Competition in the pharmaceutical industry: How do quality differences shape advertising strategies?

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ABSTRACT

We present a Hotelling model of price and advertising competition between prescription drugs that differ in quality/side effects. Promotional effort results in the endogenous formation of two consumer groups: brand loyal and non-brand loyal ones. We show that advertising intensities are strategic substitutes, with the better quality drugs being the ones that are most advertised. This positive association stems from the higher rents that firms can extract from consumers whose brand loyalty is endogenously determined by promotional effort. The model’s main results on advertising and pricing strategies are taken to the data. The latter consists of product level data on prices and quantities, product level advertising data, as well as the qualitative information on drug quality contained in the Orange Book compiled by the Food and Drug Administration (FDA). The empirical results provide strong support to the model’s predictions.

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1. Introduction

A particular feature of the market for prescription drugs is that patients usually do not establish their own diagnosis nor are they fully aware of the effectiveness or side effects associated with the different drugs. As a consequence, the choice of drug to administer is generally made by a physician. It may however also be the case that a patient expresses a preference for a drug over another, in particular if she has been exposed to some form of advertising. Accordingly, a consumer is best represented by a physician–patient pair whose choice to address a given pathology is determined by the intrinsic characteristics of the available drugs, their prices, and promotional effort. In the US, the latter takes three forms. The bulk consists in “detailing” i.e., salespeople personally visiting doctors to promote a set of drugs, often leaving free samples in the process. The second type emerged in late 1996 when the US Food and Drug Administration (FDA) allowed “plain vanilla” advertising for prescription drugs, for instance via television ads. Since then, spending on direct-to-consumer advertising (DTCA, from now on) has increased more than any other marketing activity

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DTCA, are hence on and by pressure cacy that of the Producers that are. The value of that medical evidence can be captured by its prescriptions. If physician/drug promotions are not free-riding as we assume that market size is given and hence it is independent of firms’ promotional efforts. In contrast, it assumes that the number of patients visiting a physician is determined by aggregate DTCA expenditures, thus attributing “public good” characteristics to DTCA.

5 See Azoulay (2002) for evidence that advertising and scientific information stemming from clinical trials can affect physicians’ prescription choices.

6 Iizuka and Jin (2007) find that directed-to-physician advertising (i.e., detailing and medical journal advertising) has positive, significant, and long-lasting effects on the prescription choice of allergy drugs.

7 This characterization is akin to that found in Bala and Bhardwaj (2010) who distinguish between “strong preference” patients whose choices are influenced by DTCA, and “other patients” who are not.

8 Heart rhythm disorders, hypotension, impotence, mediastinal and gastrointestinal disorders, abdominal pain, eye disorders, or subcutaneous tissue disorders are some of the side effects.

9 The result is not driven by free-riding as we assume that market size is given and hence it is independent of firms’ promotional efforts. In contrast, Limnosmaa (2008)
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