

January 2010

A Real-World Analysis of Pharmaceutical Settlements: The Missing Dimension of Product Hopping

Michael A. Carrier

Follow this and additional works at: <https://scholarship.law.ufl.edu/flr>



Part of the [Law Commons](#)

Recommended Citation

Michael A. Carrier, *A Real-World Analysis of Pharmaceutical Settlements: The Missing Dimension of Product Hopping*, 62 Fla. L. Rev. 1009 (2010).

Available at: <https://scholarship.law.ufl.edu/flr/vol62/iss4/6>

This Article is brought to you for free and open access by UF Law Scholarship Repository. It has been accepted for inclusion in Florida Law Review by an authorized editor of UF Law Scholarship Repository. For more information, please contact kaleita@law.ufl.edu.

A REAL-WORLD ANALYSIS OF PHARMACEUTICAL
SETTLEMENTS: THE MISSING DIMENSION OF PRODUCT
HOPPING

*Michael A. Carrier**

Abstract

The pharmaceutical industry plays an important role in improving human health. But it also provides the setting for some of the most concerning issues in the patent-antitrust intersection today. Two activities are particularly worrisome.

First, brand-name pharmaceutical firms and generic companies have settled patent litigation. As part of these agreements, brand firms have paid generic firms to drop their patent challenges and delay entering the market.

Second, brand firms, frequently at the end of a patent term, have engaged in “product hopping,” often switching from one means of administering a drug (e.g., tablet) to another (e.g., capsule).

In the past decade, courts and commentators have separately explored these activities. But no one has yet explored the intersection of these two forms of conduct. This Article tackles this project. In doing so, it uncovers a vital strategy that, until now, has fallen through the cracks of antitrust law.

This Article will show that the combination of settlements and product hopping results in unrecognized, anticompetitive harm. Such a conclusion is particularly important given arguments offered by settling parties today, which on the surface appear reasonable. These parties have contended that settlements that allow entry before the end of the patent term are, by definition, procompetitive. After all, such entry would appear to introduce competition before patent expiration. This would seem to be a significant justification for the settlement.

But the closer analysis presented here reveals anticompetitive effects arising from the combination of settlement and product hopping. For a settlement that prevents patent challenges for a period of time—even if less than the duration of the patent—gives the brand firm the space in which it can comfortably switch the market to the new product. So by the time, years later, when the generic enters, the market will have already been switched to the new product. The generic firm will no longer be able to take advantage of state drug product selection laws that allow pharmacists to automatically substitute generic drugs in place of brand-name drugs. In short, the lethal combination of the two activities erects a significant roadblock to pharmaceutical competition.

* Professor, Rutgers University School of Law-Camden. I would like to thank Meredyth Andrus, Pat Cafferty, and Steve Shadowen for helpful comments and Karalee Monahan for excellent research assistance.

I.	INTRODUCTION	1010
II.	BACKGROUND.....	1012
	A. <i>Settlements</i>	1012
	1. Hatch-Waxman Act	1012
	2. Antitrust Concern	1014
	3. Timing of Generic Entry.....	1015
	B. <i>Product Hopping</i>	1016
	1. Definition.....	1016
	2. State Drug Product Selection Laws	1017
	3. Generic Substitution Case	1019
	4. Timing of Reformulation.....	1020
III.	CASE STUDY 1: PROVIGIL	1022
	A. <i>Facts</i>	1022
	B. <i>The Big Picture: Product Hopping and Settlement</i> <i>Interplay</i>	1024
	C. <i>Specific Strategy</i>	1025
	1. Make Provigil Less Desirable.....	1025
	2. Make Nuvigil More Desirable.....	1026
IV.	CASE STUDY 2: ANDROGEL.....	1027
	A. <i>Facts</i>	1027
	B. <i>Adding the Product-Hopping Dimension</i>	1029
V.	THE MISSING DIMENSION	1030
	A. <i>Flatland and Previous Analyses</i>	1030
	B. <i>Embracing the New Dimension</i>	1033
	1. Guaranteed Immunity from Challenge	1033
	2. Lack of Meaningful Competition After Generic Entry	1034
VI.	CONCLUSION	1036

I. INTRODUCTION

The pharmaceutical industry plays an important role in improving human health. But it also provides the setting for some of the most concerning issues in the patent-antitrust intersection today. Two activities are particularly worrisome.

First, brand-name drug firms and generic companies have settled patent litigation. As part of these agreements, brand firms have paid generic firms to drop their patent challenges and delay entering the market.

Second, drug companies, frequently at the end of patent terms, engage in “product hopping,” often switching from one means of administering the

drug (e.g., tablet) to another (e.g., capsule).

In the past decade, courts and commentators have separately explored these activities. But no one has yet explored the intersection of these two forms of conduct. This Article tackles this project. In doing so, it uncovers a vital strategy that, until now, has fallen through the cracks of antitrust law.

This Article will show that the combination of settlements and product hopping results in anticompetitive harm. Such a conclusion is particularly important given arguments offered by settling parties today, which on the surface appear reasonable. These parties have contended that settlements that allow entry before the end of the patent term are, by definition, procompetitive. After all, such entry would seem to introduce competition before patent expiration. This would appear to be a significant justification for the settlement.

But the closer analysis presented here reveals the anticompetitive effects arising from the combination of settlement and product hopping. For a settlement that prevents patent challenges for a period of time—even if less than the duration of the patent—gives the brand firm the space in which it can comfortably switch the market to the new product. By the time, years later, when the generic enters, the market will have already been switched to the new product. As a result, the generic firm, which can no longer take advantage of state drug product selection laws, fails to provide meaningful competition.

Part II of this Article sets the stage. It first presents an overview of the Hatch-Waxman Act, which governs patent settlements in the pharmaceutical industry. It pays particular attention to the timing of generic entry in relation to the patent term. It then defines product hopping and focuses on the effect of state drug product selection laws, which allow pharmacists to automatically substitute generic for brand versions of drugs. This section also highlights the “price disconnect,” by which doctors prescribing medications do not directly consider the drug’s price.

Part III presents a case study of the combined effect of settlements and product hopping. The drug Provigil, a sleep disorder medication, reveals Cephalon’s combination of the two practices. This company settled with the first four generic firms to challenge the patent, allowing entry several years before the expiration of the patent term. Such entry, however, was designed to occur after Cephalon switched the market to the new product, Nuvigil.

Part IV presents a second study, of AndroGel, a testosterone gel replacement. In this case, manufacturer Solvay settled with generic firms, again allowing entry before the end of the patent term, but again garnering enough breathing room to—without any concern of patent challenges—switch from one version of the gel to a second.¹

1. Nor are the cases limited to the United States. In the European Commission’s recent

Part V adds the product-hopping dimension to the analysis of drug settlements, which until now has neglected this element. Courts and commentators in recent years have focused on the appropriate treatment of reverse payments in drug settlements. But once the focus expands to consider the brand firm's overall strategy, the framework shifts.

Without considering the brand firm's product hopping, the settlement framework resembles one in which 1) the brand firm maintains its monopoly, followed by 2) a period (before patent expiration) in which generics enter the market, fostering competition.

Adding the product-hopping dimension shifts the framework to one in which 1) the brand firm ensures that its patent will not be challenged, followed by 2) a period (before patent expiration) in which generic competition will mean little given the migration of patients to a new product not subject to state drug product selection laws.

A focus on the product-hopping dimension of drug firms' strategies uncovers the lethal combination of guaranteed immunity from challenge and a lack of meaningful competition after generic entry.

II. BACKGROUND

To understand brand firms' strategy of combining settlements and product hopping, a separate explanation of the two would be useful. This Part thus provides a brief overview of drug settlements, paying special attention to the timing of generic entry. It then discusses product hopping, focusing on the state drug product selection laws, which dramatically increase generic competition but which frequently are the target of product hopping.

A. Settlements

1. Hatch-Waxman Act

The framework governing drug patent settlements is the Hatch-Waxman Act,² enacted by Congress in 1984 to increase generic competition and foster innovation in the pharmaceutical industry.³

report on the pharmaceutical industry, product hopping played a potential role in 108 of the 207 reported brand-generic settlements. EUROPEAN COMMISSION, PHARMACEUTICAL SECTOR INQUIRY FINAL REPORT 365 (2009), http://ec.europa.eu/competition/sectors/pharmaceuticals/inquiry/staff_working_paper_part1.pdf. Although such figures have not been compiled in the United States, the phenomenon seems to have increased in recent years, as judged by the activity in complaints filed by the Federal Trade Commission (FTC), *see, e.g.*, Complaint for Injunctive Relief, *FTC v. Cephalon, Inc.*, No. 08-cv-00244 (JDB) (D.D.C. 2008) [hereinafter *Cephalon Complaint*], and by conversations with FTC officials about trends in recent filings under the Medicare Modernization Act.

2. Drug Price Competition and Patent Term Restoration Act of 1984, Pub. L. No. 98-417, 98 Stat. 1585 (codified as amended at 21 U.S.C. § 355 (2006)).

3. Teresa Stanek Rea, *Striking the Right Balance Between Innovation and Drug Price*

One central goal of the Act was to promote generic competition.⁴ Generic drugs have the same active ingredients, dosage, administration, performance, and safety as patented brand drugs.⁵ Despite the equivalence, generic manufacturers were required, at the time of the Act, to engage in lengthy and expensive trials to demonstrate safety and effectiveness.⁶ The FDA approval process took several years, and because the required tests constituted infringement, generics could not begin the process during the patent term.⁷ They therefore waited until the end of the term to begin these activities, which prevented them from entering the market until two or three years after the patent's expiration.⁸ At the time Congress enacted Hatch-Waxman, there was no generic equivalent for roughly 150 drugs whose patent terms had lapsed.⁹

In the Act, Congress employed several mechanisms to encourage competition. First, it allowed firms to experiment on the drug during the patent term. In particular, the legislature exempted from infringement the manufacture, use, or sale of a patented invention for uses "reasonably related to the development and submission of information" under a federal law regulating the manufacture, use, or sale of drugs.¹⁰

Second, Congress created a new process for obtaining FDA approval. Before Hatch-Waxman, generic firms that offered products identical to approved drugs needed to independently prove safety and efficacy.¹¹ One reason that generic companies chose not to bring products to the market after a patent's expiration was the expense and time involved in replicating clinical studies.¹² The Act created a new type of drug application, called an Abbreviated New Drug Application (ANDA), that allowed generic firms to rely on brands' safety and effectiveness studies, dispensing with the need for lengthy and expensive independent preclinical or clinical studies.¹³

Competition: Understanding the Hatch-Waxman Act—An Introduction of Speakers, 54 FOOD & DRUG L.J. 223, 224 (1999).

4. For a discussion of the mechanisms used to carry out the other primary goal, fostering innovation, see Michael A. Carrier, *Unsettling Drug Patent Settlements: A Framework for Presumptive Illegality*, 108 MICH. L. REV. 37, 43–45 (2009) (discussing patent term extensions, non-patent market exclusivity, and an automatic 30-month stay of FDA approval of generics).

5. U.S. Food and Drug Administration, *Generic Drugs: What You Need to Know*, http://www.fda.gov/buyonlineguide/generics_q&a.htm (last visited May 7, 2010).

6. CONGRESSIONAL BUDGET OFFICE, HOW INCREASED COMPETITION FROM GENERIC DRUGS HAS AFFECTED PRICES AND RETURNS IN THE PHARMACEUTICAL INDUSTRY 43–44 (1998).

7. *Id.* at 38.

8. *Id.*

9. H.R. REP. NO. 98-857, pt. 1, at 17 (1984), reprinted in 1984 U.S.C.C.A.N. 2647, 2650.

10. 35 U.S.C. § 271(e)(1) (2006).

11. Elizabeth Stotland Weiswasser & Scott D. Danzis, *The Hatch-Waxman Act: History, Structure, and Legacy*, 71 ANTITRUST L.J. 585, 589–90 (2003).

12. *See id.*

13. FEDERAL TRADE COMMISSION, GENERIC DRUG ENTRY PRIOR TO PATENT EXPIRATION: AN FTC STUDY 5 (2002), available at <http://www.ftc.gov/os/2002/07/genericdrugstudy.pdf> [hereinafter GENERIC DRUG STUDY].

Most relevant for our purposes, the Act provided 180 days of marketing exclusivity to the first generic firm to certify that the brand firm's patent was not valid or that the generic's drug did not infringe the patent.¹⁴ Such exclusivity was reserved for the first generic firm—known as a “Paragraph IV filer”—that sought to enter during the patent term.¹⁵ During the period, which begins after the first commercial marketing of the drug, the FDA cannot approve other ANDAs for the same product.¹⁶

2. Antitrust Concern

This exclusivity has resulted in numerous settlements between brand firms and first-filing generic companies. By paying the first-filer to delay entering the market, the brand firm can prevent entry not only by that generic but also by all other generics. The reason is that these firms cannot enter the market until 180 days after the first-filer's entry.¹⁷ And as a result of the settlement with the brand firm, the generics' entry is delayed for years.

It is in the interest of both the brand firm and the first-filing generic firm to settle, especially with payments from the brand to the generic known as “reverse payments.”¹⁸ The brand firm benefits by blocking challenges that could invalidate its patent. And the generic company receives a subset of the brand firm's monopoly profits that may even exceed what it could have gained through successful litigation and market entry. Consumers, on the other hand, suffer from the stifling of challenges to patents that often are invalid.¹⁹

At the same time, subsequent generic filers have not played a meaningful role in challenging those settlements. Even if they prove the patent's invalidity, that would only trigger the *first-filer's* 180 days of exclusivity. In addition, if the brand firm does not sue later-filing generic firms, these generics may not be able to obtain a judicial determination of the validity of the brand firm's patent given the difficulties of obtaining

14. 21 U.S.C. § 355(j)(5)(B)(iv) (2006).

15. *Id.* Three other patent certifications apply if the drug is not patented, the patent has expired, or the generic agrees it will not seek approval until the patent expires. 21 U.S.C. § 355(j)(2)(A)(vii) (2006).

16. GENERIC DRUG STUDY, *supra* note 13, at 7. Until amended in 2003, the Hatch-Waxman Act included a court decision finding invalidity or lack of infringement as a second trigger for the start of the 180-day period. Erika Lietzan & David E. Korn, *Issues in the Interpretation of 180-Day Exclusivity*, 62 FOOD & DRUG L.J. 49, 63 (2007).

17. *See* 21 U.S.C. § 355(j)(5)(B)(iv).

18. These agreements are called reverse payments since they differ from typical licensing payments that flow from challengers to patentees. *See* Carrier, *supra* note 4, at 39.

19. In a study of Paragraph IV challenges between 1992 and 2000, the FTC found that the generic prevailed in 73% of the patent infringement cases and that the brand-name companies won only 27% of the time. GENERIC DRUG STUDY, *supra* note 13, at 16. These figures are consistent with a survey of Federal Circuit decisions from 2002 through 2004 that found that pharmaceutical patentees were successful on the merits in 30% of the cases. Paul M. Janicke & LiLan Ren, *Who Wins Patent Infringement Cases?*, 34 AIPLA Q.J. 1, 20 (2006).

declaratory judgment.

Most generally, the parties' reverse-payment settlements threaten severe anticompetitive dangers. They are a type of market division, with the brand firm blocking all competition for a period of time.²⁰ Market division, which antitrust courts view as *per se* illegal,²¹ is concerning because it restricts all competition between the parties on all grounds.

Not all patent settlements, to be sure, constitute market allocation agreements. If a patent is valid and infringed, the patentee could rely on the patent itself to restrict competition. In that case, an agreement that allows a generic to enter before the end of the patent term could increase competition. But if a patent is invalid or not infringed, there is no legitimate justification for delaying competition.

The appropriate antitrust treatment of patent settlements thus depends on the validity of the patent and existence of infringement. But the most straightforward way to determine these issues, patent litigation, is not appropriate in this setting. Determining patent validity and infringement would require significant analysis and testimony on complex issues such as patent claim interpretation and infringement analysis. Such inquiries, which could take weeks, cannot be inserted as mini-trials within antitrust cases.²²

3. Timing of Generic Entry

One central element of settlements has been the timing of generic entry. Most generally (and oversimplifying dramatically), the longer the generic firm agrees to refrain from entering the market, the more concern arises. Anticompetitive effects are highest if the generic firm agrees not to enter during the entire patent term. In contrast, generic entry before the end of a valid patent term encourages competition within the term, which benefits consumers.

In some of the early settlements, the generic company agreed to stay out of the market for all or nearly all of the patent term. For example, in *In re Tamoxifen Citrate Antitrust Litigation*,²³ generic firm Barr agreed in 1993 not to enter the market with a generic breast cancer treatment until brand firm Zeneca's patent expired in 2002.²⁴ And in *In re Ciprofloxacin Hydrochloride Antitrust Litigation*,²⁵ brand firm Bayer in 1997 paid

20. *In re Schering-Plough Corp.*, 2003 WL 22989651, Part II.A (F.T.C. 2003), *vacated by* *Schering-Plough Corp. v. FTC.*, 402 F.3d 1056, 1058 (11th Cir. 2005).

21. *Palmer v. BRG of Ga., Inc.*, 498 U.S. 46, 49–50 (1990) (*per curiam*).

22. In addition, an analysis of the merits of the patent infringement case would be unreliable. After a case settles, the parties' interests become aligned, with a generic firm lacking the incentive to vigorously attack a patent's validity or an infringement claim.

23. 466 F.3d 187 (2d Cir. 2006).

24. *Id.* at 193–94.

25. 544 F.3d 1323 (Fed. Cir. 2008), *aff'g*, 363 F. Supp. 2d 514, 519 (E.D.N.Y. 2005).

generic firm Barr to stay out of the market until six months before Bayer's patent on Cipro, a drug treating bacterial illnesses, expired in 2003.²⁶

In recent settlements, however, such as those concerning Provigil and AndroGel,²⁷ the parties have provided for generic entry for longer periods before the end of the term. They presumably have reached such arrangements to convince courts that the agreements are procompetitive. After all, the argument goes, the brand firm could, relying on its patent alone, prevent competition until the end of the patent. In that context, several years of competition before expiration appear procompetitive. Cephalon, for example, touted the "obvious benefits and efficiencies" of its Provigil settlement,²⁸ which "permitted the [g]enerics to enter the market three years prior to the expiration of the . . . patent."²⁹

Even Assistant Attorney General Christine Varney, in her answers to questions for her confirmation hearing before the Senate Judiciary Committee, remarked that "A patent holder who enters into a commercial arrangement to allow a competitor to enter the market prior to the patent's expiration would most likely be procompetitive."³⁰

While such a position could conceivably apply in the context of the patent that is the focus of settlement,³¹ a closer look at a separate dimension uncovers potentially significant flaws in the argument.

B. Product Hopping

1. Definition

The new dimension revealed in this Article is "product hopping." This activity (also known as "evergreening" or "line extension") refers to a drug company's reformulation of its product. There are several types of such redesigns.

One type involves new forms, which consist of reformulations from capsules, tablets, or solutions to other forms, such as any of the above as well as extended-release drugs and chewable tablets.³² Another type involves changing molecule parts (known as "moieties") by adding or

26. *Id.* at 1328–29.

27. *See infra* Parts II–III.

28. This settlement is described below. *See infra* Part III.

29. Defendant Cephalon, Inc.'s Memorandum of Points and Authorities in Support of its Motion to Dismiss at 1, *FTC v. Cephalon, Inc.*, 551 F. Supp. 2d 21 (D.D.C. 2008) (No. 08-cv-00244).

30. Stephen Albainy-Jenei, *FTC Position on Reverse Payments: Settlements Can Be Procompetitive*, PATENT BARISTAS, May 13, 2009, <http://www.patentbaristas.com/archives/2009/05/13/ftc-position-on-reverse-payments-settlements-can-be-procompetitive/> (italization formatting removed).

31. Even this position is more nuanced than explained in the text. *See infra* note 151.

32. Keith Leffler et al., *Anticompetitive Product Changes in the Pharmaceutical Industry*, 41 RUTGERS L.J. (forthcoming 2010) (manuscript at 24, on file with author).

removing compounds.³³ A third is a combination of two or more drug compositions that had previously been marketed separately.³⁴

There are numerous examples of these reformulations.³⁵ For example, the makers of the antidepressant Prozac and the cholesterol treatment TriCor switched from capsule to tablet form, while anxiety-treating Buspar was switched from tablet to capsule.³⁶

Chemical changes explained the switch from allergy medication Claritin to Clarinex, antidepressant Celexa to Lexapro, and heartburn medications Prevacid to Kapidex and Prilosec to Nexium.³⁷

Combinations of drugs occurred with migraine-treatment Treximet (combining Imitrex and Naproxen Sodium) and high-blood-pressure medications Azor (Norvasc and Benicar), Caduet (Norvasc and Lipitor), and Exforge (Norvasc and Diovan).³⁸

Much of this product-hopping activity has been successful because it has avoided the effect of state drug product selection laws.

2. State Drug Product Selection Laws

State drug product selection (DPS) laws, in effect in all fifty states today, are designed to lower prices for consumers. These laws allow—and in many cases require—pharmacists, absent a doctor’s contrary instructions, to substitute generic versions of brand-name prescriptions.

DPS laws are designed to address the disconnect in the industry between prescribing doctors, who are not directly responsive to drug pricing, and paying insurers and consumers, who do not directly select the prescribed drug.³⁹ In particular, DPS laws carve out a role for pharmacists, who are much more sensitive to prices than doctors.⁴⁰

Doctors are subject to a vast array of drug promotion, which includes detailing (sales calls to doctor’s offices), direct mailings, free drug samples, medical journal advertising, sponsored continuing medical education programs, and media advertising.⁴¹ Pharmacists, in contrast,

33. *Id.* (manuscript at 24–25).

34. *Id.* (manuscript at 25) (discussing, as well, enantiomers, molecules that are mirror images of each other).

35. See Rebecca S. Yoshitani & Ellen S. Cooper, *Pharmaceutical Reformulation: The Growth of Life Cycle Management*, 7 HOUS. J. HEALTH L. & POL. 379, 388 (2007) (“[S]ixty percent of New Drug Applications submitted to the FDA in the 1990s were for drugs containing existing active ingredients.”).

36. Leffler et al., *supra* note 32 (manuscript at 36, 42).

37. *Id.* (manuscript at 31–32).

38. *Id.* (manuscript at 25, 40).

39. BUREAU OF CONSUMER PROTECTION, DRUG PRODUCT SELECTION: STAFF REPORT TO THE FTC 2–3 (1979).

40. ALISON MASSON & ROBERT L. STEINER, GENERIC SUBSTITUTION AND PRESCRIPTION DRUG PRICES: ECONOMIC EFFECTS OF STATE DRUG PRODUCT SELECTION LAWS 7 (1985).

41. STUART O. SCHWEITZER, PHARMACEUTICAL ECONOMICS AND POLICY 87–93 (2d ed. 2007).

respond to consumer demand and compete with other pharmacies on price.⁴²

Reformulation eliminates both price and quality competition. It eliminates quality competition since the brand firm switches its promotion to the new product, leaving doctors unable to effectively compare quality between the reformulated brand drug and the old version.⁴³ It also limits price competition because it evades the DPS laws.⁴⁴

The DPS laws typically allow pharmacists to substitute generic versions of brand drugs only if they are “AB-rated” by the FDA. To receive an AB rating, a generic drug must be therapeutically equivalent to the brand drug, which means that the generic has the same active ingredient, form, dosage, strength, and safety and efficacy profile.⁴⁵ The drug also must be bioequivalent, which signifies that the rate and extent of absorption in the body is roughly equivalent to the brand drug.⁴⁶

The concern when a brand reformulates its drug is that the generic version of the first product is not bioequivalent to the second product. And while the generic firm may eventually show bioequivalence, such a showing likely will not occur for years. There are several reasons for the delay.

First, the generic manufacturer must reformulate its product. This period is extended because the brand firm does not need to provide notice to the generic firm of the reformulation.⁴⁷ Second, the generic firm must seek FDA approval (which typically takes at least eighteen months) for this new version.⁴⁸ And third, in many cases, the generic firm will file a Paragraph-IV certification, which is followed by the brand firm’s automatic “thirty month stay” of FDA approval and additional delays from patent litigation.⁴⁹ As a result of these delays, the pharmacist is not able to substitute the generic version of the old product for the brand version of the new product.⁵⁰

42. See MASSON & STEINER, *supra* note 40, at 7.

43. Leffler et al., *supra* note 32 (manuscript at 3) (“We examine the economic effect . . . with special emphasis on identifying the particular dimension of rivalry—price competition or quality comparisons—that is affected.”).

44. *Id.* (manuscript at 17–18).

45. FDA Center For Drug Evaluation and Research, *Approved Drug Products with Therapeutic Equivalence Evaluations* (30th ed.), <http://www.fda.gov/drugs/developmentapprovalprocess/ucm079068.htm> (last visited May 8, 2010) [hereinafter *Therapeutic Equivalence Evaluations*]; Leffler et al., *supra* note 32 (manuscript at 5).

46. See *Therapeutic Equivalence Evaluations*, *supra* note 45.

47. Leffler et al., *supra* note 32 (manuscript at 6).

48. LEON SHARGEL & ISADORE KANFER, *GENERIC DRUG PRODUCT DEVELOPMENT* 366 (2005).

49. Jessie Cheng, *An Antitrust Analysis of Product Hopping in the Pharmaceutical Industry*, 108 COLUM. L. REV. 1471, 1488–89, 1489 n.107 (2008). The period could extend an additional twelve months depending on when the generic filed its Paragraph IV certification. 21 U.S.C. § 355(j)(5)(F)(ii) (2006); see generally C. Scott Hemphill, *Paying for Delay: Pharmaceutical Patent Settlement as a Regulatory Design Problem*, 81 N.Y.U. L. REV. 1553, 1566 n.50 (2006).

50. Cheng, *supra* note 49, at 487–88.

Compounding this problem—and as discussed in detail below in the setting of the Provigil case—the brand firm typically will switch its promotional efforts to the new drug. In fact, it will often highlight the advantages of the new product as compared to the old.⁵¹ At the same time, no other party has the incentive and ability to promote the old product, which leads to doctors receiving “an entirely one-sided presentation” of the relative merits of the products.⁵² The case of *Abbott Laboratories v. Teva Pharmaceuticals USA, Inc.* reveals the dangers of product hopping for generic substitution.⁵³

3. Generic Substitution Case

The drug at the center of *Abbott Laboratories* was TriCor, a billion-dollar drug used to lower cholesterol and triglycerides.⁵⁴ In 1998, Abbott received FDA approval of its capsule version of TriCor. During the next two years, two generic firms filed ANDAs with Paragraph IV certifications challenging TriCor. In 2003, the generic firms received favorable judgments in litigation. In the intervening period, however, Abbott had marginally lowered the drug’s strength and switched from a capsule form of the drug to a tablet form. These changes prevented pharmacists from substituting generic versions of TriCor.

Abbott took direct aim at this regime with its plan to switch to a new version of TriCor. Not only did it switch to a tablet form, but it 1) stopped selling capsules; 2) bought back the existing supplies of the capsules from the pharmacies; and 3) changed the code for TriCor capsules in the National Drug Data File (NDDF)⁵⁵ to obsolete.⁵⁶ As the district court observed, these activities “prevented pharmacies from filling TriCor prescriptions with a generic capsule formulation.”⁵⁷

The generic firms then developed equivalents for the tablet formulation and submitted ANDAs with Paragraph IV certifications. Abbott sued and transitioned to a *new* type of tablet, marked by, again, marginally lower strength. And again, Abbott stopped selling the old TriCor tablets and changed the NDDF code on these tablets to obsolete.

51. *See infra* Part III.

52. Leffler et al., *supra* note 32 (manuscript at 45) (explaining that other brands lack the incentive to promote a competitor’s products and that generics will not promote the product because they do not have large sales forces and would worry about free-riding by other generics).

53. 432 F. Supp. 2d 408 (D. Del. 2006).

54. The facts are taken from *id.* at 415–18.

55. The NDDF, which guides pharmacists in determining substitution, is “a comprehensive set of drug data base elements, drug pricing and clinical information.” First DataBank, *National Drug Data File (NDDF) Plus*, <http://www.firstdatabank.com/Products/national-drug-file-NDDF.aspx> (last visited May 10, 2010).

56. *Abbott*, 432 F. Supp. 2d at 416.

57. *Id.*

The district court applied a rule-of-reason approach in denying Abbott's motion to dismiss. It found that Abbott allegedly prevented a choice between products "by removing the old formulations from the market while introducing new formulations."⁵⁸ The court also found that through Abbott's "allegedly manipulative and unjustifiable formulation changes," Teva and Impax were not able to offer generic substitutes for TriCor, which was the alleged "cost-efficient means of competing" in the market.⁵⁹

In short, the DPS laws, which play a central role in containing prescription drug pricing in all fifty states, were directly threatened by Abbott's activity. The activity reveals the role that product hopping plays in evading the state drug product selection laws.

4. Timing of Reformulation

Product hopping is most successful when brand firms can not only avoid state DPS laws but also orchestrate effective timing. Stated most simply, the brand firm will be more successful if it can switch the market before generic entry.

Introducing the new product before the generic enters the market "adds the near-elimination of price competition to the near-elimination of quality competition."⁶⁰ Brand firms offer the "uncontested message" of the new product's superiority as the manufacturer's detailers "extol the virtues of the new product" at a time that "no one is promoting the original."⁶¹ In addition, brand firms make the switch "when doctors do not have a generic alternative available and do not know that one may be on the way."⁶²

Several examples demonstrate the crucial role played by timing. In the TriCor case, one document demonstrated the different projected sales based on timing. The brand firm, Abbott, predicted that if it launched its reformulated version before generic entry, sales would rise from 161 million Euros in 2004 to 269 million Euros in 2008.⁶³ But if the reformulation did not reach the market before the generic, sales would only reach 35 million Euros in 2004 and 15 million Euros in 2008.⁶⁴ In other words, in 2008, sales would be more than *17 times* greater if Abbott introduced the new version before generic entry.

58. *Id.* at 422.

59. *Id.* at 423. The case ultimately settled. *See, e.g.,* Seth Silber & Kara Kuritz, *Product Switching in the Pharmaceutical Industry: Ripe for Antitrust Scrutiny?*, 7 J. GENERIC MEDS. 119, 123 (2010).

60. Leffler et al., *supra* note 32 (manuscript at 50).

61. *Id.*

62. *Id.*

63. Steve D. Shadowen et al., *Anticompetitive Product Changes in the Pharmaceutical Industry* 6 (2009) (unpublished presentation, on file with author), available at <http://www.abanet.org/antitrust/at-committees/at-hcic/pdf/past-programs/10-28-09-shadowen.pdf>.

64. *Id.*

Another example revealed by Keith Leffler, Joseph Lukens, and Steve Shadowen involved a confidential analysis of a product for which projected sales in the first three years after generic entry would be nearly three times higher if the reformulation (replacing a twice-daily version with one taken once a day) occurred before generic entry than after.⁶⁵ Similar testimony in a different case referred to the launch of a reformulated product after generic entry as a “[t]otal [d]isaster.”⁶⁶

The importance of timing also was recognized by the Final Report of the European Commission, which addressed obstacles blocking generic entry.⁶⁷ The report concluded that brands would suffer reduced sales and prices if generics entered the market before or at the same time as the follow-on product.⁶⁸ For that reason, “[I]t is of [the] utmost importance for the originator company to bring the follow-on product on the market before the first product effectively loses exclusivity.”⁶⁹

The brand firm facilitates such a switch by “channelling . . . demand from the first product to the follow-on product” and by “delay[ing] or prevent[ing] generic entry for the sensitive period of the product switch.”⁷⁰ For 13 of the 22 second-generation products in the report, the new product was launched before the first lost its exclusivity, with an average lead time of 17 months.⁷¹

The report included several telling comments from drug companies. One brand firm explained that “the switch rate is dramatically reduced” if generics enter at the time of, or before, the second-generation product.⁷² Similarly, as another brand company revealed: “[E]ach patient that is not switched quickly enough” to the second-generation product “is forever lost to the generics.”⁷³ In contrast, as a third brand firm conceded: “Once the patient is switched to [the new product] the physician does not have to, cannot and will not switch him to a generic, and . . . more important: the pharmacist cannot substitute!!”⁷⁴

In short, the timing of reformulation matters significantly. Brand firms have a considerable interest in forestalling generic entry until after they can switch the market to the new product. Such a delay protects them from selling and marketing their branded drugs against cheaper generics. The next two parts of the Article, discussing the drugs Provigil and AndroGel, demonstrate how brand firms have used settlements to ensure that generic

65. *Id.*

66. *Meijer, Inc. v. Barr Pharms., Inc.*, 572 F. Supp. 2d 38, 43 (D.D.C. 2008).

67. EUROPEAN COMMISSION, *supra* note 1, at 10.

68. *Id.* at 356.

69. *Id.*

70. *Id.*

71. *Id.* at 361 fig.138. The Report considered patent and data exclusivity. *Id.* at 22–23.

72. *Id.* at 359.

73. *Id.* at 360.

74. *Id.*

entry does not occur before they can switch the market to the reformulated product.

III. CASE STUDY 1: PROVIGIL

A. *Facts*

The case of Provigil is the most vivid example of the interplay of settlements and product hopping. Provigil is a sleep-disorder medication marketed by Cephalon. It was initially approved for excessive daytime sleepiness associated with narcolepsy and was subsequently used to treat obstructive sleep apnea and shift work sleep disorder.⁷⁵ U.S. soldiers, most famously those fighting in the Iraq War, have used it to stay awake for as long as 40 hours at a time.⁷⁶

The drug offers significant benefits over other amphetamine-like stimulants. In particular, it does not produce side effects such as addiction, feeling jittery, and crashing afterward.⁷⁷ As a result, the drug is considered the “gold standard” for the treatment of the excessive sleepiness accompanying sleep disorders.⁷⁸ U.S. sales of Provigil have increased from \$25 million in 1999 to \$475 million in 2005 to \$800 million in 2007.⁷⁹

The active ingredient in Provigil is a chemical compound called modafinil.⁸⁰ Cephalon filed a New Drug Application for Provigil in 1996, which the FDA approved in 1998.⁸¹ The U.S. patent covering modafinil was issued in 1979 and expired in 2001.⁸²

Cephalon obtained a second patent in 1997. This patent covered a formulation of modafinil that consisted of a specified distribution of small particles.⁸³ This narrower patent lasts until October 2014, with Cephalon receiving an additional six months of pediatric exclusivity extending protection to April 2015.⁸⁴

Unlike the patent on the compound itself, generic firms could, without difficulty, avoid this narrow formulation patent. As a consultant advised Cephalon in 2002: “[A]ll generic companies know [that the patent] may be

75. Cephalon Complaint, *supra* note 1, ¶ 26.

76. Tom Spears, *New Drug May Help Soldiers Stay Awake Doctors Unsure of Long-Term Effect*, OTTAWA CITIZEN, Oct. 11, 2003, <http://www.modafinil.com/article/soldiers.html>.

77. Cephalon Complaint, *supra* note 1, ¶ 27.

78. *Id.*

79. *Id.* ¶ 28.

80. *Id.* ¶ 24.

81. *Id.* ¶ 26.

82. *Id.* ¶ 32.

83. *Id.* ¶ 33.

84. Press Release, Cephalon, Cephalon Granted Six Months of Pediatric Exclusivity for Provigil(R), Mar. 28, 2006, <http://www.cephalon.com/media/news-releases.shtml?mode=year&filterval=2006> (last visited May 7, 2010) (noting that Cephalon “met the terms of a written request to provide data from clinical studies examining the effect of Provigil in pediatric patients”) (emphasis omitted).

easily circumvented” by manufacturing products to contain a different distribution of modafinil particle sizes.⁸⁵

Given the ease with which generic firms could circumvent the particle-size patent, it is no surprise they were eager to do so. As the FTC explained in its complaint: “On December 24, 2002, the first day that the FDA could accept an ANDA for generic Provigil, four companies submitted applications”⁸⁶ Teva, Ranbaxy, Mylan, and Barr each certified “that [their] version[s] of generic Provigil did not infringe . . . [the] [p]atent, that the patent was invalid, or both.”⁸⁷

Each of the four generic firms developed non-infringing versions of Provigil.⁸⁸ And since all four filed on the same day, they could share the 180-day Hatch-Waxman exclusivity period.⁸⁹

As the FTC pointed out in the complaint: “Cephalon knew that generic Provigil entry would lead to substantial declines in the company’s revenues.”⁹⁰ A Cephalon vice president projected a 75%–90% price reduction that would lower revenues by more than \$400 million (nearly 75% of the drug’s annual sales) within one year.⁹¹

The generic firms estimated a similar impact. Teva projected that generic versions “would garner 90[%] of all modafinil prescriptions within a month.”⁹² The price was projected to fall to 5%–10% of Provigil’s price within one year.⁹³

The generic firms’ claims, in fact, were supported by the consensus in the industry. Wall Street analysts projected generic entry in 2006.⁹⁴ The four first-filing generic firms planned for a launch in June 2006, at the latest.⁹⁵ Barr ordered significant quantities of the active ingredient in late 2005.⁹⁶ And Cephalon asserted, in November 2005, that “generic versions of modafinil” would enter the market in the middle of 2006.⁹⁷

Cephalon sought to maintain its market share by introducing a successor product, Nuvigil, in 2006.⁹⁸ The longer-lasting Nuvigil was similar to Provigil in many ways, including chemical composition.⁹⁹ It

85. Cephalon Complaint, *supra* note 1, ¶ 35.

86. *Id.* ¶ 36.

87. *Id.*

88. *Id.* ¶ 37.

89. *Id.* ¶ 38.

90. *Id.* ¶ 39.

91. *Id.*

92. *Id.* ¶ 40.

93. *Id.* (noting that Teva projected 10% and Ranbaxy projected 5%).

94. *Id.* ¶ 51.

95. *Id.* ¶ 50.

96. *Id.*

97. *Id.* ¶ 48.

98. *Id.* ¶ 52.

99. Press Release, Cephalon, Cephalon Receives FDA Approval of NUVIGIL(TM) for the Treatment of Excessive Sleepiness Associated with Three Disorders, June 18, 2007,

offered modest improvements by allowing patients to take a pill once a day instead of two times daily. Cephalon also sought to switch to Nuvigil to expand its customer base to cover other conditions.¹⁰⁰

The FDA, however, “had not approved Nuvigil by late 2005.”¹⁰¹ And, as the FTC pointed out, “[T]here was considerable uncertainty as to whether the FDA would approve Nuvigil early enough in 2006 to enable Cephalon to successfully migrate customers from Provigil to Nuvigil before the entry of a generic version of Provigil.”¹⁰² Given this uncertainty, Cephalon decided to settle patent litigation with the four first-filing generic firms.¹⁰³

Cephalon paid more than \$200 million to the four generic firms to agree to forgo entry until April 2012.¹⁰⁴ The Cephalon CEO conceded that the settlements provided “six more years of patent protection[,]” which was “\$4 billion in sales that no one expected.”¹⁰⁵

B. *The Big Picture: Product Hopping and Settlement Interplay*

In its motion to dismiss the complaint, which the U.S. District Court for the Eastern District of Pennsylvania recently denied,¹⁰⁶ Cephalon noted that the settlement, which allowed entry in 2012, “resulted in generic entry *years earlier* than patent expiration” in 2015.¹⁰⁷ This is typical of arguments voiced by proponents of recent reverse-payment settlements, who justify the agreements by pointing to the guaranteed years of competition before the end of the patent term.

A bird’s-eye view of the activity, however, shows how the various forms of anticompetitive behavior fit together. Cephalon had no intention of competing in a robust market with generic firms in 2012. The generic firms themselves, in obtaining more than \$200 million from Cephalon, did not expect vibrant competition in 2012.

<http://www.cephalon.com/media/news-releases.shtml?mode=year&filterval=2007> (last visited May 7, 2010) (follow “Cephalon Receives FDA Approval of NUVIGIL(TM) . . .” hyperlink). As the Cephalon press release points out, “The active pharmaceutical ingredient in Nuvigil, armodafinil, is the longer-lived r-enantiomer [molecule’s mirror image] of modafinil, the active ingredient in Provigil.” *Id.* (emphasis omitted).

100. Cephalon, Inc., Q1 2009 Earnings Call Transcript, May 5, 2009, *available at* <http://seekingalpha.com/article/135541-cephalon-inc-q1-2009-earnings-call-transcript?page=-1> (discussing clinical trials for jet-lag disorders, bipolar depression, sleep apnea, co-morbid major depressive disorder, and traumatic brain injury).

101. Cephalon Complaint, *supra* note 1, ¶ 52.

102. *Id.*

103. *Id.* ¶ 53.

104. *Id.* ¶ 3.

105. *Id.* ¶ 4.

106. King Drug Co. of Florence, Inc. v. Cephalon, Inc., 2010 WL 1221793 (E.D.Pa., Mar. 29, 2010).

107. Defendant Cephalon, Inc.’s Memorandum of Points and Authorities in Support of its Motion to Dismiss at 26, *FTC v. Cephalon, Inc.*, 551 F. Supp. 2d 21 (D.D.C. 2008) (No. 08-cv-00244).

Rather, by delaying the potential onset of generic competition until 2012, six years after settlement, Cephalon bought itself a period in which it was *guaranteed* that its weak Provigil patent would not be challenged. With that certainty in hand, Cephalon could enjoy the luxury of an extended period in which it could switch the market to its new sleepiness drug, Nuvigil. Nuvigil, which the FDA approved in 2007, enjoys patent protection until 2023.¹⁰⁸

A Cephalon spokesman conceded that after settlement “[t]he pressure is not what it was” and that the company was not required “to make a quick transition from Provigil to Nuvigil.”¹⁰⁹ And an industry analyst agreed that the delay would “allow Cephalon to seek to expand its wakefulness franchise” rather than treating Nuvigil “merely as a conversion opportunity . . . that would be under pressure to establish itself early.”¹¹⁰

C. Specific Strategy

1. Make Provigil Less Desirable

Cephalon’s switching strategy had two simple components: making Provigil less desirable and making Nuvigil more desirable.¹¹¹ The easiest way to make Provigil less desirable was to increase its price. Between 2004 and 2008, Cephalon increased the price of Provigil by 74%.¹¹² As a Cephalon vice president remarked: “[W]e will likely raise Provigil prices to try to create an incentive for the reimbursers to preferentially move to Nuvigil.”¹¹³

Another means to reduce Provigil’s attractiveness was to stop promoting it. And that is what it did. Cephalon officials explained that they “actually pulled all promotion from Provigil” after the first quarter of 2009

108. *Cephalon Receives FDA Approval Of Nuvigil(TM) for the Treatment of Excessive Sleepiness Associated with Three Disorders*, MED. NEWS TODAY, June 19, 2007, <http://www.medicalnewstoday.com/printerfriendlynews.php?newsid=74585> (last visited May 7, 2010).

109. Robert Steyer, *Cephalon Puts Worries to Rest*, THE STREET, Feb. 14, 2006, <http://www.thestreet.com/print/story/10268224.html> (last visited May 7, 2010).

110. *Id.*

111. Another example involving similar strategies was Cephalon’s switch from pain management drug Actiq to Fentora, a similar drug requiring lower doses. First, Cephalon “increased the price of Actiq substantially” and “stopped . . . detailing Actiq[.]” Cephalon, Inc., Q4 2006 Earnings Call Transcript, Feb. 12, 2007, *available at* <http://seekingalpha.com/article/26813-cephalon-q4-2006-earnings-call-transcript> (emphasis omitted). As a result, the market “retract[ed] a bit[.]” which the firm’s CEO conceded was “probably our own doing.” *Id.*

Second, it focused its marketing efforts on Fentora. When it had “a chance to talk to the doctors” about both products, Cephalon “talk[ed] about Fentora.” *Id.* And it lowered the new drug’s price, which was “very attractive to physicians” and gave the company’s representatives a favorable pricing story. *Id.*

112. Jonathan D. Rockoff, *How a Drug Maker Tries to Outwit Generics*, WALL ST. J., Nov. 17, 2008, at B1.

113. *Id.*

“in anticipation of the Nuvigil launch[,]” which occurred in June.¹¹⁴ Specifically, Cephalon pulled all samples, promotional materials, and messaging on Provigil in order to replace them with new materials and samples on Nuvigil.¹¹⁵ A Cephalon official highlighted the firm’s efforts for Nuvigil, which included “promotional efforts[,] . . . patient sampling programs, discount programs for patients, a significant number of key opinion leader/speaker presentations, and a contracting plan with certain health care payers.”¹¹⁶

2. Make Nuvigil More Desirable

Having weakened the competitive position of Provigil, Cephalon set off on its second task: promoting Nuvigil. The CEO sang Nuvigil’s praises: “With an extensive clinical program supporting Nuvigil, and a patent that extends to 2023, we believe that Nuvigil will be a very successful product that will ultimately benefit more patients than Provigil.”¹¹⁷

The company vigorously promoted Nuvigil. As soon as Cephalon brought Nuvigil to the market, “close to 800 salespeople [would] be out there” selling it.¹¹⁸ And more:

- “[I]t’s really all focused now on Nuvigil and the launch of that product and doing absolutely everything we can to ensure that physicians have a good experience in prescribing it and that it’s available to patients and that they have a terrific experience when they take it.”¹¹⁹
- “We are going to be launching this product, doing so very vigorously. We believe that Nuvigil is a better product than Provigil.”¹²⁰

Bringing it all together was the “excitement” in the marketplace from the cheaper, “more effective” Nuvigil. Revealing all too little of its role in increasing Provigil’s price, Cephalon played coy in being “particularly pleased to offer Nuvigil at a discount to Provigil.”¹²¹ A Cephalon official explained that Nuvigil’s pricing at a discount has “generated a lot of

114. Cephalon Q1 2009 Transcript, *supra* note 100 (emphasis omitted).

115. Cephalon, Inc., Q2 2009 Earnings Call Transcript, Aug. 4, 2007, *available at* <http://seekingalpha.com/article/153789-cephalon-inc-q2-2009-earnings-call-transcript?page=-1>.

116. *Id.*

117. Cephalon, Inc., Q4 2008 Earnings Call Transcript, Feb. 13, 2009, *available at* <http://seekingalpha.com/article/120423-cephalon-inc-q4-2008-earnings-call-transcript?page=-1> (emphasis omitted).

118. Cephalon Q1 2009 transcript, *supra* note 100.

119. *Id.* (emphasis omitted).

120. *Id.* (emphasis omitted).

121. *Id.* (emphasis omitted).

excitement[,] . . . [with] [t]he formularies and the physicians and pharmacists and bean counters that we're talking to . . . all see[ing] the economic benefit that Nuvigil will be able to provide."¹²²

Of course, given Provigil's methodically-increasing costs and the *guaranteed* lack of generic entry until 2012, it was only natural that insurers and health-plan managers would switch patients to Nuvigil. Cephalon should not have been surprised with Nuvigil's price advantage.

In short, Cephalon's switch from Provigil to Nuvigil, undertaken in the context of its settlement with four generic firms that were no longer able to challenge its Provigil patent, raises concern regarding the anticompetitive effect of the intersection of product hopping and settlement.

IV. CASE STUDY 2: ANDROGEL

A second case study is presented by the testosterone-replacement drug AndroGel.

A. Facts

Solvay is the maker of AndroGel, a testosterone gel applied daily to the skin.¹²³ AndroGel treats low testosterone, a deficiency that may cause fatigue, decreased sexual function, and depressed mood.¹²⁴ There is no cure for low testosterone; instead, it is a medical condition that requires ongoing treatment.¹²⁵

AndroGel has been Solvay's highest-selling product. AndroGel sales in the United States have risen from \$26 million in 2000 to \$277 million in 2003 to more than \$400 million in 2007.¹²⁶ From 2000 to 2007, AndroGel's cumulative U.S. sales exceeded \$1.8 billion.¹²⁷

AndroGel's strong sales figures belie limited patent protection. Testosterone, the active ingredient in AndroGel, has been available in drug products since the 1950s.¹²⁸ Patents for synthesizing artificial testosterone expired decades ago.¹²⁹ Nonetheless, in 2000, Solvay applied for a patent covering the use of a gel formulation containing testosterone and other

122. *Id.*; see also Rockoff, *supra* note 112 (quoting national medical director for Aetna Pharmacy Management as stating, "It's really hard to take a higher price now for a lower price in the future when the future is very far away").

123. AndroGel, *What is AndroGel?*, <http://www.androgel.com/aboutandrogel.html> (last visited May 7, 2010).

124. AndroGel, *What is Low T?*, http://www.androgel.com/about_lowt.html (last visited May 7, 2010).

125. *Id.*

126. First Amended Complaint, *FTC v. Watson*, No. CV 09-598 MRP (PLAx) ¶ 35 (C.D. Cal. Feb. 12, 2009).

127. *Id.* ¶ 36.

128. *Id.* ¶ 32.

129. *Id.* ¶ 39.

ingredients.¹³⁰ This patent expires in August 2020.¹³¹

In May 2003, generic firms Watson and Paddock filed Paragraph-IV certifications challenging AndroGel.¹³² In August, Solvay sued each for infringement, which triggered automatic stays of FDA approval of the companies' generic AndroGel versions until January 2006.¹³³

In its complaint, the FTC included several grounds on which Solvay might not be able to rely on its patent in preventing competition. First, the generic products contained ingredients not covered by the patent.¹³⁴ Second, the patent was invalid because of previous sales, because it was obvious, and because it did not provide an adequate written description.¹³⁵ Finally, the patent was unenforceable since, in its application, Solvay did not disclose a relevant agreement to the U.S. Patent and Trademark Office (PTO).¹³⁶ To keep its monopoly position, Solvay needed to prove infringement by the generics and had to defeat each of these infringement and unenforceability arguments.

In any event, AndroGel had played a central role in Solvay's portfolio. And the company projected that generic entry in mid-2006 would slash AndroGel sales by 90% within one year, cutting its profits by \$125 million per year.¹³⁷

At the same time, generic firms were poised to enter the market. In January 2006, Watson received final FDA approval for its product.¹³⁸ Watson predicted an entry date of January 2007, and ordered commercial manufacturing equipment for intended use in late 2006.¹³⁹ Paddock spent \$750,000, approximately three-quarters of its annual equipment budget, on commercial manufacturing equipment.¹⁴⁰

Solvay settled with Watson and Paddock, as well as Paddock's development partner Par. It agreed to pay Watson \$19 million during the first year of the deal—eventually rising to \$30 million annually—for co-promoting AndroGel to doctors.¹⁴¹ And for six years, Solvay agreed to pay \$10 million to Par for co-promotion and \$2 million to Paddock for back-up manufacturing.¹⁴²

130. *Id.* ¶ 40. Solvay applied for the patent along with Belgian firm Besins Healthcare, S.A. In 1999, Solvay filed a New Drug Application for AndroGel with the FDA, which approved it in 2000. *Id.* ¶ 34.

131. *Id.* ¶ 44. Solvay ultimately received an additional six months of “pediatric exclusivity” that runs through February 2021. *Id.*

132. *Id.* ¶ 45.

133. *Id.* ¶ 48.

134. *Id.* ¶ 87.

135. *Id.* ¶ 88.

136. *Id.* ¶ 89.

137. *Id.* ¶ 50.

138. *Id.* ¶ 53.

139. *Id.* ¶ 56.

140. *Id.*

141. *Id.* ¶ 66.

142. *Id.* ¶ 74.

B. Adding the Product-Hopping Dimension

Pursuant to the terms of the 2006 agreements, the generics agreed that they would not enter the market before 2015. Such entry would occur five years before patent expiration in 2020.

Solvay, however, was not planning to encounter robust generic competition in 2015. Its strategy was to switch the market to a new version of testosterone gel. AndroGel contains 1% testosterone.¹⁴³ The new product it was developing would contain 1.62% testosterone.¹⁴⁴

Between 2006 and 2015, Solvay was guaranteed that its formulation patent would not be challenged. With this luxury, it had sufficient time to develop and market the new testosterone gel. Such a change could benefit patients by allowing them to achieve results with less gel.¹⁴⁵

Even more obviously, the new formulation would be a windfall to Solvay. Such a switch would prevent automatic generic substitution. Patients, in other words, could not substitute generic versions of the new gel. There likely would be little demand for generic versions of AndroGel.

This strategy was a central aspect of the agreements with generics. According to the FTC's complaint, "Solvay told Watson of its plans for a line extension product."¹⁴⁶ Watson accepted delay in its entering the market until 2015 "even though a line extension product could have a severe negative impact on its potential sales of generic AndroGel by 2015."¹⁴⁷ And Watson gained the right to co-promote not only AndroGel but also any line extension product.¹⁴⁸

In short, the generic entry date of 2015 might initially appear to be procompetitive by providing a guaranteed additional five years of competition. In the context of Solvay's product-hopping strategy, however, it seems far less favorable. For after product hopping, there will be little demand for generic versions of AndroGel in 2015. By then, the market will be switched to the new testosterone gel product.¹⁴⁹

143. *Id.* ¶ 63.

144. *Id.*

145. *Id.*

146. *Id.*

147. *Id.*

148. *Id.* ¶ 66.

149. Another example is provided by Abbott's TriCor, a cholesterol and triglycerides drug with more than \$1 billion in annual U.S. sales. Jonathan D. Rockoff, *Abbott, Teva Reach Deal that Delays Generic TriCor*, WALL ST. J., Dec. 1, 2009, <http://online.wsj.com/article/SB10001424052748703300504574568262242442986.html> (last visited June 20, 2010). With Tricor's patent expiring in 2011, Abbott pursued the product hopping/settlement combination to obtain every drop of profits it could.

First, it developed the next-generation drug, TriLipix, for which it received FDA approval in December 2008 and which it began marketing in January 2009. David Phillips, *Abbott Labs' Deal with Teva Pharma Is 'Phat News' for Lipid-Lowering Franchise*, BNET, Dec. 14, 2009, <http://industry.bnet.com/pharma/10005711/abbott-labs-deal-with-teva-pharmaceuticals-is-phat-news-for-lipid-lowering-franchise/> (last visited June 20, 2010); *Abbott Laboratories, Q1 2009 Earnings Call*

V. THE MISSING DIMENSION

The exploration of the relationship between product hopping and settlement leads to insights not previously appreciated. In doing so, it recalls the parable of Flatland.

A. *Flatland and Previous Analyses*

The story of Flatland centers on a two-dimensional world in which geometric shapes exist, unaware of other dimensions.¹⁵⁰ Squares and lines in Flatland observe only the flat slices of three-dimensional objects that intersect with the plane. In the story, a square is able to leave Flatland and discover a third dimension, thereby exposing the limitations of the two-dimensional world.

These lessons are applicable to the intersection of product hopping and settlements. Until now, the competitive effects of pharmaceutical settlements have been analyzed on the plane of the single product that is the subject of settlement.¹⁵¹ One central line of inquiry on this plane has been the existence and analysis of reverse payments.

For example, courts, government agencies, and commentators have examined the effects of settlement on generic firms' entry for the particular product covered by settlement. They have especially focused on reverse payments that provide the brand firm with more protection than the patent provides. For example, the Department of Justice Antitrust Division has recently joined the FTC in advocating presumptive illegality for reverse payments:

Transcript, SEEKINGALPHA, Apr. 17, 2009, <http://seekingalpha.com/article/131529-abbott-laboratories-q1-2009-earnings-call-transcript?page=-1> (last visited June 20, 2010). In mid-2009, Abbott entered into a co-promotion agreement with AstraZeneca and "initiated a Trilipix branded consumer awareness campaign" that increased patient use "across all channels." Ben Comer, *Abbott, AZ Extend Co-promotion to Trilipix*, MM&M, June 4, 2009, <http://www.mmm-online.com/abbott-az-extend-co-promotion-to-trilipix/article/138003/> (last visited June 20, 2010); *Abbott Laboratories, Q3 2009 Earnings Call Transcript*, SEEKINGALPHA, Oct. 14, 2009, <http://seekingalpha.com/article/166543-abbott-laboratories-q3-2009-earnings-call-transcript?page=-1> (last visited June 20, 2010). Second, Abbott addressed the possibility of a generic version of TriCor by settling with Teva in December 2009, preventing the generic from reaching the market until (at the earliest) March 2011. Rockoff, *supra*.

150. EDWIN A. ABBOTT, *FLATLAND* 3–5 (Barnes & Noble Books 5th ed. 1884).

151. Before the 2003 Medicare amendments, settlements occurred on a patent-by-patent basis. The amendments shifted the focus to a product-by-product basis. *See* 149 CONG. REC. 31780, 31783 (2003) (statement of Sen. Kennedy) ("The Hatch-Waxman provisions in this bill also make the exclusivity available only with respect to the patent or patents challenged on the first day generic applicants challenge brand drug patents, which makes the exclusivity a product-by-product exclusivity rather than a patent-by-patent exclusivity.").

Even this axis is more complicated than initially appears because of the malleable nature of the expiration date of the last-expiring patent. C. Scott Hemphill, *An Aggregate Approach to Antitrust: Using New Data and Rulemaking to Preserve Drug Competition*, 109 COLUM. L. REV. 629, 638 (2009).

- As far back as 2002, the FTC argued that “paying a potential competitor to accept an entry date is a payment not to compete and presumptively anticompetitive.”¹⁵²
- In 2009, the Division aligned with the FTC in asserting that: “[T]he anticompetitive potential of reverse payments . . . in exchange for the alleged infringer’s agreement not to compete and to eschew any challenge to the patent is sufficiently clear that such agreements should be treated as presumptively unlawful.”¹⁵³

Many commentators have taken similar positions, again focusing on reverse payments:

- Herbert Hovenkamp, Mark Janis, and Mark Lemley contend that reverse payments should be “presumptively unlawful” unless the payment “is no more than the expected value of litigation and collateral costs attending the lawsuit.”¹⁵⁴
- Tom Cotter advances “a rule of presumptive invalidity for all reverse-payment settlements.”¹⁵⁵
- Carl Shapiro and Mark Lemley view patents as “probabilistic property right[s.]”¹⁵⁶ concluding that settlements “cannot lead to lower expected consumer

152. Reply Brief of Counsel Supporting the Complaint at 25, *In re Schering-Plough Corp.*, 2003 WL 22989651, Part II.A (F.T.C. Dec. 8, 2003) (No. 9297), *vacated by* Schering-Plough Corp. v. FTC, 402 F.3d 1056, 1058 (11th Cir. 2005), *available at* <http://www.ftc.gov/os/adjpro/d9297/021022rbocstc.pdf>. Even before that, the FTC settled a reverse-payment case with Abbott Laboratories and Geneva Pharmaceuticals in 2000 that had delayed generic alternatives to the hypertension and prostate drug, Hytrin. Agreement Containing Consent Order, *In re Abbott Labs.*, No. 981-0395 (2000), *available at* <http://www.ftc.gov/os/2000/03/abbottagreement.htm>.

153. Brief for the United States in Response to the Court’s Invitation at 10, *Ark. Carpenters Health and Welfare Fund v. Bayer*, AG, No. 05-2581-cv(L) (2d Cir. July 6, 2009), *available at* <http://www.justice.gov/atr/cases/f247700/247708.pdf> [hereinafter U.S. Cipro Brief].

154. Herbert Hovenkamp et al., *Anticompetitive Settlement of Intellectual Property Disputes*, 87 MINN. L. REV. 1719, 1759 (2003) (also requiring the patentee to show that “the ex ante likelihood of prevailing in its infringement lawsuit is significant”).

155. Thomas F. Cotter, *Antitrust Implications of Patent Settlements Involving Reverse Payments: Defending a Rebuttable Presumption of Illegality in Light of Some Recent Scholarship*, 71 ANTITRUST L.J. 1069, 1091 (2003).

156. Carl Shapiro, *Antitrust Limits to Patent Settlements*, 34 RAND J. ECON. 391, 395 (2003).

surplus than would arise from ongoing litigation”¹⁵⁷ and that reverse payments in excess of avoided litigation costs are “a clear signal that the settlement is likely to be anticompetitive.”¹⁵⁸

- Scott Hemphill suggests a “presumption of illegality” if the settlement “restricts the generic firm’s ability to market a competing drug” and also “includes compensation from the innovator to the generic firm.”¹⁵⁹
- I have explained that “the appropriate default position for reverse-payment settlements should be presumptive illegality” and that a brand is likely to gain exclusivity beyond that provided by the patent “by supplementing the parties’ entry-date agreement with a payment to the generic.”¹⁶⁰

This focus on reverse payments makes sense in shining the spotlight on the most concerning settlements. Large reverse payments are most likely to raise red flags of potential patent invalidity, especially when generic firms receive more through settlement than they would have gained from entering the market. A focus on reverse payments is especially helpful given antitrust courts’ inability to directly determine issues such as patent validity and infringement.¹⁶¹ And the appropriate treatment of reverse payments has deserved significant attention given courts’ overly excessive deference to such settlements.

But this spotlight on the evils of reverse payments may unwittingly absolve from condemnation agreements without reverse payments. Recently, firms have entered into nuanced agreements by which brand companies pay generic firms for IP licenses, the supply of raw materials or finished products, and assistance in product promotion. They agree not to launch authorized, brand-sponsored generics.¹⁶² And they promise, through

157. Mark A. Lemley & Carl Shapiro, *Probabilistic Patents*, 19 J. ECON. PERSP. 75, 94 (2005).

158. Shapiro, *supra* note 156, at 407.

159. Hemphill, *supra* note 49, at 1561.

160. Carrier, *supra* note 4, at 76.

161. *Id.* at 73 (“Determining patent validity and infringement would require significant analysis and testimony on complex issues such as patent claim interpretation and infringement analysis” that “could take weeks [and] cannot be inserted as mini-trials within antitrust cases.”).

162. FTC BUREAU OF COMPETITION, AGREEMENTS FILED WITH THE FEDERAL TRADE COMMISSION UNDER THE MEDICARE PRESCRIPTION DRUG, IMPROVEMENT, AND MODERNIZATION ACT OF 2003: SUMMARY OF AGREEMENTS FILED IN FY 2007 2 (2008), <http://www.ftc.gov/os/2008/05/mmaact.pdf>; FTC BUREAU OF COMPETITION, AGREEMENTS FILED WITH THE FEDERAL TRADE COMMISSION UNDER THE MEDICARE PRESCRIPTION DRUG, IMPROVEMENT,

settlement, that the generic firm can retain its 180 days of exclusivity.¹⁶³ Though courts do not always recognize it, all of these arrangements convey value to the generic firm.

B. *Embracing the New Dimension*

As this Article shows, the focus on reverse payments also misses concerns associated with product hopping. In many cases, the relevant framework within which the brand firm maneuvers is not the single product that is the focus of settlement. Rather, it is the multiple products implicated in the firm's lifecycle strategy. As a result, the realities of the pharmaceutical marketplace suggest an expansion of the relevant universe to include the reformulated product.

Once the focus expands to consider the brand firm's strategy, the framework shifts. Initially, when centered on the single product that is the subject of settlement, it resembles one in which 1) the brand firm maintains its monopoly, followed by 2) a period (before patent expiration) in which generic firms can enter the market, fostering competition.

Consideration of the product-hopping dimension shifts the framework to one in which 1) the brand firm guarantees that its patent will not be challenged, followed by 2) a period (before patent expiration) in which any generic competition will mean little given the migration of patients to a new product not subject to state drug product selection laws.

These two elements make up the core of the new dimension to the product hopping–settlement combination.

1. Guaranteed Immunity from Challenge

The first prong emphasizes the period in which the generic firm agrees not to challenge the patent. For starters, the promise threatens the goals of the Hatch-Waxman Act, which encouraged patent *challenges*, as opposed to agreements *not to challenge* patents. In particular, the exclusivity period is reserved for the first ANDA to challenge a patent and seek entrance before the end of the patent term.

The promise also is concerning given that empirical studies have consistently shown that a significant percentage of granted patents are

AND MODERNIZATION ACT OF 2003: SUMMARY OF AGREEMENTS FILED IN FY 2005 4–5 (2006), <http://www.ftc.gov/os/2006/04/fy2005drugsettlementsrt.pdf>.

163. Hemphill, *supra* note 151, at 651–53. This “retained exclusivity” is quite valuable to the generic, which does not face the possibility of losing patent litigation and which gains much of its profits during the period in which it is the only generic on the market. See U.S. FOOD AND DRUG ADMINISTRATION, GENERIC COMPETITION AND DRUG PRICES (2006), <http://www.fda.gov/AboutFDA/CentersOffices/CDER/ucm129385.htm> (last visited May 7, 2010) (noting that presence of one generic on market leads to 6% price reduction, entry of second generic lowers price to approximately half the brand price, and entry by six or more generic companies lowers the price to a quarter of the brand price).

invalid.¹⁶⁴ As the Department of Justice explained in a recent brief: “Allowing the patent holder to claim antitrust immunity for its contracts as if they were litigated injunctions, while evading the risk of patent invalidation, deprives consumers of significant benefits from price competition in the pharmaceutical industry.”¹⁶⁵

If the brand firm were not able to guarantee that its patent would be immune from challenge, any switch to the new product would face the hurdle of a patent challenge that could ultimately lead to invalidity. Such a finding would thwart the strategy.

For in that case, the generic firm would be able to offer its version of the patented drug, entering the market before the brand firm has the chance to switch the market to its new product. And once the generic firm obtains a foothold in the market, the product-hopping strategy is far less likely to be successful.¹⁶⁶

One reason is that any attempt to prime the market for the product hop by increasing the price of the patented brand product would run headlong into the cheaper generic product, to which patients naturally would turn. A second reason is that any attempt by the brand firm to heavily market the new drug would suffer through competition against a less expensive generic version.

That is why the combination is so powerful. For it allows the brand firm to methodically move to the new product at a time of its choosing. It need not fear the state DPS laws. It need not fear that generic firms would compete with its reformulated product. It need not fear that such competition would make the new product less attractive.

As discussed above, product hopping is most successful when brand firms can prevent generic entry until after they can switch the market to the new product. During this period, brand firms trumpet the virtues of the new product, ignore the old product, and avoid generic competition. As Cephalon could confidently assure investors as a result of the strategy: “[T]here is nobody else in this space at this time.”¹⁶⁷

2. Lack of Meaningful Competition After Generic Entry

The second prong of the strategy is a lack of meaningful competition after generic entry. One factor on which courts and commentators have focused in analyzing settlements is the date of generic entry in relation to the time remaining in the patent term. Even a recently introduced Senate bill includes, in determining the validity of agreements, the factor of “the

164. Carrier, *supra* note 4, at 64–65 (citing studies finding that courts invalidated at least 43% of patents and that an FTC study of Paragraph IV challenges in the 1990s showed that the generic prevailed in 73% of the cases).

165. U.S. Cipro Brief, *supra* note 153, at 16–17.

166. See *supra* Part II.B.4.

167. Cephalon Q1 2009 transcript, *supra* note 100.

length of time remaining until the end of the life of the relevant patent, compared with the agreed upon entry date for the ANDA product.”¹⁶⁸

At the risk of oversimplifying, generic entry several years before the end of the patent term is generally viewed as procompetitive because it introduces generic competition in a setting in which the brand firm could have exercised monopoly power until the end of the patent term.

Focusing on the product-hopping dimension, however, reveals that this period is entitled to less deference than might initially appear. For once the brand firm shifts the market to the reformulated product, often after raising the price of the old product and employing its heavy marketing artillery on behalf of the new product, generic competition will not play a meaningful role in the industry.

One central reason is that generic firms cannot take advantage of state DPS laws. These laws allow—or even require—pharmacists to substitute generic versions of brand drugs. But switching the market to new products prevents generic firms from quickly demonstrating the equivalency necessary to take advantage of the laws.

As discussed above, the concern when a brand reformulates its drug is that the generic version of the first product is not bioequivalent to the second product. And the generic firm typically will not be able to show bioequivalence for years, until it reformulates the product, receives FDA approval, and concludes patent litigation.

As a result, the generic firm must play catch-up in developing versions of the reformulated product. Just one example was provided in the TriCor case, in which Abbott switched to new formulations on several occasions, buying time to avoid competition and “prevent[ing] pharmacies from filling TriCor prescriptions with a generic capsule formulation.”¹⁶⁹

The second reason that generic firms cannot offer meaningful competition is that the brand firm switches the market to the reformulated product before generic entry. Absent settlement, there is a chance that generic firms could successfully challenge the brand firm’s patent by showing that it is invalid or that its product does not infringe the patent. Either of these conclusions would allow immediate generic entry. As a result, pharmacists could offer, and patients purchase, generics *at a time before the brand firm is able to switch the market to the reformulated product*. In other words, the brand will have lost the critical advantage of timing.

In that case, brand firms will not be able to offer the “uncontested message” of the new product’s superiority with detailers praising only the

168. Preserve Access to Affordable Generics Act, S. 369, 111th Cong. § 28(b)(1), (2009), available at http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_bills&docid=f:s369rs.txt.pdf.

169. Abbott Labs. v. Teva Pharms. USA, Inc., 432 F. Supp. 2d 408, 416 (D. Del. 2006).

new product.¹⁷⁰ Nor could they avoid generic alternatives. Brand firms view a launch after generic entry as a “[t]otal [d]isaster.”¹⁷¹ Any reformulation would garner dramatically lower revenues and would suffer as products are “forever lost to the generics.”¹⁷²

For example, in the TriCor case, brand firm Abbott predicted that if it launched its reformulated version before generic entry, it would enjoy sales of 269 million Euros, far more than the 15 million Euros it would receive if the reformulation did not reach the market before the generic.¹⁷³

In short, even if settlement allows formal generic entry before the end of the patent term, the appropriate timeframe should be considered not just in the context of the patent at the heart of settlement but also in light of the brand firm’s product-hopping strategy. Through this lens, pre-expiration settlements appear far less favorable.

VI. CONCLUSION

Two activities central to brand drug firm strategies in the early 21st century are settlements and product hopping. To date, courts and commentators have separately considered these activities. But an analysis of the combination of the two strategies uncovers anticompetitive concern that might otherwise evade scrutiny.

In particular, settlements that allow generic entry before the end of the patent term are often trumpeted as offering procompetitive virtues in introducing competition before patent expiration.

But a real-world analysis of product hopping shows that any such competition is often illusory. In many cases, by the time the generic enters the market, the brand will have switched the market to the new product. In fact, the timing of the reformulated product is a vital factor in determining the success of product hopping. Brand firms are far more likely to succeed if they can forestall generic entry until after they introduce the new product. Of course, by this time, generic versions of the older product do not offer effective competition.

In short, courts determining the appropriate antitrust treatment of settlements should pay attention to the silent, but brutally effective, dimension of product hopping.

170. Leffler et al., *supra* note 32 (manuscript at 50).

171. *Meijer, Inc. v. Barr Pharms., Inc.*, 572 F. Supp. 2d 38, 43 (D.D.C. 2008).

172. EUROPEAN COMMISSION, *supra* note 1, ¶ 1028.

173. Shadowen et al., *supra* note 63.