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Dynamic Informative Advertising of New Experience Goods

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Dynamic Informative Advertising with Learning by Purchasing

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
sustainable solutions for ending hunger and poverty
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Alexander E. Saak

International Food Policy Research Institute

Introduction

Information content of advertisements often goes beyond product existence and price, and can complement or substitute for learning by purchasing and trying the product. Advertising that complements learning by purchasing is ads for drugs that describe the benefits and likely users and the most common or severe side effects; advertising that substitutes for learning-by-purchasing is free product sampling.

Do firms always have incentives to provide detailed product information and facilitate consumer learning in such ways? We study a dynamic model of informative advertising for a new nondurable experience good, asking the following questions: When does the seller offer advertising that complements or substitutes for learning-by-purchasing? How does advertising intensity vary over time? Are consumers better informed as a result of advertising? How does advertising affect prices? What about its effect on consumer and overall welfare?

Model

Time: continuous, infinite horizon; r is discount rate

Seller: single nonstorable, nonreturnable product to risk-neutral consumers with unit demands; constant unit production cost $k \geq 0$.

Buyers: idiosyncratic (but fixed over time) WTP for the product θ, but it is initially unknown (experience good); θ are drawn from $F(\theta)$

Learning: Informative signal arrives to each consumer at a Poisson rate

$\lambda + x(t)$, if she purchases the product in a time interval of length dt

$\gamma x(t)$, if she does not purchase the product in a time interval of length dt,

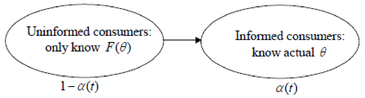
where $\lambda > 0$ is the exogenous rate of learning-by-purchasing,

$x(t) \geq 0$ is the advertising intensity that is controlled by the seller,

$\gamma \in [0,1]$ is the degree of substitutability between learning from advertising and consumption experience: $\gamma = 0$ is TV advertising and $\gamma = 1$ is free samples;

$c(x(t))$ is advertising cost function;

$\alpha(t) \in [0,1]$ denote the share of consumers that are informed at time t



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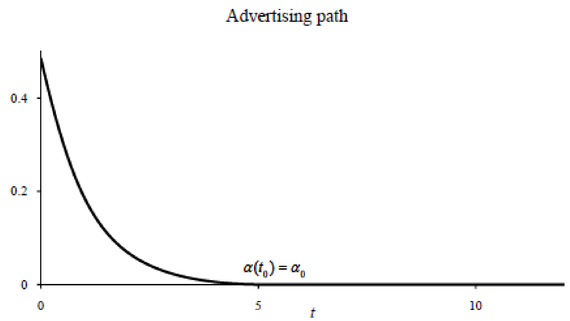
Advertising that complements learning-by-purchasing



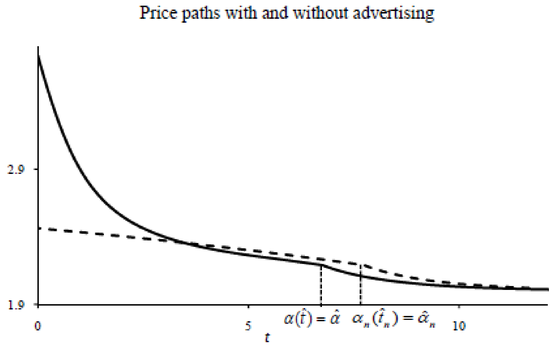
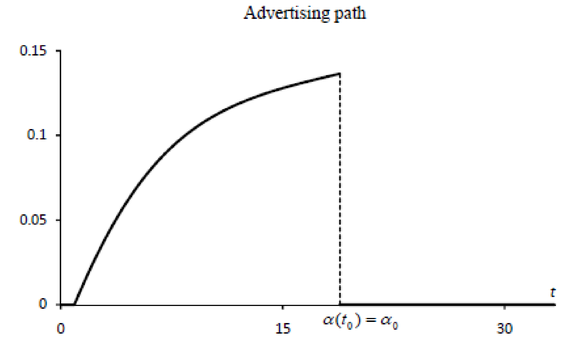


FIGURE 1. Mass market



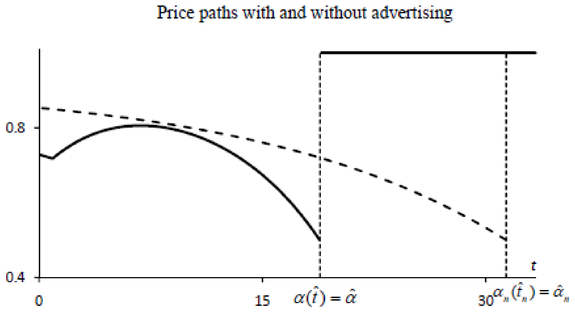


FIGURE 2. Niche market with low cost

Conclusions

In this paper, we have analyzed the advertising and pricing policies of a monopolist in a model of advertising that helps consumers learn their valuation for an experience good. We have shown that in a mass market with sufficiently low discount rate and net average consumer valuation, the equilibrium advertising intensity falls over time. However, the monopolist does not necessarily advertise more in the beginning when most consumers are in the process of learning their preferences for the good. In particular, in a niche market, the path of advertising intensity can be U-shaped during the early stages, or bell-shaped depending on whether advertising complements or substitutes for learning-by-purchasing.

We have also compared the learning outcomes, prices, and welfare in equilibrium with advertising vis-à-vis equilibrium without advertising. Although advertising that provides little information to non-purchasing buyers always accelerates aggregate learning, advertising that provides information to all buyers may lead to less learning-by-purchasing and temporarily slow down the learning process. The effect of advertising on prices is ambiguous. A general property is that advertising increases prices at least for some time before the equilibrium price converges to the long-run price. Nonetheless, advertising raises the present value of consumer welfare as uninformed buyers are more likely to become informed while any effects of advertising on prices eventually vanish. Yet, the present value of social surpluses may be reduced by advertising due to excessive advertising in the future that lessens the value of information today.

Our modeling strategy can also be used to investigate the *evolution* of an optimal marketing mix between advertising that substitutes and complements learning-by-purchasing. This can be done by letting the advertising cost $c(x,\gamma)$ be a function of the advertising rate x and the degree of substitutability between learning from advertising and purchasing γ, and allowing the seller to choose γ and send advertising messages with different levels of γ. Our analysis suggests that advertising that complements learning-by-purchasing will be used in mass markets. However, in the case of a niche market, there will be a shift from advertising that complements experience to advertising that substitutes for learning-by-purchasing as the market matures. An empirical investigation of how the intensity *and* content of informative advertising for newly launched nondurable experience goods change over time is desirable (Anderson et al. 2010).

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