

Price discrimination across indications in the pharmaceutical industry: The case of finasteride

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Abstract

This paper examines the price differential between two prescription drugs (Proscar and Propecia) which contain the same active ingredient (finasteride) in different dosages. It is argued that the price differential is an example of price discrimination across indications of the same substance.

1. Introduction

In 1992, Merck Pharmaceuticals introduced its prescription drug Proscar for the treatment of enlarged prostates, a common problem among middle-aged and older men. Some of the users were pleasantly surprised to see a reduction in their hair loss, and in some cases, the growth of new hair. Their experience was similar to that of the early users of *sildenafil citrate* for the relaxation of coronary arteries. Nowadays, sildenafil citrate is much better known as the active ingredient of Viagra, the pill used in the treatment of erectile dysfunction in men. By the end of 1997, Merck had managed to get FDA approval to market its drug under the brand name of Propecia, targeting mainly young males suffering from (and caring about) hair loss. Following clinical trials, it was determined that the appropriate amount of the active ingredient, *finasteride*, in Propecia is 1 mg, as opposed to the 5 mg in Proscar. Larger dosages were seen to increase

the risk of impotence, a side effect which would probably be defeating the purpose for many of the users.¹

What makes this story interesting from an economic perspective is that Propecia was, and still is, sold at a much higher price even though it contains exactly one-fifth of the ingredients of Proscar. As of 2005, the per-milligram price of Propecia is five to eight times that of Proscar depending on the method and location of purchase. Interestingly, differential pricing with regard to these drugs is also implemented by online retailers who claim to be marketing the drugs' generic versions. Indian drug maker Cipla, for example, takes advantage of India's lenient patent laws by producing generic versions of the two drugs, and sells its *Finpecia* at about four times the price of its *Fincar*. The intriguing question is whether this can be regarded as a some kind of price discrimination. After all, whichever of the two drugs they purchase, it is only finasteride that customers are getting. The pharmaceutical company would argue otherwise, citing packaging costs, as well as the additional costs incurred in the procedure that leads to the marketing of the new brand, as the reason for the price differential. However, it is hard to imagine the customers sympathizing with this justification once they find out that they can buy the same substance at a much lower price under a different brand name. Therefore, despite the existence of two separate brands, this could probably be considered a case of price discrimination in disguise across the indications (i.e. [illnesses](#) or medical conditions for which the drug has been shown to be effective) of the same substance.

The type of price discrimination by which different groups of customers are charged different prices for the same good is called third-degree price discrimination (Hay and Morris, 1991; Tirole, 1988; Varian, 1989). The conditions for a firm to be able to engage in third-degree price discrimination include (i) the existence of some market power, i.e. a non-perfectly-elastic demand curve for the product, (ii) the existence of market segments comprising of groups of potential customers that differ in their willingness to pay (which may depend on purchasing power and/or tastes), (iii) the firm's ability to tell which individual belongs in which group, and (iv) the infeasibility of arbitrage. Typical textbook examples are provided by the airline and

¹ The information on the story of these products is taken from "New Profits in Old Bottles; Companies Find Bonus in Drugs That Cure Several Ills" by David J. Morrow, *New York Times*, March 19, 1999. A recent related article is "Why One Medication Can Sometimes Treat Very Different Maladies" by Sharon Begley, *Wall Street Journal*, March 11, 2005.

long distance phone companies who are able to discriminate to a certain extent between those who use their services for business and for leisure, the former group ending up paying more for the same service. Pharmaceutical companies are also known to implement price discrimination across countries, charging higher prices in regions where customers have more purchasing power (Danzon and Chao, 2000; Rojas, 2005). That practice is seen by many as justifiable on the grounds that the companies could not recover their R&D expenses if they sold their products to everyone at or near marginal costs.

Price discrimination across indications of a substance is an unusual scenario, because there are only a few substances that are approved for the treatment of different diseases under different brand names, and even fewer of them that can be associated with clearly distinct market segments such as the markets for hair loss and prostate treatment. Aspirin, as an example of drugs that do not satisfy these criteria, is a last resort pain-killer in its conventional doses due to its side effects, but can also be used regularly in smaller dosages to promote cardiovascular health. However, there is little difference in the per-milligram price of *acetylsalicylic acid* found in the various versions of Aspirin available in pharmacies. So, what are the economic factors that lead to the currently implemented pricing strategy for products containing finasteride? It seems that there are several factors contributing to the price discrimination phenomenon described above. These are presented in the next section.

2. Economic factors contributing to the price differential

1) In the case of Proscar and Propecia, **product differentiation** is clearly a major source of the price differential. As mentioned above, the introduction of a new brand entails various costs for additional clinical testing, advertisement, and marketing which need to be recouped from the users of the new drug. For this reason, the company may (at least temporarily) have to charge a high price for the newly-introduced product. Moreover, not all customers would be aware of the fact that two pills have the same ingredient. Even if they did, they may find it difficult gain access to the cheaper drug because it is sold only by prescription.

2) The company has **market power** in both the 'hair loss' and 'prostate' markets. While the patent on Proscar (for the use of finasteride for the treatment of enlarged prostates) expires in 2006, Propecia's formulation is protected until 2013 (because the use in a smaller dosage is subject to a separate patent). However, Proscar

competes with several rivals in the prostate market (such as Hytrin, Cardura, and Flomax) whereas Propecia is the only FDA-approved hair loss pill on the market.² Therefore, the lack of a close substitute may have contributed to the relatively higher price of Propecia.

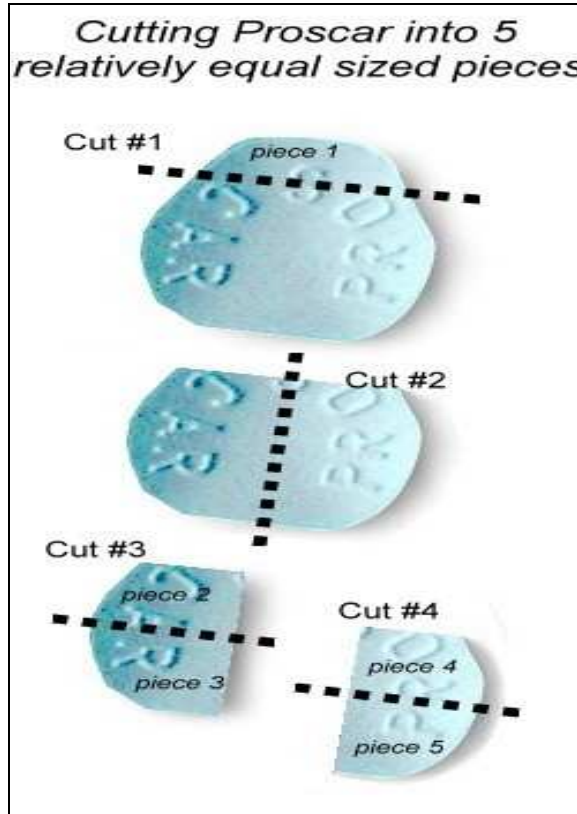
3) Proscar and Propecia are clearly targeted at different groups of users which are likely to differ in their willingness to pay for the product. In fact, it is even possible to speak of separate markets for the two drugs rather than two **market segments**. Although it would not be easy to argue that people have a higher willingness to pay to cure a cosmetic problem than for a serious health problem, it is also difficult to refute the argument when it comes to the issue of hair loss in younger males. It is conceivable that younger males have a higher willingness to pay for Propecia than older men do for Proscar.

4) For the majority of users, it is no secret that Proscar and Propecia are in fact the same drug. Some users are known to be breaking Proscar tablets into five equal-sized pieces and using them in place of Propecia tablets. However, there is a difficulty with this method: Proscar tablets are very hard to break, especially into five equal-sized pieces. The procedure could become so tricky that a web site has posted visual instructions on how it can be done (see Figure 1). Considering the potential side effects of taking higher dosages, many users could be discouraged from producing their own medicine at home.³ Therefore, the practical **limitations to the substitutability** between the drugs is another factor that leads to the price differential.

² The over-the-counter rival, Rogaine, is applied topically. For more on the substitutability of the two drugs, see "Telling the Bald Truth", *Newsweek*, June 16, 2003.

³ An additional source of concern would be that women who are or may potentially be pregnant must not get in contact with broken tablets because finasteride may cause abnormalities of a male baby's sex organs. On a related note, the web site for the drug (<http://www.propecia.com>) informs users that "Propecia tablets are coated and will prevent contact with the active ingredient during normal handling, provided that the tablets are not broken or crushed."

Figure 1
Instructions on How to Obtain Propecia from Proscar



Note: The illustration is taken from <http://hairloss.cyberatlantis.com>.

3. Conclusion

We have considered several factors that are likely to contribute to the price differential between the drugs Proscar and Propecia which both contain the same active ingredient, finasteride. If the price differential is to be regarded as an example of price discrimination, then economic theory provides plenty of explanations as to why it exists. However, it is likely that the relative prices of the two drugs will change by the end of 2006, when the patent on Proscar expires. Other companies which will be producing the generic versions of the drug may already be working on designing tablets that are easily broken up into five pieces. This would certainly be a clever way of getting around Propecia's patent protection.

References

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Özet

İlaç sektöründe endikasyonlar arası fiyat ayrımcılığı: Finasterid örneği

Bu makalede, aynı aktif maddeyi farklı dozlarda içeren iki ilaç (Proscar and Propecia) arasındaki fiyat farkının olası ekonomik nedenleri tartışılmakta ve mevcut durumun 'üçüncü derece fiyat ayrımcılığı'na benzer bir örnek oluşturduğu iddia edilmektedir.