

Food choices and public policy

Rachel Griffith explains the significance of her research, which was funded through the European Research Council



Rachel Griffith is Research Director at the Institute for Fiscal Studies, and Professor of Economics at the University of Manchester. She was elected a Fellow of the British Academy in 2009.

Policies to reduce purchases of unhealthy foods

The World Health Organization (WHO) estimates that worldwide obesity has more than doubled since 1980, and that most of the world's population now live in countries where obesity and being overweight are responsible for more deaths than being underweight. Governments around the world are grappling with how to tackle rising rates of obesity and non-communicable disease, and a range of policies have been implemented with this in mind, including taxes on soft drinks or other foods, labels to inform consumers about the nutritional content of products, encouraging the reformulation of food products, and restrictions to advertising junk foods.

These policies aim to reduce the amount of unhealthy foods that people purchase, and ultimately to improve health outcomes and reduce long-run inequalities in health, social and economic outcomes. In order to understand the impacts of these policies and their effectiveness in meeting the aims of policy, an important first step is to understand how they change the choices that individuals and households make over the foods they purchase. We can then map how changes in food choices lead to

changes in health outcomes and consider the implications for long-term inequalities.

In order to understand how policies affect individual choices, it is important to capture how a change in price, information or advertising will lead people to switch between a large number of food products. Policies may affect products that seem similar in different ways, and products may differ in their nutritional characteristics.

Understanding how policy affects individual's food purchase choices

Our research uses detailed data on all of the food purchases made by over 25,000 households over several years to estimate the impact that policies have on food choices.¹ The funding that we had for this work through a European Research Council Advanced Grant was crucial in several ways. First, the work represented a new direction for the research team. This required an investment of time and resources by all of the researchers, and we could only do this because we knew that we had a sizeable chunk of long-term funding. Second, the work was risky in that social science researchers had only limited experience with these data, and ERC grants are designed explicitly to fund high-risk but potentially high-return research.

A particularly tricky issue is how to get at the causal effects of a change in policy. For example, if a tax on soda was introduced at the same time as the Brexit trade

1. The work described in this article was conducted by Rachel Griffith with her colleagues Pierre Dubois, Martin O'Connell and Kate Smith. It was funded by a European Research Council Advanced Grant, and had support from the ESRC Centre for the Microeconomic Analysis of Public Policy at the Institute for Fiscal Studies.

negotiations were resulting in large fluctuations in the exchange rate of the pound, then it would be important that we were able to distinguish the effects of the tax from the potentially confounding movements in prices due to changes in the exchange rate.

Policy attention has focused on ‘junk foods’ – foods that are high in calories, salt, sugar and fat, and low in fibre, proteins and vitamin. Food consumed at home accounts for the largest share of calories for most individuals. However, fast food, drinks and snacks are important contributors to sugar consumption, particularly for children and adolescents. Decisions over which fast foods, drinks and snacks to purchase are typically made in an environment where the item is for immediate consumption. These are situations in which temptation is likely to play an important role, with individuals who have self-control problems being more likely to make poor food choices, potentially exacerbated by the possible addictive nature of sugar.

The psychology and economics literatures have pointed to poverty potentially being causally related to self-control problems. The stress and cognitive loads of being in poverty mean that people might have less capacity for decision making, and are more likely to make decisions that underweight the future consequences of their choices, which they later regret. This can have long-term implications for well-being, since poverty can perpetuate itself by undermining the capacity for self-control.

In our work we are trying to study the importance of these effects, in order to understand better not only whether particular policies work, but also why they work, and who the policies are most effective at targeting. This helps us to design better policies.

An example, which I will discuss further below, is a recent paper in which we estimate how individual’s purchases of crisps are affected by advertising. We use the estimates to simulate the impact of banning advertising, considering both the consumer response and what would happen if firms changed their prices.²

The impact of advertising in junk food markets

Junk food markets, such as those for confectionery, soft drinks and crisps, share common features. They tend to be dominated by a small number of firms, selling multiple brands, and advertising their products heavily. Policy organisations, including WHO, have called for restrictions on advertising junk food, in the expectation that less junk food advertising will translate into less junk food purchased. However, this will depend on the ways in which advertising affects consumer choice, and how firms respond to an advertising ban. For example, advertising of a particular brand might make individuals

more likely to purchase that brand and less likely to purchase other similar brands, but alternatively it could also encourage them to purchase other similar brands; the overall effect of advertising could be to increase the total amount purchased or to shrink the size of the market depending on the size of these effects. The overall effect will also depend on a number of other factors, including whether advertising makes individuals more or less sensitive to price, and whether firms that manufacture and sell junk foods respond to a restriction by, for example, lowering prices.

Economists have long been interested in the mechanism through which advertising affects consumer choice. There are three broad traditions: advertising may play a persuasive role in altering consumer tastes; it may play an informative role in conveying information to consumers about a product’s existence, price or quality; it might directly provide the individual with benefits from purchasing the product. These alternative views have different positive and normative implications.

Theories in which advertising is ‘persuasive’ suggest that advertising will make individuals less responsive to price, and will distort their decision-making so that they pay less attention to some characteristics, potentially including the nutritional characteristics. Theories in which advertising is ‘informative’ suggest that advertising helps consumers find information, such as price, that might otherwise be costly for them to obtain. The ‘complementary’ view of advertising highlights how advertising can enhance the value of a product, for example, by enhancing the social prestige associated with its consumption.

In order to assess the impact of a ban on advertising on individuals’ food choices it is important that we use a model that can accommodate all the ways that advertising might affect the choices individuals make. We can do this while remaining agnostic about how advertising affects the value that the individual places on purchasing a product – for example, we can allow advertising to have persuasive and complementary effects on choices. However, in order to make statements about the impact on consumer welfare we need to take a stance on the effects of advertising – we explain why below.

Estimating the effects of advertising on individual’s choices

We study purchases of crisps in the UK. In order to obtain robust empirical estimates of the causal effects of advertising on individuals’ choices we exploit variation in the extent to which individuals were exposed to advertising of crisps over time. We use variation that is due to the time and station that different brands of crisp were advertised, and the TV viewing behaviour of individuals. The fact that we observe the same individuals over time

2. P. Dubois, R. Griffith and M. O’Connell, ‘The Effects of Banning Advertising in Junk Food Markets’, *Review of Economic Studies* (2017).



Figure 1. Four examples of crisp adverts. We leave it to the reader to decide whether they are persuasive, informative or complementary to consumption.

making repeated decisions (what is called longitudinal or panel data) helps us to control for a number of potentially confounding factors.

We allow for the possibility that advertising affects the choices that individuals make now and in the future. People are not likely to instantly forget an advert they see, so this is potentially important (and turns out to be important empirically). However, it makes modelling the way that firms might respond considerably more difficult, since the choice that a firm makes over advertising today will affect its profits today and in the future and also affect the profits of other firms in the market. This means that, when firms choose their advertising strategies, they play a complicated dynamic game. However, we are in luck, since our interest is in assessing the impacts of a ban on advertising, which conveniently means that we do not need to worry about the precise details of firm advertising choices, because the ban sets advertising to zero, so all these dynamic effects go away. We model firm's decisions over prices. If advertising was banned there is

no reason to think that firms would keep the prices of their products the same, and there are many reasons to think that the best price they could charge would differ compared to when they are allowed to advertise. These are what economists call strategic responses for firms.

Our estimates show that advertising does have important effects on the choices that individuals make. Advertising lowers the willingness of consumers to pay for more healthy crisp products. It also lowers their price sensitivity and encourages people to switch to larger pack sizes. Our estimates suggest that advertising has both predatory effects, meaning that the advertising of some brands leads to individuals being less likely to purchase other brands, and co-operative effects, meaning that the advertising of some brands leads to an increase in purchases of other brands. Overall the effect of advertising is to expand the size of the market.

Our model implies that the impact of a ban on advertising *if the manufacturers and retailers of crisps kept prices at their existing level* would be a 15 per cent reduc-

tion in the total quantity of crisps purchased, leading to similar reductions in calories, saturated fat and salt from crisps. These health gains would be partially mitigated by people switching to other junk food (confectionery, for example) – indeed, we found that individuals would be more likely to switch to other junk foods than towards healthy snacks.

Firms' responses to offset the effects of a ban

Our model implies that the manufacturers and retailers would face incentives to change prices following an advertising ban. Advertising makes consumers less responsive to changes in prices, so that a ban on advertising would make them more sensitive to prices. Firms would therefore want to set lower prices than when they could also advertise. This is intuitive: banning competition in advertising leads to more intense competition in prices.

The response of firms to the ban acts to offset the reduction in purchases of crisps that results directly from the absence of advertising. Our model suggests that prices in the market would fall by 4 per cent on average, and therefore the overall effect (in equilibrium) of an advertising ban would be a reduction in purchases of crisps of only around 10 per cent – i.e. about two-thirds of the reduction we would expect if prices did *not* change.

Conclusions

Our study shows that banning the advertising of crisps would lead to a reduction in purchases of crisps, and presumably to health gains through lower consumption. These health gains would be limited for two reasons. First, some firms would respond to the ban by lowering

prices, which leads to an offsetting increase in purchases of crisps. Second, some consumers would substitute to other junk foods.

Our analysis relies on carefully modelling the channels by which advertising can influence consumer demands. To take the analysis further and to make statements about the overall effect on welfare, we need to be more precise about whether advertising is persuasive, informative or complementary. We are not able to distinguish between these effects, but Figure 1 shows some examples of recent advertisements for crisps which should enable the reader to form their own view.

Some economists have argued that advertising provides environmental cues that lead consumers to behave like non-standard decision-makers and that 'choices made in the presence of those cues are therefore predicated on improperly processed information, and welfare evaluations should be guided by choices made under other conditions.'³ If we agree with this view that advertising for crisps is persuasive, then banning advertising would improve consumer welfare for two reasons. Banning advertising would remove a distortion to decision-making, and would also lower prices. The ban would also reduce firms' profits. The welfare gain by consumers would be greater than the reduction in firms' profits resulting from the ban. Of course, the long-run welfare impacts of a ban on advertising of junk foods would also depend on the impact that reductions in purchases had on health outcomes and the implications this had for long-term outcomes and inequalities in health, social and economic outcomes, as well as future savings of the public cost of healthcare. ■

3. B.D. Bernheim and A. Rangel, 'Beyond Revealed Preference: Choice Theoretic Foundations for Behavioral Welfare Economics', *Quarterly Journal of Economics*, 124:1 (2009), 51–104.