Market Effects of Generic Entry: The Role of Physicians and of Non-Bioequivalent Competitors
Catarina Sismeiro

1. Generic Drug Adoption

Rising health care costs are today a major concern for Governments and public health officials. Costs with prescription drugs are a significant component of total health care costs (4% in the US to 18% in France and Italy). As a result Public policy officials are deeply interested in promoting the substitution of brand name drugs by (cheaper) generics.

Pharmaceutical companies are also interested in understanding generic adoption

2. Previous Research on Generic Adoption

Aggregate level studies

Have investigated the effects of generic entry on the drug losing patent protection, and the general institutional factors and the supply side issues that affect generic demand

Role of physicians?

Surprisingly, the role of physicians on the demand for generics has received far less attention; the exceptions are Hellertsein (1998), Coscelli (1998) and Lundin (2000); they conclude that physician habit plays an important role in the choice of drug type.

3. Problems with Previous Research

a. Investigates only within-molecule competition

b. Does not account for the marketing actions (even though previous research has also demonstrated that the marketing activities do impact physicians)

c. Does not take into account the individual physician’s response to price and marketing activity

4. Our Objectives

a. Understand and predict physician role in shaping market outcomes after generic entry

b. Study physician observable and unobservable characteristics and their impact on generic adoption

5. Empirical Setting

SSRI Category in the UK

<table>
<thead>
<tr>
<th>Institutional details</th>
<th>Top molecules are</th>
</tr>
</thead>
<tbody>
<tr>
<td>No DTC advertising</td>
<td>• Prozac (fluoxetine)</td>
</tr>
<tr>
<td>Wide NHS coverage</td>
<td>• Seroxat (paroxetine)</td>
</tr>
<tr>
<td>prices highly regulated</td>
<td>• Lustral (sertraline)</td>
</tr>
<tr>
<td>Physicians have final word on drug and format)</td>
<td>• Cipramil (citalopram) (correspond to 98% of SSRI prescriptions)</td>
</tr>
</tbody>
</table>

Data from a continuous panel of GPs (09/1998 to 09/2000)

• New prescription data
• Marketing activity from all competing companies
• Physician specific data (gender; practice size)
• Defined two periods (Period 1 = first 18 months and Period 2 = last 6 months)

6. Methodology

Phase 1: Random Effects

Multinomial Nested Logit

- Study physician prescribing behavior
- Classify physicians with respect to their unobserved characteristics (e.g., responsiveness to marketing)
- Use the first 18 months of data (15 before entry + 3 after data (after entry)

Phase 2: Binomial Models

- Study within- and between-molecule competition
- Understand how physician observable and unobservable characteristics predict the market outcome
- Use the last 6 months of data (after entry)

7. Results and Conclusions

Physician Observable Characteristics

- In general women and bigger practices tend to prescribe more generics and to tend change more towards generics

Physician Unobservable Characteristics

- Explain why the use of multi-source molecule is reduced after patent expiration in spite of a price reduction
- Segment of price sensitive physicians is small (~20%), though indeed increases use of generics
- Detailing sensitive physicians reduce their consumption of the multi-source drug (~12% of physicians) and switch from the multi-source drug to non bio-equivalent molecules

Hence, the potential cost reduction from generic entry might be lower than expected due to the competition of non-bioequivalent molecules; it is essential to understand physician responsiveness to price and marketing and study the entire category and not only the brand being directly affected.