Economic Perspectives on Food Choices, Marketing, and Consumer Welfare

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Abstract: This contribution reviews the main normative and positive arguments that can used in the assessment of the costs and benefits of food marketing restrictions, focusing specifically on theoretical and empirical developments in the economics of advertising, consumer behaviour and industrial organization since the 70s.

Introduction

Theoretical and empirical insights from economics have been much less influential in the design of nutrition policies than in competition or trade policies. One explanation is that nutrition policies have not been until now an area of great litigation processes. This is changing, as public health authorities, and national or international bodies push for more stringent regulation of the nutritional quality, the price, and the marketing of food products (see, e.g., the investigation into the Nutri-Score food labelling system launched by the Italian antitrust authority in January 2022). As adversarial processes between legislators or regulators and the food industry become more frequent, it is important to present the perspectives that economists can provide to both sides, and to discuss their empirical validity. I focus specifically on normative and positive arguments that may be used in the assessment of the costs and benefits of marketing restrictions.

Cost-benefit analysis has become central in the discussion of public policies. It allows to select the "best" policy option (ex-ante) and evaluate their effectiveness (ex-post) when stakeholders' interests diverge. Governments and supra-national institutions have increasingly relied on cost-benefit money metrics in the construction of standards and laws.[1] Yet, it is crucial to understand that these costs and benefits are valid money metric equivalent only under precise sets of methodological assumptions that are required to value consumer welfare. These are the questions of what costs and benefits should be counted, and how to measure them. Answering these questions raises in turn two critical issues. First, what assumptions do we make regarding consumer preferences and rationality? Second, even when consumer sovereignty does not hold, can the regulation of marketing practices

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make them worse off, through indirect unintended effects such as a decrease in price competition?

I start by reviewing the neo-classical approach to consumer choices, markets and marketing. Starting in the 1970s, it has had a great influence in the construction of the legal framework binding regulation.[2] It is characterized by a strong emphasis on the autonomy and rationality of a consumer endowed with stable preferences. Therefore, marketing does not *a priori* affect consumer choices by influencing their preferences. Marketing is viewed as providing information about products, or as a complementary product characteristic that is intrinsically valued by consumers. It has a strategic role in the competition between firms. "Good" marketing will often increase consumer welfare, while "bad" marketing (deceptive advertising) should disappear, thanks to competition and market efficiency. As such, marketing restrictions will likely make consumers worse off. Prior to the neo-classical perspective, economists made a distinction between informative and persuasive marketing. I discuss why the view that marketing can alter consumer preferences by persuading them poses difficulties to the standard economic analysis of the welfare effects of marketing.

The second section discusses the validity of the neo-classical approach by reviewing the empirical evidence about the effect of marketing on consumer decisions and markets. Ingenious studies in behavioral economics and experimental marketing have clearly shown that marketing actions can distort consumers' decision making,[3] and thus hurt consumer sovereignty. There is a fundamental asymmetry between firms and consumers, because the former are fully able to develop an economic rationality while the latter have limited abilities in terms of perception and cognition, and emotion-control. Yet, these experimental studies have limited external validity. Observational studies of markets suggest that marketing has small and rather pro-competitive effects,[4] a result that is more consistent with the "informative" perspective on advertising than with the "persuasive" one. However, the internal validity of these observational studies most often relies on the same rationality assumptions that ground the neo-classical model of consumer choices. Finally, I discuss recent theoretical results in the Economics of Industrial Organization suggesting that firms can durably exploit consumers' behavioral biases to decrease competition, thus harming consumer welfare.[5] One straightforward consequence is that more stringent marketing regulations may increase consumer welfare, by "debiasing" people's choices and align them with their long-term interest. In addition, both theoretical and empirical studies provide results showing that firms generally spend too much on marketing.[6] Hence, marketing restrictions may actually increase the profitability of firms in addition to their potential benefits in terms of consumer welfare and protection.

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The Neo-Classical Approach to Consumer Choices, Health, and Marketing

The economic analysis of marketing has historically focused on advertising or Promotion, one of the four Ps involved in food marketing, along with the Price, the Product (seen as a bundle of attributes including its taste, its composition, its packaging and so on), and the Place (where it is marketed). From the massification of advertising between the two world wars to the 1970s, the idea that advertising intends to influence consumer preferences and can "make demand" was not uncommon among economists.[7] From the 1970s onwards, three hypotheses have structured the research. First, advertising can inform consumers about the existence of products or certain objective attributes of products, including their prices. Second, advertising can persuade well-informed consumers that a product they know well is more desirable than they think. Third, advertising can be seen as a good that is complementary to the product in producing a subjective consumption experience. This research has been deeply shaped by the neo-classical economic approach to markets, whose key peculiarity is that it provides both a toolbox for understanding consumer

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behavior and a reference normative standard for assessing the relevance of market regulation policies in terms of economic efficiency.[8] I start by introducing the neo-classical approach to consumer choices and markets. I then expose the three alternative views on the impact of advertising on consumer demand.

The Neo-Classical Approach to Consumer Choices

In the neoclassical approach to consumption and health, consumers make trade-offs between maximizing the immediate pleasure of eating and preserving future health or body shape. Their decisions are constrained by their available time and budget. The future costs and benefits of consumption are weighted against immediate ones by a discount factor that expresses their subjective preference for the present, and their choices are supposed to be temporally consistent. The temporal consistency of choices implies that consumers do not change their consumption plans when their food environment is unchanged. They are therefore able to regulate their food intakes over time in order to achieve long-term goals that may or may not be in line with public health recommendations: being obese can be the outcome of perfectly rational food choices.[9] Indeed, the neo-classical *homo oeconomicus* is not a *homo medicus*, in the sense that they have no normative reasons to wish maximizing their health.[10] Their decisions merely reveal their preferences.

In this theoretical framework, consumers are *a priori* held responsible for the consequences of their decisions, and nutritional health is private issues. If they have an unbalanced diet, gain weight, and develop illnesses, they will start valuing healthy behaviors, and this will increase their demand for healthier foods or for physical activity. The market should *a priori* provide them efficiently with what they need to achieve their desired level of health. A normative consequence is that public policies ought to respect the axiom of consumer sovereignty. Nutritional health policies, especially market regulations, can only be justified by market failures, in particular the existence of externalities or imperfect information.[11]

Food markets generate externalities in terms of losses of economic productivity and direct health-care costs, especially in countries where a large proportion of health expenditure is covered by public insurance. For instance, the current trends in obesity and diet-related noncommunicable diseases might account for 8.4% of total health care expenditure in the next decades in countries member of the Organisation for Economic Co-operation and Development.[12] These externalities may justify the implementation of corrective taxes, also called Pigouvian taxes, the optimal design of which is the subject of abundant literature.[13] Such taxes restore the truth of prices, in the sense that the latter must convey correct information about the value of products. As analyzed by Michel Foucault in the late 1970s, the truth of prices is an essential condition for the governmentality of behavior in neo-liberal economies.[14] Consumers can adopt behaviors that deviate from public health recommendations as long as they pay the price that internalizes the externality that they create.

Consumers are in a situation of imperfect information when they have little knowledge of the health impacts of their eating behaviors, or when producers do not disclose some characteristics of the products they offer. In the first case, generic information can be provided by public authorities (e.g. health education campaigns) or, sometimes, by a collective actor (e.g. the union of Fruits and Vegetable producers in France), because it is rarely in the interest of a specific company to make the effort of providing information that could also be to the benefit of its competitors, except if the company wants to show a form of social responsibility. In the second case, the nutritional labeling of products or menus offered in restaurants can fill the information gap.

Advertising as Information

Advertising is said to be informative when it informs consumers about product availability, product characteristics or product prices.[15] In that case, it enhances consumer welfare as it lowers the costs of searching for information and it reduces information asymmetry between sellers and consumers.

Consumers are rarely aware of all the consumption opportunities offered by markets. Acquiring information is costly, as finding good information takes time, and the time spend with information search represents foregone opportunities to undertake more pleasurable activities or to work and earn money. Hence, consumers are better-off when information is provided freely by sellers. The welfare gains may be unequally distributed, depending on the value of time for individuals. High-income consumers have a higher value of time and therefore higher search costs. They have therefore less incentives to search for good prices or products and, perhaps counter-intuitively, they may benefit more from informative advertising. Yet, low-income consumers may also benefit from informative advertising, as they have overall less income to devote to information search. Informative advertising also raises consumer welfare by increasing their responsiveness to price changes, or their ability to

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switch to alternative products that will better satisfy their preferences. It can therefore increase competition on consumer markets, thus limiting the market power of firms, and leading to lower prices.

Beyond providing information on prices and available products, advertising may provide information on product quality, and therefore help solve issues of imperfect information about quality. Some attributes of food are difficult to verify by inspecting or experiencing products. We often do not know the possible health impacts of innovative ingredients, the environmental cost of the product, or whether it has been produced under socially fair conditions for workers. These product characteristics are credence attributes, because consumers cannot check their presence on the point of purchase, unlike search attributes (e.g. the product price), nor experience them during consumption (e.g. a particular flavor). The presence or absence of these credence attributes is associated with higher production costs and, at the same time, a higher average willingness-to-pay of consumers. This raises a problem of information asymmetry known as adverse selection:[16] if consumers could not ascertain product quality, then firms would have little incentive to make efforts to produce high-quality products, and markets would end offering only low-quality products. Here, advertising (if not deceptive) can help restore a good functioning of the market. For this to hold, one must have a market with a sufficiently large proportion of low-quality products. Then high-quality sellers have an incentive to advertise the quality of their products because they can take advantage of vertical differentiation in quality to sell at higher prices.

Interestingly, some economists have used this argument to recommend that nutrition labelling should not be made mandatory. Indeed, if consumers value the nutritional quality of products, then producers of healthy foods have an incentive to signal that their products are the best in order to gain market share. The combination of incentives and competition may then be sufficient to provide nutritional information to those consumers who have a real preference for healthy foods.[17] From this perspective, food markets are segmented according to consumer preferences, and there is no justification for the introduction of mandatory nutrition labelling.[18] Advertising, marketing claims and labels are treated similarly, as information.

A pending issue is how to ensure that advertising provides correct information. Deceptive advertising is less an issue for experience or search attributes than for credence attributes. If consumers can experience an attribute, only firms that sell high-quality products have incentives to advertise their quality, in order to attract first-time buyers or retain consumers.[19] The idea here is that high-quality firms use advertising expenditures as a signaling device. By engaging in such expenditures, they signal that, over the long-term, they can commit to substantial expenses because they expect to durably offer high-quality products at a high price. Here, advertising is useful, not only because advertising messages may convey new information, but also because the practice of advertising allows consumers to discriminate high-quality products from low-quality ones. This reasoning relies on the questionable assumption that consumers fully realize that low-quality firms have less incentives to engage in advertising expenditures.

Third-part certification might be a solution for credence attributes, hence the emergence of labels for guaranteeing the origin of products, or that they are organic or a result of fair-trade. However, in many cases, it is difficult to resort to third-party certification. Alternatively, some public regulation body may control whether information is deceptive or not. If companies risk being fined for deceptive advertising, then low-quality firms will not engage in it. In practice, such control-and-check approach often fails, either because financial and material resources for the task are limited, or because it is difficult to provide firm evidence that marketing claims are fraudulent. The protection of commercial freedom and free speech also constrains the activity of regulatory bodies.

Last, industrial economists have devoted much energy to identifying the role played by informative advertising in market competition, especially whether it is pro-competitive and whether advertising expenditures are not too excessive. Excessive advertising efforts can result from the potential intensification of competition between firms which are trapped in a non-cooperative equilibrium, whereby each firm has to raise its effort at the level of its rivals to avoid losing market shares.[20] Hence, the race for informative advertising may reduce company profits.

Advertising as Persuasion: A Good or a Bad?

Advertising has changed over the last century. Nowadays, advertisements and marketing campaigns are often designed to convey narratives telling consumers why they must buy a product and not what this product is or costs. Stories are constructed around products, or products are derived from stories. These stories appeal to emotions, implicit associations and cognitive schemes such as the need of belonging to a community of consumers.[21] When advertising is not informative, it may be said to be persuasive, in the sense that it would alter consumer tastes.[22]

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Persuasive advertising can have two effects on consumer demand for a product.[23] First, it can expand the demand for the product, either by taking market shares from rival products or by increasing the size of the market. Such distinction is important because one widespread argument against regulating the advertisement of unhealthy goods is that this *does not* expand the market size by increasing purchase volumes by habitual consumers, but just play a role in the competition for market shares.[24] Note that showing that advertising expands the market size by attracting new consumers does not prove that it is persuasive, as new consumers might have just been previously uniformed of the existence of the product.[25] Second, persuasive advertising can alter consumer responsiveness to price changes. For instance, creating a strong brand identity is a means of lowering consumer price responsiveness, so that consumers will be less sensitive to increases in own-price or to decreases in the price of rival brands. Incumbent firms may also use it to create barriers to market entry, as new entrants will have to spend important resources in marketing efforts. In these cases, persuasive advertising would harm consumer welfare by increasing total demand so that consumers buy too much of the product, and by lowering market competition. Yet, the anti-competitive effect may not be observed if all firms simultaneously increase their advertising efforts, in a strategic attempt to best reply to their competitors. In addition, some firms may also reply by lowering their prices if possible. A cost-benefit analysis may therefore conclude that prohibiting persuasive advertising is not beneficial to the consumer if beneficial pro-competitive effects offset the harmful taste-shifting effects.

In addition, there is a practical difficulty in assessing welfare losses due to taste-shifting. If the consumer does not have the same preferences before and after an advertising campaign, then what are the preferences that should be taken into consideration for assessing the welfare impacts of advertising? If prior preferences, then one implicitly assumes the normative position that preferences should remain unaltered. But then why would it be more legitimate to try changing consumer preferences through public health information campaigns? If posterior preferences — because consumer preferences have been irremediably altered —, then prohibiting advertising can only stand on the basis that it is a proportioned means of avoiding potential welfare consequences that the consumer or the market would not have internalized, such as health or environmental damages. It should be proportioned in the sense that the problem of externalities cannot be solved *more efficiently* by some standard Pigouvian tax. The economists' preference for a tax rather than a ban is illustrated, for instance, by Shiman,[26] who studies the opportunity of a tax to regulate excess direct marketing to consumers.

Dixit and Norman[27] propose a middle way to inform the welfare consequences of persuasive advertising: comparing the changes in consumer welfare calculated under prior and under posterior preferences. They show that, in general, the *marginal* effect of persuasive advertising is to increase firm profits by a first-order of magnitude and to decrease consumer welfare (under prior preferences) by a second-order of magnitude. Hence, from a marginalist point of view, this small welfare loss for consumers is not sufficient to decide that persuasive advertising should be prohibited.[28] However, even if advertising has small short-run effects, its long-run effects appear to be important when we compare the consumer now and the consumer a decade ago. In that case, we are back to the situation of having to decide which preferences to consider. There is one case, however, where Dixit and Norman reach the conclusion that persuasive advertising is welfare damaging: when it raises the price of products. In that case, the producer increases its profit at the expense of consumer welfare even from the perspective of posterior preferences. There is a transfer of surplus from the consumer to the firm, and the firm has bad incentives to increase its advertising expenditures. Once again, competition between firms may increase, so that firms may end over-investing in advertising.

As refined as it looks, the Dixit and Norman's approach has not been successful in economic analysis. This is essentially because, in the 1980s, the triumphant view was that one must assume *a priori* that consumer preferences are stable, and that economists should not try to explain markets and social facts by relying on ad hoc assumptions regarding changes in consumer tastes. Stigler and Becker wrote in 1978 a key article of the neo-classical pantheon - "De Gustibus Non Est Disputandum" —, in which they argued that apparent changes in preferences could indeed be understood as being produced by stable "meta-preferences."[29] They reframed the development of a preference for music or for junk-food as the *intentional and consequentialist* accumulation of a "stock" of consumption experience. With perfect anticipation of how this stock of consumption accumulates, and how it affects the pleasure of listening to music or eating junk-food, consumers *choose* to fulfil their desire in all their sovereignty. Consumption is not just the use of a product or a service, but an experience that is produced by the subject via the combination of past experiences (and knowledges, memories of emotions, skills etc.) and current purchases.

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Following this line of thought, advertising is seen as a good providing additional characteristics to the product (like a cloth dressing a character). Becker and Murphy[30] indeed defended the view that advertising creates narratives that consumers demand and like. These narratives would not alter consumer taste because the consumption experience is not made up only of the product, but also of the emotions that make it more or less enjoyable. Eating a cake can be associated with memories of childhood, and some effective marketing may reactivate this memory. Advertising is thus seen as a good that is complementary to the product in the production of a consumption experience. Of course, this subtle way of reframing the perspective on non-informative advertising has powerful normative implications for regulation: advertising builds value for the consumer. In that case, even if it raises prices, this is not bad for consumers, as this rise in price corresponds merely to an increase in consumer willingness-to-pay for the consumption experience but not to a change in preferences. The creation of value comes at the expense of firms' profits, as advertising is costly and intensifies competition. Hence, firms prefer to limit advertising and, perhaps surprisingly, they may even *undersupply* advertising as compared to what would maximize consumer welfare.

The neo-classical approach to consumer choice leaves little room for regulation of advertising. Informative or complementary advertising tends to increase consumer welfare, while persuasive marketing can decrease it if it reduces competition between firms. However, economists are reluctant to consider that marketing is persuasive, notably because it raises the issue of the observability of consumer "true" preferences. Then, advertising regulation can only be based on evidence that it is deceptive or that it generates externalities, for example, in terms of health or environmental costs. In the latter case, the question for public authorities is whether restrictions and bans are the most appropriate tools for reducing externalities, or whether a Pigouvian tax — which is simpler to implement — would be more effective. These conclusions apply more generally to many aspects of marketing activities, such as packaging design, sponsorship of sports events or product placement in video games.

Consumer Behavioral Failures and their Exploitation

The neo-classical approach is based on the key assumption that consumer choices are the expression of stable and consistent preferences under time and money constraints. Expanding the diversity of consumption experiences (complementary advertising) or making more information available (informative advertising) is welfare-enhancing. In addition, the consumer has the cognitive and knowledge capacities to understand and outsmart firms' strategies, so that competition would solve most regulatory issues at low costs. Naturally, the validity of this approach depends on how well this assumption, or the predictions it generates, is supported by empirical evidence. I first start reviewing experimental evidence showing that consumer decisions are biased by the interplay of environmental factors, and perceptual or cognitive factors. I then present observational evidence from empirical studies of existing markets. They rather support the "informative" view of advertising, but they often implicitly rely on rationality assumptions that are consistent with the neo-classical approach. Finally, I present some recent theoretical advances of a recent research field — "behavioral industrial organization" — that tries to think about the implications of consumer behavioral failures for market regulation as rational firms can strategically exploit these failures to increase their profits or strengthen their market positions.

Experimental Evidence on Marketing and Food Choices

The standard economic approach ignores the variety of perceptual, affective, and cognitive mechanisms that determine what individuals decide to purchase and to eat along both the quantity and quality dimensions. Experimental studies in economics, marketing, and psychology have provided extensive evidence that these mechanisms play a significant and *systematic* role in food choices.[31] This implies that the food environment is a key determinant of consumer behavior, in addition to their preferences and the time and income constraints they face.

Marketing often plays with perceptual cues that affect consumer-revealed preferences. For instance, exposure to palatable food cues reduces the ability of dieters to substitute healthy food for unhealthy one, because they interfere with the cognitive processing of comparison between the weight control goal and short-term pleasure.[32] The shape of packaging also has an impact on consumer perception of overall volumes, in such a way that doubling all sizes of a product package makes it appear only 50% bigger.[33] As consumers tend to rely on portion size to regulate their intake, the underestimation of increasing volumes when packaging sizes increase causes individuals to eat more.[34] Beyond product-specific perceptual cues, environmental cues act as distractors that alter the perception of hunger and satiety. Experiments have shown that listening to music, watching a movie or even a soft light tend to increase food intake at eating occasions.[35]

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Marketing also uses framing techniques to alter consumer valuation of the choice options. For instance, adding extra-large options in a menu shifts upward the preferences of consumers who did not choose the previously largest option.[36] Here, framing plays with consumer aversion for extreme options in a choice set. This renders options with less extreme attributes more salient. Consumer evaluation of products can also be affected by halo effects that are obtained by associating the (unhealthy) product with elements that evoke healthiness. For instance, consumers evaluate a meal as less caloric when healthy food is added to unhealthy food as compared to when unhealthy food is presented alone.[37] Marketing a brand as "healthy" affects people's perceptions of its nutritional and calorie content.[38]

Finally, several experimental studies have also analyzed the impact of exposure to advertising on brand recognition, liking and eating in children and in adults. In particular, Connell et al.[39] show that exposure to advertising in childhood generates positive affects for the advertised brand in adulthood, independently from the fact that subjects may also have consumed the product. Harris et al.[40] provide evidence that exposure to food advertising during TV viewing tends to trigger snacking in children and in adults as compared to exposure to non-food advertising. This shows that food advertising could increase food demand, beyond some impacts on market shares and competition.

As compelling as they are, these results are not sufficient to conclude that marketing has persuasive effects. First, the "complementary view" argument may apply "in real life" to some of the choice situations that demonstrate "in lab" the consumer sensitivity to environmental cues. For instance, eating with friends or family, or the sounds and lighting of the eating environment, tend to increase food intake. However, having a dinner with one's partner at a romantic restaurant is a consumption experience that is made up of food, the partner, candles, and the jazzy music. Second, it may be possible that people are subject to all sort of biases, but that they are still able to maintain the stability of their food intake (at least in terms of calories) by engaging homeostatic responses that modulate hunger and satiety and correct for past errors. Studies in neurobiology have demonstrated how the functioning of some of the neural systems and pathways driving food decisions can be altered by the perceptual cues, framing effects and other environmental "pressure" discussed above.[41] Yet, to the best of my knowledge, we lack long-term cohort studies showing that these alterations translate permanently and over the long-term into a change in food preferences.

Such long-term studies would be useful because, if consumers are prone to systematic errors that do not cancel over time, then their food choices are no longer consistent over time. They are not able to stick to predetermined consumption plans that would be optimal over the long-term, and the argument of consumer sovereignty collapses. Public health authorities then have an additional reason for regulating marketing practices: the burden of "internalities" that current consumers generate for their future selves.[42] Taxes may directly increase consumer welfare by helping them to adopt behaviors that would be more consistent with their long-term "true" preferences. In that case, the optimal tax level is to be calculated so as to cover both the externalities of consumption and the internalities, but we are back to the difficult task of defining what consumer "true" preferences are.

The neo-classical approach is based on the key assumption that consumer choices are the expression of stable and consistent preferences under time and money constraints. Expanding the diversity of consumption experiences (complementary advertising) or making more information available (informative advertising) is welfare-enhancing. In addition, the consumer has the cognitive and knowledge capacities to understand and outsmart firms' strategies, so that competition would solve most regulatory issues at low costs. Naturally, the validity of this approach depends on how well this assumption, or the predictions it generates, is supported by empirical evidence.

Observational Evidence on Marketing and Food Choices

Collecting observational evidence on the impact of food marketing is interesting for two reasons. First,

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although laboratory experiments are useful to highlight the mechanisms through which food marketing can alter choices, they may be criticized for their lack of external validity. The effects found in the lab often magnify the reality of the field. More importantly, even if in-lab marketing manipulations lead subjects to eat more unhealthy food, the same subjects may immediately offset these excess intakes in the days following the experiment. Second, field data can be used to test some of the theoretical predictions of the standard economic approach. For instance, if advertising has persuasive effects, then it may increase brand fidelity and the volumes purchased by habitual consumers. If it has informative effects, then it should increase consumer price responsiveness and brand-switching. Importantly, all empirical studies cited below focus on advertising as it is the marketing variable that is the easiest to measure.

Empirical studies of market data tend to conclude that advertising often increases the brand market share in the short-term, but not necessarily in the long-term, that it generally has a negative effect on rivals' market shares ("combative" advertising), and that it tends to increase price elasticity. Deighton et al.[43] studying the Ketchup market and Ackerberg[44] studying the Yogurt market find that advertising is effective at attracting new consumers but not at retaining them. It has no effect on the purchases of those consumers who already have experienced the product. Shum[45] finds similarly for the breakfast-cereal market evidence that advertising encourages consumers to substitute for less familiar brands. Ippolito and Mathios[46] show that allowing firms to use health claims on breakfast-cereal packages increased the consumption of brands displaying such claims. Rao and Wang[47] analyze the impact of the termination of claims following charges by the U.S Federal Trade Commission. They document a significant decline in demand that is mainly explained by a loss in ability to attract new consumers. These results are consistent with informative rather than persuasive or complementary advertising.[48]

If advertising is informative and only serves to attract new consumers, then it is *a priori* welfare-enhancing. However, consumers develop some brand-loyalty over time, a fact that is well-documented. It is explained by purchase routines that may reflect various behavioral mechanisms, such as loss aversion (psychological attachment to the brand), default option bias, or aversion to the risk of trying a new product.[49] If new consumers do not anticipate well the stickiness of their choice over the long-term, then even informative advertising may have negative consequences for their long-term welfare.

In addition to these market studies, applied economists have uncovered evidence of a small positive impact of advertising on quantity outcomes beyond the effect on brand market shares. They apply quasi-experimental design to exploit spatial variations across regions that differ in the intensity of their exposure to advertising. This is not an easy task as food companies are likely to concentrate their efforts on regions where the demand is large enough and more responsive to marketing. Some studies have tried to use the price of advertisement and the number of households with a television in the area as exogenous source of variation for advertising exposure. They find small but significant correlations between fast-food and soft-drink advertising and consumption.[50] Another set of studies has exploited the ban on advertising targeting children on Quebec TV stations. As English-speaking children living in Quebec continued to be exposed to border TV stations in English, it is possible to compare the consumption trends between French-speaking and English-speaking children. Dhar and Baylis[51] find that the ban has decreased fast-food consumption at the extensive margin (the number of purchase occasions), while Goldberg[52] reports a decrease in cereals purchase in French-speaking households.

To summarize, empirical evidence from existing observational studies lend support to both the informative view on advertising and to the idea that advertising efforts can increase the overall quantities sold on market. The view that advertising has a persuasive effect seems to be rejected. However, it is important to note that the existing studies use data collected on "mature" markets in high-income countries. We lack evidence from emerging economies and middle-income countries, while we know that they suffer more and more from the burden of food-related chronic diseases.

These market studies are based on empirical techniques that rely implicitly on specific assumptions regarding consumer choices.[53] More precisely, consumers are supposed to maximize a utility function over a set of alternative products. They are supposed to consider all the products that are offered by the market, to have no bias in their perceptions of the product attributes, and to be able to choose the option that maximizes their utility. The experimental evidence briefly reviewed above and the observation of consumer decision process in the real world show that these assumptions are unlikely to hold. Consumers exhibit restricted consideration sets.[54] They misperceive certain attributes. They are not consistent utility-maximizers when environmental or internal cues

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make them succumb to impulse buying and forget the health consequences of their decisions. While experimental studies lack external validity, observational studies lack internal validity.

The Commercial Exploitation of Behavioral Biases

Advertising and other marketing techniques play with consumer difficulties to make unbiased value comparisons between products. Advertising renders more salient certain choice options, which may then enter into the consumer consideration set.[55] It also changes the perception of product attributes.[56] It may cause impulse buying as is the case with the placement of sweet products in cashier zones or end-of-aisles.[57] In that case, consumer behavioral failures generate internalities because the utility experienced by consumers differ from the utility they expected at the moment of purchase. This loss corresponds to a transfer of welfare surplus from the consumer to the firm.

A growing theoretical literature tries to understand the implication of the commercial exploitation of behavioral biases for markets.[58] They focus on obfuscation strategies that aim at "shrouding" specific attributes, or at making them more or less salient to focus the attention of consumers in the process of product evaluation.[59] In particular, one issue is whether biased consumers, in addition to suffering from health-damaging internalities, also suffer from a loss of price competition.

One important result is that rational firms may use marketing as an obfuscation strategy to increase choice complexity so as *to decrease* competition, thus lowering its benefits for consumer welfare.[60] A second important result is that firms may end up under-investing on product quality, if advertising is used as a means of rendering product differentiation more salient, or of focusing consumer attention.[61] If consumers over-value the differences in quality between products relatively to the difference in price, or if marketing restricts the consideration set of consumers, then firms producing high-quality products have less incentives to invest in quality, for instance to formulate food with healthier but more expensive ingredients. They may prefer investing more in adding cartoon characters on the packaging. Finally, firms face a trade-off between "educating" consumers and using obfuscation strategies. A firm can educate consumers by choosing transparency, e.g., displaying a clear front-of-pack nutritional label on the packaging. The results are not unambiguous, as their strategies will depend on the intensity of competition and the relative costs of education and obfuscation that can be both achieved through marketing. For instance, when obfuscation is cheap and competition is intense (as is likely the case for food markets), obfuscation will be used as a means of maintaining cost-price margins. But this result may change if obfuscation is costly.[62]

A policy-maker who wishes to impose more stringent regulation on marketing could use empirical evidence showing that it is detrimental to consumer welfare. Bhargava and Loewenstein have argued that behavioral sciences provide evidence for protecting more aggressively consumers from "behavioral exploitation by firms," through taxation and regulation of the choice context. However, the economic literature does not provide unambiguous results regarding the welfare-damaging of advertising. Experimental evidence showing that marketing techniques do bias consumer decisions are somewhat at odds with results inferred from market data.

Conclusion

A policy-maker who wishes to impose more stringent regulation on marketing could use empirical evidence showing that it is detrimental to consumer welfare. Bhargava and Loewenstein[63] have argued that behavioral sciences provide evidence for protecting more aggressively consumers from "behavioral exploitation by firms," through taxation and regulation of the choice context. However, the economic literature does not provide unambiguous results regarding the welfare-damaging of advertising. Experimental evidence showing that marketing techniques do bias consumer

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decisions are somewhat at odds with results inferred from market data.

Experimental studies tend by design to produce results that have large "effect sizes" and thus lack external validity. Existing observational evidence has been produced by using econometric methods that ignore consumer biases and thus lack internal validity. In addition, the welfare losses produced by persuasive marketing and the commercial exploitation of behavioral biases depend on the discrepancy between the preferences revealed by consumers through their choices and some "true" preferences. The latter are by essence very difficult to identify with observational data, if we do not have additional information on the extent of consumer bias.[64] In (quasi-)experimental settings, one may sometime back out the individual "true" preferences from the comparison of the choices made by individuals in an environment conducive to biases to those made in a context known to remove biases. For instance, Allcott et al.[65] examines the pattern of soft-drink purchases by households depending on whether they have accurate nutritional knowledge and declare to have problems controlling their consumption. They use this information to calculate the soft-drink tax that would be optimal to make biased consumers as well-off as unbiased consumers. Collecting more compelling observational evidence thus requires more precise data. With the rise of digital marketing, access to data on online purchases may help to make progress in that direction. Finally, it is important to note that existing studies have generally focused on one specific marketing technique (e.g TV advertising, price promotions), while marketing campaigns are multi-channeled. The economics of advertising has little to say about the effect of massive change in the environment, perhaps because the field is structured around the idea that only precise causal effects are worthy of scientific interest.

Economists have also been interested in knowing whether firms spend too much in marketing and advertising. Competition here plays a key role, whether advertising be informative, persuasive or complementary. The literature uncovers empirical evidence of negative return on investments in advertising for many important brands (see the evidence in Shapiro et al.[66] for the U.S.). This is explained by the "non-cooperative" aspect of advertising. Firms are trapped in an inefficient strategic equilibrium where they cannot cut on their advertising expenditures without seeing their market shares stolen by rivals. This implies that restricting marketing efforts could actually be beneficial to both firms and consumers, at least in high-income countries and for mature markets.[67] This efficiency argument may eventually help to reframe marketing restrictions as a win-win policy.

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53. Market studies are based on structural econometric models, where the term "structural" means that some fundamental behavioral parameters (consumer elasticities, unit cost of production) are inferred by making specific assumptions regarding the structure of consumer preferences, their decision-making process (they maximize a utility function), the cost structure of firms and the nature of competition. Quasi-experimental designs can be applied without relying on such assumptions. For instance, a comparison of trends in purchases between markets that "quasi-randomly" differ in the intensity of their exposure to marketing identifies the effect of marketing on purchased volumes. However, such quasi-experimental designs are often unable to explain all the mechanisms explaining the effect of interest. There is now a move toward studies that try to combine both approaches, thanks to the availability of new sources of data.
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