

Market Definition and the Characteristics of Pharmaceutical Markets
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This note explores two aspects of the economics of pharmaceutical markets in Canada, first listing various factors that jointly contribute toward pharmaceutical markets being different from other markets, and second describing aspects of market definition.

What Makes (Prescription) Pharmaceutical Markets Special?

- A high degree of regulation and administrative oversight:
 - Entry requires approval from Health Canada for both branded and generic drugs.
 - Pricing of patented drugs is regulated by the Patented Medicine Prices Review Board, which reviews initial and post-launch prices to ensure they are not “excessive.”
 - Generic drug prices are regulated or overseen by provincial drug plans.
 - These policies tend to result in published prices that are relatively stable over time.
 - Marketing of drugs is limited to approved claims, and the scope of permissible marketing is determined by Health Canada.
 - Sales are dependent on reimbursement and interchangeability decisions by a limited number of large entities: government drug plans. Products listed on drug plans (and therefore reimbursable) tend to be more successful than unlisted drugs. The existence of generic versions of a branded drug deemed interchangeable typically results in a rapid loss of branded sales due to incentives for generic dispensing.
- Involvement by multiple decision-making agents:
 - Drug manufacturers choose marketing approaches to physicians (in the case of branded drugs) or pharmacists (in the case of generic drugs).
 - Physicians choose which drugs to prescribe.
 - Drug plans choose which drugs to pay for, and how much to reimburse for each drug.
 - Pharmacies choose which generic version of a given drug to stock.
 - Patients fill prescriptions (and can choose brand or generic).
- Complex payment systems:
 - Pharmacies purchase branded and generic drugs from manufacturers or wholesalers.

- Patients pay pharmacies all or part of the cost of prescriptions (which include dispensing fees and pharmacy markup).
- Insurance companies or government drug plans reimburse pharmacies according to drug plan policies (which may vary by plan provider).
- Generic drug manufacturers provide rebates or professional allowances to pharmacies to encourage the stocking of their products.
- Importance of innovation:
 - The research and development process for new drugs is costly and uncertain.
 - Patent protection is of great importance to innovators to assure the opportunity for a return on these investments. Patent expiry or other loss of exclusivity (invalidity, inventing around) opens the door to generic competition.
 - New drugs provide gains to consumers (patients and payors) in the form of clinical benefits over existing treatments; generic drugs provide gains to consumers (patients and payors) in the form of lower costs.
- Importance of product differentiation and marketing:
 - Branded drugs compete across a range of product attributes (including indications, side-effect profiles, dosage forms and frequencies, reputation for safety and efficacy).
 - Product attributes are the major factor in the prescribing decision; in economic terms, for branded products non-price competition is more important and price competition is less important.
 - Branded drug manufacturers focus marketing efforts on physicians: sales representatives discuss product claims and clinical evidence, and often distribute samples.
 - Promotion of a branded drug is generally terminated upon launch of a generic version. Sales of a molecule (brand plus generics) for which branded promotion has ceased tend to eventually decline against competing molecules.

Market Definition in Pharmaceutical Markets

- Bureau: “Assessing market power requires an identification of the products and the competitors that produce them that are likely to constrain the ability of the firm(s) in question to profitably raise price(s) or otherwise restrict competition.” (Draft Guidelines on Abuse of Dominance, January 2009, p. 7.)

- The goal in (product) market definition is to identify products that are sufficiently close substitutes in demand. (Focus is on product market definition as geographic market definition is usually less interesting in pharmaceutical markets.)
- The hypothetical monopolist test is the classic approach to product market definition:

For each candidate market, the analysis proceeds by determining whether a hypothetical monopolist controlling the group of products in that candidate market would be able to impose a five per cent price increase assuming the terms of sale of all other products remained constant. If the price increase would likely cause buyers to switch their purchases to other products in sufficient quantity to render the price increase unprofitable, the postulated candidate market is not the relevant market, and the next-best substitute is added to the candidate market. ... This process continues until the point at which the hypothetical monopolist would impose and sustain the price increase for at least one product of the merging parties in the candidate market. The smallest set of products in which the price increase can be sustained is defined as the relevant product market. (Merger Enforcement Guidelines, September 2004, ¶ 3.5.)

- This approach may not be informative in the analysis of pharmaceutical markets:
 - Price increases may not be possible given constraints imposed by regulation and large entity control.
 - The relative stability of observable prices does not facilitate estimation of cross-price elasticities of demand to determine close substitutes.
 - Who are the “buyers” that would “switch their purchases to other products”? Physicians (who are relatively insulated from pricing)? Patients (who have no control over the prescribing decision)? Payors (who list and pay for drugs but typically do not actually obtain them or influence choice among listed drugs)? Why not address the issue of switching and substitutability more directly?
 - What is the competitive price? In merger cases, it may be presumed that the pre-merger price is the baseline competitive price against which hypothetical price increases are to be compared. In abuse or conspiracy cases where it is presumed that any harm has already taken place, a baseline competitive price may be harder to establish.
- Given these problems, how can we identify products that are sufficiently close substitutes in demand to some initial candidate product? Several lines of analysis may be informative.

- **Therapeutic substitution and interchangeability.** Which molecules do doctors regard as reasonably close substitutes for treating a set of conditions? What are the dimensions (if any) along which an initial drug and its potential substitutes are differentiated? Medical and marketing literature as well as physician interviews or expert testimony can help address these questions. At one extreme, generics deemed interchangeable with the brand are seen as very close substitutes. Toward the other end of the spectrum, an alternative molecule that treats some of the same conditions as the initial product, perhaps with different side-effects or dosage regimens or a different mechanism of action, may or may not be regarded as a good substitute.
- **Physician prescribing patterns.** What is the set of products that physicians actually prescribe for the conditions treated by the initial product? Some patients may also be switched from one product to another for reasons relating to side-effects, lack of efficacy, and so on. Evidence on which drugs replace initial prescriptions demonstrates a degree of substitutability between drugs for the condition being treated. These analyses require data on actual prescriptions for the initial drug in question as well as potentially competing products.
- **Firm competitive behaviour.** The competitive actions taken by manufacturers carry information on the products considered to be close competitors. Promotional efforts such as detailing may address claims made by manufacturers of competing products. Line extensions or clinical trials may also be responses taken by manufacturers to address competitive threats from other drugs. An “event study” methodology may be used: how did sales of the initial drug respond to a change in the competitive status of a potential substitute (e.g., launch, new indication, new clinical trial results, etc.)? For example, which drugs lost sales as a result of the launch of a new drug? What happened to pricing and promotion? If a second product is a good substitute for the initial drug the event is more likely to be associated with a clear competitive response. Company documents and/or interviews may be useful for this analysis, as well as data on detailing and other promotional efforts.
- The approach taken should be tailored to the specific type of conduct at issue. An investigation that primarily involves branded producers will tend to result in a different type of analysis than an investigation that involves branded and generic or only generic producers. For example:
 - Conduct involving branded manufacturers (e.g. a merger between two branded producers) may require a full analysis along the lines described above to identify competing drugs from a range of potential substitutes.
 - Conduct involving both branded and generic manufacturers (e.g. a merger between a brand and a generic) may or may not involve a similar analysis.

While it may be intuitive for a market to be restricted to the brand plus its interchangeable generics, this may not be justified in all cases.

- Conduct involving only generic manufacturers (e.g. a merger between two generic producers) may involve markets limited to generics only.

Examples of Market Definition in the U.S. and Europe

- The FTC has adopted different approaches to market definition depending on the nature of the investigation. In investigations focusing on brands, the FTC has defined markets to include competing drugs within a therapeutic class, sometimes narrowing the market to a particular mechanism of action or dosing frequency. Examples include:
 - Sanofi-Synthelabo and Aventis: “For the purposes of this Complaint, the relevant lines of commerce in which to analyze the effects of the Acquisition are: a. the research, development, manufacture and sale of factor Xa inhibitors; b. the research, development, manufacture and sale of cytotoxic drugs for the treatment of colorectal cancer; and c. the research, development, manufacture and sale of prescription drugs for the treatment of insomnia.” (Complaint, September 24, 2004, ¶ 20.)
 - Pfizer Inc. and Pharmacia Corp.: “For the purposes of this Complaint, the relevant lines of commerce in which to analyze the effects of the Acquisition are: a. the research and development, and the manufacture and sale, of extended release prescription drugs for the treatment of [overactive bladder]; ... c. the research and development, and the manufacture and sale, of prescription drugs for the treatment of [erectile dysfunction];” (Complaint, April 11, 2003, ¶ 20.)
 - Amgen Inc. and Immunex Corp.: “For the purposes of this Complaint, the relevant lines of commerce in which to analyze the effects of the Merger are: a. the research, development, manufacture, and sale of Neutrophil Regeneration Products; b. the research, development, manufacture, and sale of TNF Inhibitors; and c. the research, development, manufacture, and sale of IL-1 Inhibitors.” (Complaint, July 12, 2002, ¶ 17.) The last two markets are narrowed based on the included drugs’ mechanism of action for the treatment of rheumatoid arthritis and other autoimmune disorders.
- In generic delay cases, the FTC has argued for markets defined by the brand product and its (actual or potential) interchangeable generics. For example:
 - In Hoechst Marion Roussel, Inc. and Andrx Corp. (a “reverse payment” case), the FTC defined the market as “once-a-day diltiazem” (including brand and generic) (Complaint, March 16, 2000, ¶ 12).

- In *FTC v. Cephalon Inc.*, the FTC alleged “anticompetitive conduct by Cephalon to prevent lower-cost generic competition to one of its key products, a branded prescription drug known as Provigil.” (Complaint, February 13, 2008, ¶ 1.) The FTC argued for a relevant market consisting of “modafinil-containing drugs approved by the FDA for sale in the United States, consisting of Provigil and generic versions of Provigil. A unique competitive relationship exists between branded drugs and their generic equivalents, including Provigil and generic Provigil. Although other drugs may be used to treat narcolepsy and the other sleep disorders for which Provigil is indicated, the availability of these drugs is not sufficient to prevent the anticompetitive effects from Cephalon’s conduct. Cephalon has proclaimed that Provigil faces ‘no competition’ and that it is the ‘only wakefulness promoter in the world,’ in part because of Provigil’s unique properties relative to other drugs.” (Complaint, ¶ 95.)
- In investigations focusing on generics, the FTC has pursued markets defined to include generics only. For example, in its investigation of Barr Pharmaceuticals’ acquisition of Pliva, the FTC defined markets as follows: “For the purposes of this Complaint, the relevant lines of commerce in which to analyze the effects of the Acquisition are the manufacture and sale of the following pharmaceutical products: a. Generic trazodone tablets; b. Generic triamterene/HCTZ tablets; ... d. Generic nimodipine soft-gel capsules.” (Complaint, October 19, 2006, ¶ 12.)
- The European Commission’s decision in *AstraZeneca*, in which Astra was found to have engaged in conduct which had the objective of preventing or delaying entry of generic omeprazole, articulates an approach that is broadly consistent with the FTC. Relevant Commission findings include:
 - “[A] properly defined market does not need to include all functionally interchangeable products, as such interchangeability between products normally only defines the outer boundaries of a product market but may not be a decisive criterion. When products such as pharmaceutical products can be broadly used for the same purpose but differ in terms of price, quality, consumer preferences or other significant attributes, the products are considered to be differentiated. Although differentiated products may compete in some dimensions, a relevant market in competition cases should only include those products that are capable of significantly constraining an undertaking’s behaviour and of preventing it from behaving independently of an effective competitive pressure.” (Commission Decision, June 15, 2005, ¶ 370.)
 - “The third ATC [Anatomical Therapeutic Chemical] level allows medicines to be grouped in terms of their therapeutic indications, i.e. their intended use. This level is generally used as the starting point for enquiring about market definition in competition cases. However, it is appropriate to carry out analyses at other ATC levels if the circumstances of a case show that sufficiently strong competitive constraints faced by the

undertakings involved are situated at another level, and that, therefore, there are indications that the third ATC level does not lead to a correct market definition.” (Decision, ¶ 371.)

- The Commission determined a relevant market limited to oral formulations of proton pump inhibitors (PPIs), including omeprazole and competing molecules, but excluding drugs with similar indications and different mechanisms of action (specifically, H2 blockers). This conclusion was based on a number of factors, including increasing sales of PPIs and decreasing sales of H2 blockers over time; higher prices for PPIs relative to H2 blockers; a perceived relative clinical superiority of PPIs compared to H2 blockers; and increased PPI sales upon entry of generic H2 blockers (with no effect on PPI prices).

Market Definition in Canada

- In Canada, the Competition Bureau has not discussed pharmaceutical market definition in detail. The *Canadian Generic Drug Sector Study* of October 2007 contains statements that are consistent with product markets including brand and generic versions of a molecule or generic versions only. For example:
 - “Generics play an important role in keeping health costs down by providing competition for brand drugs when they lose patent protection.” (*Study*, p. 3.)
 - “Competition between generic manufacturers takes place in a number of dimensions. The key ones are: timing to market, patent challenges, pricing, AGs, and breadth of product line.” (*Study*, p. 15.)
 - “[I]t appears that supply for many generic products is highly competitive.” (*Study*, p. 20.)
- Amendments to the *Competition Act* include potentially relevant language under the conspiracy provisions.
 - Section 45(8): “‘competitor’ includes a person who it is reasonable to believe would be likely to compete with respect to a product in the absence of a conspiracy, agreement or arrangement to do anything referred to in paragraphs (1)(a) to (c).”
 - Similarly, in section 90.1(11): “In subsection (1), ‘competitor’ includes a person who it is reasonable to believe would be likely to compete with respect to a product in the absence of the agreement or arrangement.”
 - These amendments may signal a reduced reliance on formalistic market definition as a critical component of the economic analysis of the conduct in question. This may be sensible from an economic perspective. If a conspiracy resulted in prices of products (drugs) sold by “competitors”

that are higher than the “competitive” level, market definition is not necessary as an initial step as it can be inferred from this conclusion.

- The key question remains: what is the “competitive” price?