labeling, appear to have improved consumers' food choices (the information hypothesis) or, as many critics fear, to have confused consumers sufficiently to slow improvements in diet that would otherwise occur (the consumer confusion hypothesis). (See Appendix 1 for details on regulatory constraints on health claims in food advertising and labeling and expected producer and consumer behavior under alternative regulatory rules.)

As in any in-field experiment, testing the effects of policy change is difficult. Other things may have also changed during the period when policy shifts occurred, making a conclusive assessment of causal relationship between advertising and labeling policies and market outcomes difficult. Nonetheless, while more controlled experimental techniques offer some advantages in research design, evidence from real markets also has important advantages. Most notably, market data reflect the reaction of the entire market system, which most controlled experiments are forced to ignore, including producers' actions and the competitive responses to them under the changed rules. Moreover, if the effects of the policy change are large—whether beneficial or harmful—they should manifest themselves in measured market changes despite other noise in the system.

We focus on two time periods: 1977-85, when there was significant regulatory risk in advertising and labeling of explicit health claims; and 1985-90, when truthful health claims were permitted and, thus, potentially added to the continuing efforts of government and other general information sources. Use of advertising to promote the advantages of dietary fiber in helping to prevent certain kinds of cancer was first made in late 1984, and the advantages of a low-fat diet in promoting a healthy heart began in 1985-87.

Impact of Health Claims in the Ready-to-Eat Cereal Market¹

Despite growing evidence of the link between reduced cancer rates and high-fiber diets during 1978-84, there was no shift toward high-fiber cereals (fig. 1).² After producer health claims in advertising and labeling began in late 1984, however, there was a significant increase in the market-share-weighted fiber content of cereals.

During 1985-87, the market-share-weighted fiber content of cereals increased 7 percent from 1.64 grams to 1.75 grams of fiber/ounce of cereal. Ippolito and Mathios (1990a) estimated that health claims in advertising and labeling in these 3 years caused 2 million more households to consume high-fiber cereals.

Cereal manufacturers, in response to the growing demand for high-fiber cereals and knowing they could now advertise the health benefits of fiber, responded by developing new high-fiber cereals. Excluding children's cereals, cereals introduced between 1985 and 1987 averaged 3.59 grams of fiber per ounce, compared with an average of 1.99 grams for cereals introduced between 1978 and 1984.

Even before 1984, firms were permitted to disclose fiber content on cereal labels. Consequently, the dramatic effects on producer and consumer behavior are clearly linked to the use of the health claim rather than the ability to disclose fiber content. In other words, it is important to permit firms to explain the reasons why consumers should care about fiber.³

¹ This section is based on Ippolito and Mathios (1989, 1990, 1991).

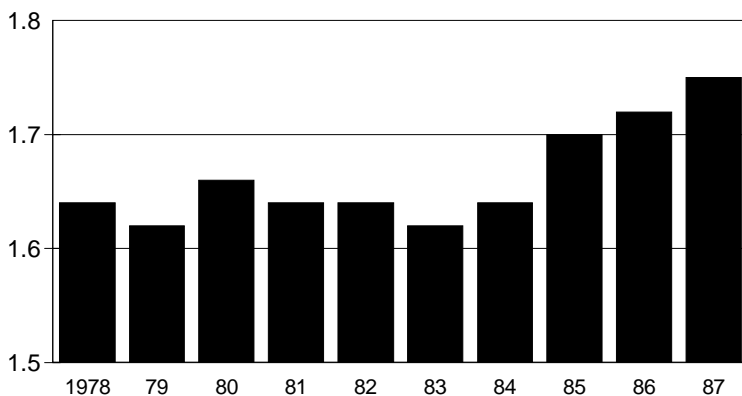
² Annual market share and sales data for 1978-87 for major brands of cereals are taken from reports by John Maxwell in *Advertising Age*. Data on the fiber content of these cereals were obtained from the U.S. Department of Agriculture's 1985 *Continuing Survey of Food Intakes by Individuals (CSFII) for Women, Ages 19-50*, supplemented by label data from 1988 for new products. For more details, see Ippolito and Mathios (1989, 1991).

³ Levy and Stokes (1987) also found substantial effects on cereal sales following the start of the advertising. They examined weekly sales data from a Washington DC grocery chain for a 48-week period that began 14 weeks before the Kellogg campaign. The size, distribution, and timing of the sales increases supported the conclusion that the introduction of the health claim advertising in the cereal market had a clear and substantial effect in shifting consumer purchases toward high-fiber cereals.

Figure 1

Average fiber from cereal (data weighted by market share)

Grams fiber per ounce cereal



Source: Ippolito and Mathios (1991).

Impact of Health Claims On Knowledge Of Diet-Disease Link

The use of health claims in the ready-to-eat cereal market also had a profound effect on consumers' knowledge of the link between diet and disease. FDA survey data show that consumer knowledge of the link between fiber and cancer was low and did not increase substantially during the 6 years prior to the introduction of health claims (1977-84).⁴ For those with less than a high school education, there was no gain in knowledge; for high school graduates and those who attended some college, there were some modest gains (fig. 2).⁵ For

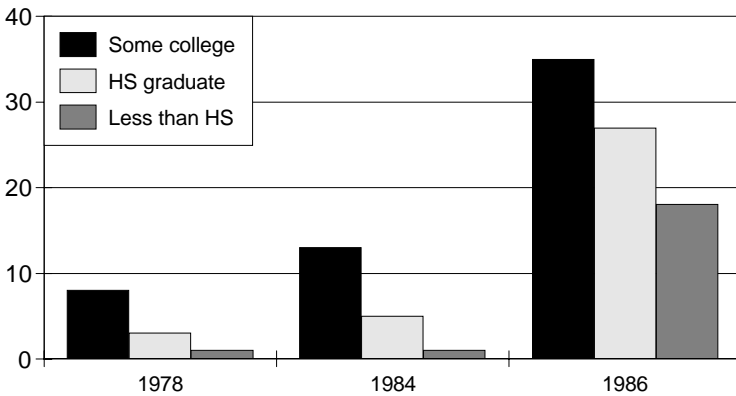
⁴ These measures of knowledge are taken from the Health and Diet Surveys, a series of national telephone surveys directed by the Food and Drug Administration (FDA) in collaboration with the National Heart, Lung, and Blood Institute. The measures reported in figure 2 are derived from the question "Have you heard about any things people eat or drink that might help prevent cancer?" Respondents who mentioned fiber, roughage, whole grains, cereals, or bran in up to four responses were coded as knowing the relationship. For more detail about these results see Ippolito and Mathios (1991) and for a detailed description of the survey see Levy and Stephenson (1990).

⁵ The 1978 statistics were taken from Levy and Heimbach (1989), who combined the "some college" and "college graduate" categories.

Figure 2

Knowledge of fiber-cancer link

Percent with knowledge



Source: Ippolito and Mathios, 1991.

example, in 1984, as in 1978, only 1 percent of those with less than a high school education knew of the link between fiber and cancer. After the introduction of health claims, all groups gained knowledge of the fiber-cancer link. For example, reported knowledge rose from 1.1 percent in 1984 to 18 percent in 1986 for those with less than a high school education. Knowledge levels also increased dramatically for other education groups as well.

In considering potential reasons why advertising had different effects on various groups, several major differences between the information distribution methods used by government and private advertisers are worthy of mention. Government and general information is usually disseminated in generic form (“increased soluble fiber consumption may reduce risks of coronary heart disease”) and this information is concentrated in news and print media reports about the latest scientific studies on diet and health. In contrast, most cereal advertising is distributed through television, with a smaller portion in print media. Moreover, health claim advertising and labeling is product-specific so that advertising and labeling not only indicate the relationship between food characteristics and health, but also prominently feature a product that contains these characteristics.

Changes in Daily Intake Of Fats and Cholesterol⁶

The U.S. Department of Agriculture (USDA) periodically conducts large-scale national probability surveys in which detailed information on all foods and beverages consumed over a 24-hour period are collected and matched to nutrition data. To examine changes in consumption over time and to keep the analysis consistent, this study focuses on data for subpopulations that were consistently sampled by USDA in the years available and for which the basic variables of interest are available. In particular, this study analyzes 1-day recall data on food consumed in a 24-hour period in spring 1977, 1985, 1986, 1987/88, and 1989/90 for women and summer 1977, 1985, 1987/88, and 1989/90 for men age 19-50 who were heads of households and who consumed at least 300 calories on the interview day. Since the focus of the analysis is on 1985 policy effects, we analyze changes from 1977-85 and 1985-90.⁷

Average daily fat intake (measured as a percent of the 1977 intake level) for both men and women fell during 1977-85, and the rate of decline accelerated during the health claims period from 1985 to 1989/90 (fig. 3). Average fat intake for women declined from 73.3 to 69.6 grams per day from spring 1977 to spring 1985, and fell an additional 11.2 grams between 1985 and 1989/90. For men, fat intake in summer declined by 5.3 grams per day during 1977-85 (from 112.8 to 107.5 grams), and fell an additional 14.9 grams between 1985 and 1989/90.

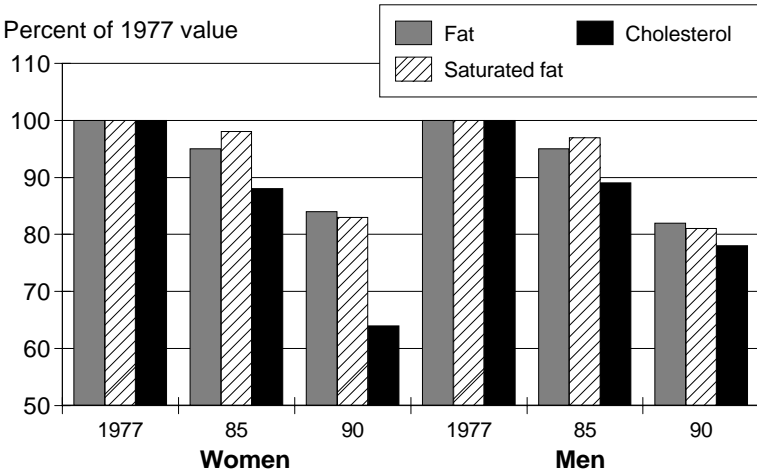
Movements in saturated fat intake generally parallel changes in total fat intake. As with total fat, the absolute reductions in saturated fat intake were larger in the health claims period of 1985-1989/90 than in the pre-1985 period (fig. 3). For women, saturated fat intake dropped by 1.0 gram during 1977-85 and an additional 3.5 grams during 1985-1989/90. For men, average saturated fat intake declined by 1.0 gram between 1977 and 1985 and fell an additional 6.7 grams during 1985-1989/90.

⁶ This section is based on Ippolito and Mathios, 1994a. That report also examined reductions in fat, saturated fat, and cholesterol at the food category level.

⁷ For a more detailed description of the data, see Ippolito and Mathios, 1994a.

Figure 3

Fat, saturated fat, and cholesterol intakes for women and men, 19-50 years of age



Source: Ippolito and Mathios, 1994a.

For women, cholesterol data show the same pattern of accelerated decline during the health claims period as found for fat and saturated fat (fig. 3). A change in the cholesterol data used for eggs beginning in the 1987 data suggests the need for caution in interpreting this result. For women, daily intake of cholesterol declined 40.4 milligrams (from 345.3 to 304.9) during the 8 years prior to 1985 and 83.7 milligrams during the following 5 years. The decline in average cholesterol intake is less sharp for men during the health claims period: 52.3 milligrams (from 498.9 to 446.6) during 1977-85 and an additional 57.6 milligrams between 1985 and 1990.

These data indicate that average intake of fat, saturated fat, and cholesterol declined from 1977 to 1989/90 and that the rate of decline was generally greater between 1985 and 1989/90, the period when diet-disease claims were permitted. This is consistent with the hypothesis that policy changes allowing producers to incorporate diet-disease issues in advertising and labeling added information to the market and sped improvement in consumers' diets.

Obviously, these types of data cannot establish that advertising and labeling claims were responsible for the increased rate of dietary improvement since, for instance, government and other public and

private organizations continued their efforts to inform the public during this period and could have found more effective ways to accomplish their goals. Nonetheless, these data provide no support for the view that the introduction of producer health claims adversely affected consumer food choices overall or led consumers to reverse dietary improvements that were underway. Moreover, the data are consistent with the hypothesis that these claims, and the competition they spurred among producers, helped consumers to improve their diets more rapidly during the period when producers were freer to explain the importance of these nutritional characteristics.

Analysis of Per Capita Food Consumption Trends⁸

USDA annually calculates the amount of food available for human consumption in the United States (see Putnam and Allshouse, 1993). For most commodity categories, this available food supply is measured as the sum of annual production, beginning inventories, and imports minus exports, industrial nonfood uses, farm uses (seed and feed), and end-of-year inventories. Whenever possible, we use data reflecting retail-level production, which reduces the amount of waste reflected in the data.⁹ Per capita consumption usually is calculated by dividing total food disappearance by the total U.S. population, including the Armed Forces overseas, on July 1 of a given year.

These data are collected by USDA directly from producers and distributors using techniques that vary by commodity. These data are not collected from individual consumers, and thus provide an independent basis for examining food consumption changes without the problems implicit in consumer survey data. If waste and other losses in the system are relatively constant over time, these data provide an

⁸ Large portions of this section are taken directly from Ippolito and Mathios (1994b).

⁹ For instance, more of the bone and other inedible parts of the animal are removed in the retail-level meat data, compared with the carcass-weight meat data, which reflect slaughter plant output.

independent measure of changes in food consumption patterns.¹⁰ Thus, trends in per capita consumption data can also be used to test the hypotheses that government and general sources of diet-health information were affecting consumers' food choices prior to 1985 and that the change in the regulations governing health claims in 1985 provided an additional source of this information, with a corresponding incremental effect on consumption patterns.

This section summarizes the results for 6 of the 22 trends examined by Ippolito and Mathios (1994b). These six are typical of the results found for the other trends. Trends in food categories that comprise a sizable portion of fat in the overall diet are examined to determine if consumption shifted away from higher-fat and higher-cholesterol food categories toward lower-fat and lower-cholesterol categories. In particular, trends in per capita consumption of red meat, eggs, and animal fat (butter, lard, and edible beef tallow) are examined, as are those in lower-fat categories, such as flour and cereals, fruits, and vegetables.¹¹ The data are obtained from the USDA's *Food Consumption, Prices, and Expenditures, 1970-92* (Putnam and Allshouse, 1993). For each food group, changes in per capita consumption were analyzed between the years 1977-85 (pre-health claims) and 1985-90 (health claims).

Per capita consumption of red meat, which is a major source of fat and saturated fat in the U.S. diet, declined during both 1977-85 and 1985-90 (fig. 4). Consumption fell from 132.2 pounds per year in 1977 to 124.9 pounds in 1985. In the next 5 years, the decline accel-

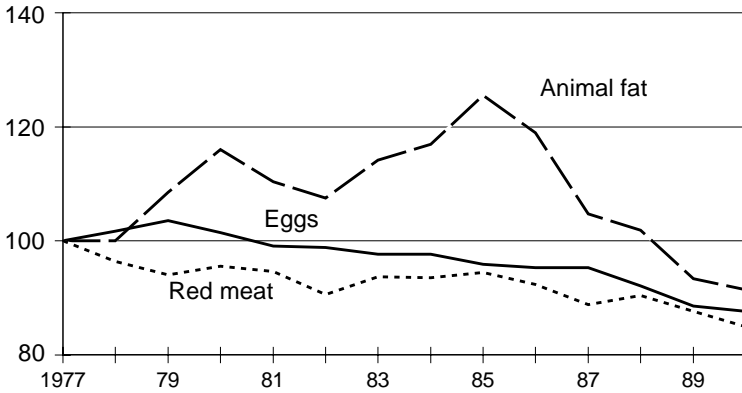
¹⁰ These data include food that spoils prior to consumer purchase, as well as other waste in the system. If this spoilage and waste are not changing over time, estimates of changes in trend will be unbiased. However, if this waste is changing for some categories, bias may be introduced into the analysis. For instance, USDA highlights the fats and oils category as one where waste may be changing. Fast-food outlets and other restaurants generate significant amounts of waste grease, which is not consumed as food but is included in the fats and oils data. As the quantity of food consumed away from home has increased in the United States, the volume of waste grease has grown, and thus, the production data may overstate fat and oil consumption by a larger margin over time. A 1987 study estimated waste grease at approximately 6 pounds per capita, or approximately 9 percent of the 1992 data for this category (Putnam and Allshouse, 1993).

¹¹ Health claims have never been allowed on meat and poultry labels, which are regulated by USDA. Thus, any effects in these categories due to the change in health claims policy would be the result of general improvements in information from claims for other foods, rather than to the direct effect of health claims for lean meats and poultry.

Figure 4

Per capita supply of high-fat foods decreased after 1985

Percent of 1977 value



Source: Ippolito and Mathios, 1994b.

erated. Per capita consumption of red meat fell to 112.4 pounds in 1990, a decline of 12.5 pounds. Regression results reported in Ippolito and Mathios (1994b) indicate that the underlying negative trend was significant and that it fell further during the health claim period.

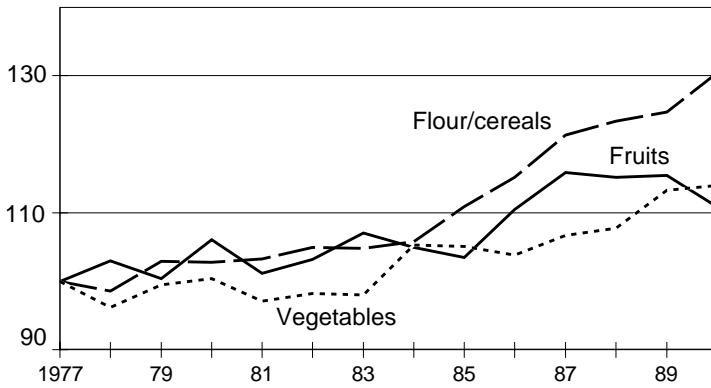
Per capita consumption of eggs also declined during both periods, from 34.3 pounds in 1977 to 32.9 pounds in 1985. During the next 5 years, consumption fell an additional 2.8 pounds, again showing an acceleration in the decline. Regression results show that the underlying trend was negative and significant, with a significant incremental reduction during the health claims period (Ippolito and Mathios, 1994b).

Surprisingly, per capita consumption of animal fat rose dramatically from 1977 to 1985 and then fell as dramatically during 1985-90 (fig. 4). Per capita consumption of animal fat was 10.6 pounds per year in 1977 and 13.3 pounds in 1985, a rise of 2.7 pounds. By 1990, per capita consumption had fallen to 9.7 pounds per year, a reduction of 3.6 pounds (27 percent) in just 5 years. Regression results indicate that during 1977-85 there was a significant upward trend in the per capita consumption of animal fat. In contrast, during the health claims period (1985-90), there was a significant reversal of the trend.

Figure 5

Per capita supply of low-fat foods increased after 1985

Percent of 1977 value



Source: Ippolito and Mathios, 1994b.

In each of the three cases analyzed, per capita consumption of high-fat, high-cholesterol foods declined during the health claims period. Moreover, this decline was more accelerated than during the period when producers were prohibited from using health claims. Of the 10 high-fat food trends considered in Ippolito and Mathios (1994b), all showed similar accelerated declines (relative to the underlying trend during 1977-85) during the health claims periods. Perversely, 6 of the 10 consumption trends had positive underlying trends during the pre-health claims period.¹²

Flour and cereal products, fruits, and vegetables are much recommended as replacement for fats in the U.S. diet. Per capita consumption of these foods increased during both periods, and the rate of increase accelerated during the health claims period (fig. 5). For example, between 1977 and 1985, per capita consumption of flour and cereal products increased by 15.4 pounds (from 140.7 to 156.1 pounds). In the next 5 years, consumption rose another 27.4 pounds to 183.5 pounds per capita. For vegetables, consumption rose 10.3 pounds (from 200.5 to 210.8 pounds) between 1977 and 1985, and

¹² The trends include red meat, eggs, cream products, cheese, animal fats, vegetable fats, whole milk, butter, ice cream, and creamed cottage cheese.

rose 17.7 pounds between 1985 and 1990. For fruits, consumption rose 3.4 pounds (from 96.1 to 99.5 pounds) between 1977 and 1985, and rose 7.1 pounds between 1985 and 1990. Regression results confirm that the upward trend was statistically significant for all three food categories and that this trend accelerated significantly during the health claims period for flour and cereal products and for vegetables. The trend also increased for fruit but not significantly. For six of eight low-fat food categories, Ippolito and Mathios (1994b) found accelerations in the positive trend during 1985-90.¹³

Consumption data for major food categories during 1977-85, when health claims were restricted, provide substantial evidence that information about fats, cholesterol, and disease was spreading to consumers, leading to improved diets. The evidence for this period is not entirely consistent, however. Per capita consumption of some higher fat products increased.

The picture is more consistent for 1985-90, when policy allowed producers to make explicit diet-disease claims. During this period, the trend in per capita consumption of food categories with high fat and high cholesterol levels either stayed the same or declined relative to the earlier period. None of the increments to the trends were significantly contrary to expectations under the information hypotheses, and thus provide no evidence that the addition of health claim advertising had adverse effects on the rate of improvement in dietary patterns. In fact, during the advertising period, movements away from the high-fat food categories increased for all major categories. Similarly, the data show a consistent pattern during the advertising period of additional movements toward lower fat food categories.

Conclusion

Examination of market share data in the ready-to-eat cereal market, consumer knowledge data, individual nutrient intake data, and per capita consumption data all indicate that diets improved during the period when producers were permitted to use health claims in advertising and labeling. Moreover, evidence from the ready-to-eat cereal market suggests that allowing producers to use health claims resulted

¹³ The trends considered are poultry, fish, skim milk, flour/cereals, vegetables, fruit, low-fat cottage cheese, and icemilk.

in more healthful product innovations and motivated producers to compete on health. Of course, it is difficult to assess the precise effect that health claims have contributed to improvements in diet.

Nevertheless, the data do not support the consumer confusion hypothesis—that health claims have adverse consequences on consumers.

The evidence presented here suggests that producer claims have significant potential to increase consumer awareness of diet-health issues and to improve consumer dietary choices, especially for groups not well reached by government and general sources of information. For these reasons, health claims policy should be designed to ensure that producers' incentives to make truthful health claims in advertising and labeling are preserved.

While this implication may seem unexceptional, it is often lost in the debate about health claims policy, where a policy's ability to control deception often becomes the major focus of the debate. All policies to control deceptive and misleading claims will also discourage some truthful claims. However, in considering alternative approaches to health claims policy, it is important to recognize that the magnitude of this effect on truthful information is as important to consumer welfare as the effects of deception. For example, current regulations prohibit all health claims not pre-approved by the FDA. While this clearly eliminates potentially deceptive advertisements and labels, it also limits the flow of evolving scientific information to that provided by the government and general sources of information. All the evidence presented here suggests that augmenting these sources of information with truthful producer health claims is likely to benefit consumers.

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Appendix 1: Dissemination of Diet-Disease Information to Consumers

Provision of Diet-Disease Information by Government and Other General Sources

As scientific understanding of the role of fats and cholesterol increased, information began to flow to the public through several channels. Public health organizations, government, and the press were all significant sources of this information. By the early 1960's, articles were appearing regularly in the popular press discussing the relationship between intake of saturated/polyunsaturated fat and blood cholesterol levels, and their relationship to heart disease.¹ By the early 1960's, the American Heart Association (AHA) had assumed a leading role in advising consumers that they could reduce their risk of heart attack by limiting saturated fat and cholesterol consumption. Other groups soon followed.

Government also played a role in disseminating this information, though considerably later than other sources. Prior to the 1970's, government

¹ Examples of articles in widely circulating magazines include "Are You Eating Your Way to a Heart Attack?," *Saturday Evening Post*, December 1, 1956; "The Perilous Fat of the Land," *Readers Digest*, April 1961; "Fat, Food, and Heart Disease," *Consumer Reports*, August 1962; "Where Do We Stand On Medicine's Big Three? Cancer, Heart Disease, Stroke," *Better Homes and Gardens*, August 1962; "How Can I Help My Husband Avoid a Heart Attack?" *Readers Digest*, etc. There are many, many others.

dietary advice focused on the need to obtain sufficient energy and nutrients from foods to prevent nutritional deficiencies (see chapter 2). By the 1970's, however, the focus of national nutrition policy began to shift to dietary components associated with chronic disease. The shift in emphasis can be seen in rules for voluntary and triggered nutrition labeling adopted in 1973, which allowed labeling of fat content by types (Calfee and Pappalardo, 1989), but the shift is most clearly reflected in U.S. Senate hearings in 1974 (U.S. Senate, 1974), which culminated in dietary goals in 1977 (U.S. Senate, 1977). Quantitative recommendations were issued for several aspects of food consumption, including recommendations to increase consumption of complex carbohydrates (55-60 percent of energy) and to decrease consumption of refined and processed sugar (less than 15 percent of energy), fat (less than 30 percent of energy), saturated fat (less than 10 percent of energy), cholesterol (300 milligrams per day), and salt (3 grams per day). In 1979, the Surgeon General also published dietary advice for the public, including recommendations that Americans consume fewer calories if overweight, less saturated fat and cholesterol, less salt, and relatively more complex carbohydrates such as whole grains, cereals, fruits, and vegetables, etc. Similar public advice was given in 1980 (and revised periodically since) in the Dietary Guidelines for Americans (USDA). In 1988, *The Surgeon General's Report on Nutrition and Health* (DHHS, 1988) provided another major review of the scientific literature on the relationship between diet and health and issued similar dietary guidelines. In 1989, the National Research Council issued a major review with similar dietary recommendations in its report *Diet and Health: Implications for Reducing Chronic Disease Risk*.

In addition, the Food and Drug Administration (FDA) and the National Heart, Lung, and Blood Institute (NHLBI) began a sodium initiative in 1981, which publicized the relationship between sodium and hypertension (Heimbach, 1986); the NHLBI's *National Cholesterol Education Program* was initiated in 1985 to improve awareness, treatment, and control of high cholesterol levels (Schucker, 1991); and the National Cancer Institute's *5-A-Day Program* was initiated in 1991 to spread information about the potential protective effects of fruits and vegetables.

Thus, government and other general information sources appear to have made considerable efforts to communicate the growing scientific evidence linking diet to heart disease and cancer.

Regulatory Constraints on Producers' Diet-Disease Information

Food producers were also an information source throughout this period, though producers faced constraints in providing some types of information.

Claims on food labels are primarily regulated by the Food and Drug Administration and claims in advertising are primarily under the jurisdiction of the Federal Trade Commission (FTC). Labels on meat and poultry products are regulated by USDA. The types of claims allowed on labels regulated by FDA or in advertising have changed over time.

For example, after producers reformulated margarine and cooking oil products to reduce saturated fat levels and began promoting their products' heart-related characteristics in the late 1950's, the FDA prohibited any label claims regarding cholesterol or fat content by type.² By the early 1970's, enforcement of this ban had eroded, and by 1973 the labeling policy was changed to allow cholesterol and fat composition disclosures and simple nutrient claims.³

Despite the policy change, manufacturers' claims linking fat, cholesterol, or any other dietary component to disease risks were explicitly prohibited on FDA-regulated labels throughout the 1970's and into the 1980's.⁴ Thus, for instance, from 1973 to the mid-1980's, a manufacturer could label the fiber, fat, saturated fat, and cholesterol content of a food product, but could not on the label cite the underlying health concerns.

The rules for advertising never formally prohibited diet-disease claims or other more general health-related claims. The FTC has allowed simple nutrient claims about fats and cholesterol as long as the claim was not deceptive or misleading.

Advertising cases are usually brought under the FTC's authority to pursue deceptive business practices. An assessment of what the agency considers deceptive must be determined from cases or other agency pronouncements during the period of interest. A variety of evidence suggests that diet-disease claims and other health-related claims in advertising raised substantial legal risk at the FTC from the mid-1970's to at least 1983 for disease claims, and until 1980 for more general health-related claims. A primary

² See "Vegetable Oils are Enjoying a Boom," *New York Times*, March 4, 1962, III-1; "Advertising: Dairy Men Open Counterattack," *New York Times*, August 7, 1962, 36; "Oil-Food Labels Held Misleading, Government Against Use of Polyunsaturated Label," *New York Times*, May 28, 1964, 75.

³ For a discussion of the history of FDA regulation of cholesterol, see Calfee and Pappalardo (1989).

⁴ For example, Hutt (1986, pp. 32-34) reports that in 1964 the agency seized Nabisco Shredded Wheat, because the label contained information linking serum cholesterol to heart disease. Other examples occurred in 1976, when the ITT Continental Baking Company was required to terminate a labeling campaign linking high-fiber foods to reduced risk of colon cancer, and in 1978 when Kellogg was required to stop a similar campaign.

indication of agency thinking at the time can be taken from the progress of the FTC's Food Rule, a broad rulemaking undertaken in the mid-1970's to regulate food claims in advertising. In the original 1974 proposal for the Food Rule, the FTC staff recommended a ban on all diet-disease claims as inherently deceptive in advertising, as in the FDA labeling restrictions, and proposed to prohibit other general health-related claims, such as the term "health food."⁵ The Commission itself did not propose to ban all health claims, instead reserving its options while soliciting comments on the issue in the Rule's *Federal Register* notice. By 1978, staff recommendations explicitly dropped the proposal to ban heart-health claims; a formal public notice ended the Food Rule in May 1983, in favor of case-by-case enforcement against deceptive food claims of all types.⁶

Thus, by May 1983, these FTC decisions had created considerably less legal risk for truthful claims in food advertising, though no particular guidance was given on the form of such claims. A diet-disease claim in advertising, however, continued to raise the risk of prosecution by FDA, since under FDA law, a diet-disease claim in advertising allowed FDA to declare the product a "drug" subject to drug law requirements.

The policy banning health claims on labels, with its implications for advertising, was effectively relaxed in 1985 following Kellogg's highly publicized All-Bran advertising and labeling campaign, which used the National Cancer Institute's statements on the potential relationship between fiber and cancer to promote its high-fiber cereals. The FDA's decision not to challenge this prominent campaign, which was in direct violation of the prohibition of diet-disease claims on labels, presumably led firms to perceive a significantly reduced legal risk in using accurate and well-founded health claims in advertising and labeling. FDA published a proposed rule to govern health claims on labels under a general deception standard in 1987,⁷ but agency officials had publicly supported a change in policy earlier and had announced that well-founded claims would not be prosecuted in the interim.⁸

Thus, regulatory events suggest that, possibly as early as 1983 in advertising and by sometime around 1985 in labeling, producers faced considerably less regulatory risk in making truthful claims about well-established diet-disease

⁵ 39 *Federal Register*, Nov. 11, 1974, 39862; Rosch, 1975; or Weitzman, 1975.

⁶ 48 *Federal Register*, May 24, 1983, 23270-71.

⁷ 52 *Federal Register*, August 4, 1987, 28843.

⁸ FDA officials were often quoted in trade press articles during 1985 and 1986 as supporting valid health claims and promising an official change in policy to allow them. See "Health Claims on Food Put FDA in a Corner," *New York Times*; and Hutt, 1986, citing speeches by FDA agency officials.

relationships in advertising and labeling. Initial claims focused on the relationship between fiber and cancer, but a number of food manufacturers soon began to promote the relationship between fats and cholesterol consumption and heart disease. Thus, beginning in 1985, the regulatory environment changed to allow producers to become an additional source of consumer information linking diet to health, as the policy debate continued on how best to regulate such claims. The regulatory uncertainties slowed firms, but claims were certainly made in 1986,⁹ and by 1987, a number of firms were making heart-health claims in major advertising campaigns.

Consumer and Producer Behavior Under Alternative Sources of Information

Government and Public Health Organizations. Government has some advantages as a source of diet and health information. As with all public goods, government is in a unique position to tax the population in order to fund the development and dissemination of information and thus forgo attempting to price information. Moreover, if government is assumed to maximize social welfare, it would be an unbiased and credible information source that would dispense information whenever the benefits of the information justified the costs of spreading it. However, if government is the sole or major source of such information, this concentration of power can be a significant problem if the process is susceptible to errors. If other theories of government behavior apply, for instance, if the “capture” or “special interest” theories of government behavior are valid (Stigler, 1971; and Peltzman, 1976), special interest groups might have undue influence on the types of information developed and disseminated, possibly blocking or slowing dissemination adverse to their interests. Similarly, if bureaucratic incentives influence government actions, these decisions may be excessively risk-averse or otherwise unresponsive to changes in science and the marketplace (Niskanen, 1971).

Finally, the nature of government and the pressures to which it responds influence the way the information is likely to be dispensed. In the nutrition area, for instance, information is usually disseminated through the release of government studies or scientific panel recommendations. These releases are initially limited to one-time reports in the news media, though there is a sec-

⁹ For instance, Promise margarine, which was lower in saturated fat than margarines at the time, was introduced in 1986 with its “heart smart” theme and focus on the role of saturated fat in coronary disease risks. The major TV campaign by Nabisco for Fleischmann’s lower saturated fat margarine, featuring a 30-year-old man talking about his recent heart attack and discussing the role of diet in prevention, also ran in 1986 (“Ads pump low cholesterol claims,” *Advertising Age*, Nov. 2, 1987).

ond-round dissemination through the popular press that reports nutrition information.¹⁰ This information is highly concentrated in the news and print media, and therefore likely to be absorbed disproportionately by those reached by these information channels and those most efficient at processing information.¹¹ Moreover, the information is generally released in generic form (e.g., “Reduced saturated fat consumption may reduce your risk of heart disease”) and not in product-specific form (e.g., “Brand X margarine contains less saturated fat than other margarines, and less saturated fat may reduce the risk of heart disease”). Generic information requires that consumers have other sources of information and a greater understanding of the issue to turn the information into behavior, again creating a potential bias toward those most efficient in processing information and those with better access to health information.

Like government, major public health organizations tend to be credible information sources, providing broad guidance on diet-disease issues. These organizations generally do not provide detailed information on particular food choices that draw consumer attention to particular dietary substitution. These groups rely on voluntary contributions for funding, and thus, tend to have relatively limited resources to devote to public education.

Based on these theoretical considerations, we can formulate hypotheses about how government and related general sources of information might affect fiber, fat, and cholesterol consumption. Other things equal, we hypothesize that the continuous flow of government and general information about the health implications of diet on heart disease and cancer have led to a decline in the average consumption of fats and cholesterol, and an increase in the consumption of fiber, in the United States.

Producers As a Source of Diet-Health Information. Food producers are another potential source of diet-health information. Certain food products have been or can be formulated to have desirable nutritional characteristics that may not be well understood by potential consumers. If these potential consumers could be informed about these product features at a low enough cost, demand for the product would increase enough to create profit opportunities for producers. This mechanism creates an incentive for producers to

¹⁰ A number of studies have found that the effects of information that is not repeated frequently can be shortlived. See Russo and others (1986), for instance, for such a finding on the effects of nutrition information in supermarkets.

¹¹ Feick and others (1986), for instance, find that more educated consumers are significantly more likely to acquire nutrition information from print media than less educated consumers.

attempt to provide the missing nutrition information to potential consumers.¹²

Producers have several advantages as providers of diet-health information. First, they should be willing to devote substantial resources to information provision if there are significant deficiencies in public knowledge and if there are products that can be sold profitably as a result of providing this new information. Thus, producers are capable of adding large amounts of diet-health information to the market, when it is needed. Second, producers' incentives are to provide nutrition information in product-specific form. Thus, as compared with government information, producer-provided nutrition information is more directly tied to potential behavioral changes, making it easier to act upon. Finally, producers have strong incentives to find the best methods to communicate the information to those who do not have it and would use it if they had. These considerations should improve consumer access to the information, especially for groups within the population that do not have the information, and should reduce the information-processing requirements necessary to turn the information into behavior.

Producer-provided diet-health information also has potential disadvantages, however. One important issue is credibility. Since consumers cannot usually verify relationships between diet and health directly (especially for long-term effects), there is the potential for deception. Unless the market or government has mechanisms to punish firms that lie, or consumers can verify information in some way, consumers would be expected to be skeptical of producer-provided information, limiting food producers' incentives to make claims.

A second issue is the inherent bias of producer-provided information. Assuming they can be credible when they make claims, producers have strong incentives to provide nutrition information that is positive about their product, but they have no incentive to provide negative information. Despite this inherent bias at the individual firm level, economic theory suggests that in many cases competition among producers can eliminate this bias in the information provided by the market as a whole (Grossman, 1981). For instance, this theory would predict that if some firms advertise the no-cholesterol benefits of their product and are gaining sales by omitting information on other dimensions, such as saturated fat, competing firms

¹² There are a host of issues related to producer provision of information that are beyond the scope of this chapter but that are important for understanding these incentives and for designing policy in the area. For example, if the information is provided in generic form, other producers of similar products will simply "free-ride" on the information and reduce the benefits to the original producer. Thus, producers are unlikely to provide health information unless they can tie it directly to their particular product. See Calfee and Pappalardo, 1989, and Ippolito (1986, 1988) for discussions of these general issues.

with no-cholesterol and low-saturated-fat products have incentives to advertise these facts. This “unfolding” theory suggests that despite firms’ initial reluctance to highlight “bad” nutritional characteristics in their products, competition will often induce all but the worst firms to disclose the features of available products, if the market values the information. As long as consumers are skeptical of firms that do not disclose features, they would then be able to rank products on most key features—for example, both cholesterol and saturated fat.

If producer claims are sufficiently credible, their advertising the health benefits of increasing fiber consumption and reducing fat and cholesterol consumption will add to the stock of information about heart disease and cancer, leading more individuals to make dietary improvements. Also, because advertisers are adept in reaching and conveying information to the public, such information should reach a broader population than that provided by the government and other general nutrition sources. Finally, if producers have the ability to communicate the value of improved health features of their products, the number of new products that are more healthful should increase.

Implicit in these hypotheses is a presumption that existing regulatory constraints are sufficient to discipline most deceptive claims that would lead consumers to make undesirable food changes. Alternatively, if producer health claims are so incomplete, misleading, or deceptive as to lead consumers to make inappropriate changes in diet, improvements in the fiber, fat, saturated fat, and cholesterol content of consumers’ diets will deteriorate. Thus, we would expect to see a decline in fat, saturated fat, and cholesterol consumption (and an increase in fiber consumption) in 1977-85 due to the flow of government and general information, and a slowing of that rate of improvement once producer health claims were allowed in the 1985-90 period.