

Economics at the FTC: Drug and PBM Mergers and Drip Pricing

1 Introduction

The Federal Trade Commission's (FTC) Bureau of Economics (BE) includes about 80 Ph.D.-level economists, a small group of accountants, and 25 other staff (including research analysts). Its work supports the FTC's competition (antitrust) and consumer protection missions. Most of the Bureau's efforts assist the Commission's investigations and enforcement, but FTC economists also help promote competition-oriented policies domestically at state and federal levels, and contribute to global adoption of modern, economically-oriented competition policies.

To keep our knowledge base and skills up-to-date, we undertake various research-related activities, including an annual conference on microeconomic issues that are relevant to our two missions. In November 2011 our fourth annual conference was conducted jointly with Northwestern University's Searle Center on Law, Regulation, and Economic Growth.¹ Topics included consumer credit and decision-making, mortgages, antitrust issues, advertising markets, and personalized medicine. Our fifth conference, slated for November 2012, will solicit contributions on a wide range of microeconomic subjects that impact consumer welfare.

2 Mergers

Merger enforcement is the bulk of our antitrust work. MergerStat reported that general merger and acquisition (M&A) activity involving US firms was about \$0.87 TR in 2011, compared with

¹ Northwestern University's Searle Center website can be found at <http://www.law.northwestern.edu/searlecenter/>

\$1.2 TR in the pre-crisis year of 2007.² About 1450 merger filings occurred in 2011, and the FTC challenged all or some aspect of 17 transactions.³

We examine mergers in a large number of different industries, and one of the most active recently has been drugs. We describe our analysis of two recent mergers involving actors in the pharmaceutical and health care area.

2.1 The Express Scripts (ESI) / Medco PBM Transaction

During the past year, the FTC concluded an extensive investigation of the combination of two of the three largest pharmacy benefit managers (PBMs): Medco Health Solutions (Medco) and Express Scripts, Inc. (ESI). Based on the evidence that was gathered in this investigation, the Commission concluded that the \$29.1 billion transaction was unlikely to harm competition, despite a significant increase in market concentration. Based on these findings, the FTC allowed the merger to consummate unconditionally.⁴

PBMs administer the prescription pharmaceutical portion of a healthcare benefit, which is typically purchased by a “plan sponsor” (e.g., a health insurer or an employer directly) for a group of beneficiaries. PBMs provide a bundle of services that are related to the administration of pharmaceutical benefits. These services include: claims adjudication (the point-of-sale processing of a pharmaceutical claim); formulary design; management and negotiation of branded drug rebates; management and negotiation of networks of retail pharmacies; reviews of

drug utilization; and the operation of specialty and home-delivery (i.e., “mail-order”) pharmacies.

Despite the presence of numerous PBMs, the industry is concentrated. At the time of its consummation, the combined firm accounted for more than 40% of prescription dollars administered by PBMs.

2.1.1 The Theory and Competitive Analysis

Competition for “PBM services” takes place within a bidding process that is initiated by a plan sponsor. Customers issue a “request for proposal” (“RFP”) that describes the required services and solicits pricing proposals that consist of several component prices. The RFP process is often designed and administered by a third-party consultant. Typically, pricing is the most significant difference between RFP responses, where the prices of competing PBMs are compared on the basis of the total predicted pharmaceutical expenditures under each bid.⁵ In addition, the cost of switching from the incumbent PBM is usually incorporated as part of the price comparison. Thus, competition occurs in an auction setting, and incumbency status and cost differences across PBMs are likely the most important determinants of competitive outcomes in the PBM market.

Taking account of these institutional features of PBM competition, the FTC investigated the likely effect of the merger, focusing in particular on whether both of the merging parties had uniquely low costs for servicing any specific group of customers.⁶ If they did, each would represent a substantial competitive constraint on the other for that group of customers, implying

that the merger could have resulted in higher prices for those particular customers. The FTC evaluated the merger under this framework using two sets of empirical analyses. The first analysis used bidding data from RFPs to measure directly the importance of competition between the parties. The second analysis compared the main components of PBMs' costs to understand directly how the parties' costs compared to other PBMs.

The bid-data analysis examined information that was obtained from the parties and from third-party consultants.⁷ The primary method for measuring the importance of the competition between the parties was to measure "conditional loss" in the parties' bid data, which measures the fraction of incumbent business that is lost to each of the other PBMs, conditional on the

(e.g., mail-order service requirements).⁹ In addition, using the consultant data, the frequency of winner/second place pairings was measured as a robustness check.

The conditional loss analysis demonstrated that competition from non-merging rivals was substantial, relative to the pre-merger competition between ESI and Medco, and sufficient to prevent a substantial loss of competition from the acquisition. This analysis also showed that market shares are not an accurate indicator of the likely effects of the merger. Medco disproportionately lost to CVS/Caremark (in particular in segments that considered larger customers), and smaller PBMs competed just as closely with Medco as did ESI. ESI, on the other hand, lost business more uniformly to all other PBMs, including Medco. However, Medco was never the most significant competitor to ESI in any customer segment, and smaller PBMs were often at least as significant competitors as Medco.

The direct comparisons of PBM costs explain and corroborate the results of the bidding data analysis. This analysis considered four specific areas of costs: (1) reimbursement rates to pharmacies; (2) rebates negotiated with branded drug manufacturers; (3) mail-order fulfillment costs; and (4) mail-order drug procurement costs. Two approaches were used to analyze costs. Differences between PBMs for each of these cost components were evaluated with cross-sectional comparisons, controlling for various factors (e.g., plan design for rebates). The second approach exploits previous merger activity in the industry to test whether the increase in scale from the merger was associated with a decrease in costs using a difference-in-differences econometric framework. Neither approach revealed significant incremental scale economies in the negotiation of rebates or pharmacy reimbursement. Although the analysis did reveal that larger firms had lower mail-order costs (both fulfillment and procurement) than did smaller firms, the minimum size necessary to achieve those lower costs was no longer unique to the parties and CVS/Caremark. Moreover, some of the smaller PBMs had recently made investments

⁹ The analysis also applied different weighting structures to RFPs (e.g., weighing each lost account equally and weighting accounts proportional to their size).

in their mail-order operations that allowed them to achieve costs that were competitive with the larger PBMs.

Both the analysis of bidding data and the analysis of the cost data showed that other smaller PBMs effectively compete today and are in a strong position to respond to anticompetitive behaviors if the parties were to attempt them post-merger. Based on this evidence, the FTC concluded that a substantial anticompetitive effect was unlikely.

2.2 FTC v. Lundbeck and Drug Therapies for PDA

In 2005, Lundbeck¹⁰ acquired Indocin IV, then the only drug treatment for patent ductus arteriosus (PDA), a serious, but treatable, congenital heart defect that affects some premature babies. In 2006, Abbott was about to introduce NeoProfen, an alternative drug treatment for PDA, but Lundbeck acquired the rights to NeoProfen. The FTC challenged this 2006 acquisition, arguing that Indocin IV and Neoprofen were the only non-surgical therapies available for PDA. The case was litigated in federal district court.

In 2009 the district court held that, even if they had been owned separately, the two drugs would not have competed enough to be in the same antitrust market: cross-elasticity of demand was “very low.”¹¹ That conclusion relied on two strands of testimony: First, eight doctors (specifically, neonatologists) testified that in deciding what to prescribe, they would not consider prices, or at least not modest price differences. Second, the FTC’s and Lundbeck’s experts disagreed about whether hospitals would have been able to use their formularies to play independent sellers of the two drugs off against one another. The court adopted Lundbeck’s expert’s view that competition for inclusion on a hospital formulary could not be used to obtain

¹⁰ As a formal matter, Indocin was acquired by Ovation, which later was acquired by Lundbeck; the economic issues are most simply described as in the text. Public documents about the Lundbeck case can be found at <http://www.ftc.gov/os/caselist/0810156/index.shtm>

¹¹ *FTC v. Lundbeck, Inc.*, 2009 WL 2215006 (2009). The FTC appealed, but the court of appeals upheld the finding, based on the standard of review. See *FTC v. Lundbeck, Inc.*, 650 F.3d 1236 (1211).

price concessions, although the court did not elaborate on why formulary competition would not work in this market.

Although the eight physicians testified that they would not switch PDA drugs for a small price increase, in general physicians themselves seldom face direct fiscal consequences of choosing between differently priced treatments, so this is not where one would usually look for cross-elasticity based on price.¹² Rather, for hospital-based drugs, hospital pharmacy and therapeutics committees often pit suppliers of (imperfectly) substitutable drugs against one another for

simple example of linear demand with symmetric margins, symmetric diversions, and equal pre-merger prices and volumes, makes the basic point:¹⁶

$$\% \Delta P = \frac{MD}{2(1 - D)} \quad \text{where} \quad M = \frac{(p - c)}{p} \quad \text{and} \quad D_{ij} = \frac{e_{ji}}{e_i}$$

The FTC's Bureau of Economics held a conference on the Economics of Drip Pricing on May 21, 2012.²¹ The purpose of the conference was to improve the understanding of the use of drip pricing in the marketplace and to evaluate policy issues. The conference brought together economists and marketing academics to address the following questions: Why do firms engage in drip pricing? Where does drip pricing occur? How does it affect the way that consumers search for products and services? When is drip pricing harmful? Can competition prevent firms from harming consumers through drip pricing? Are there efficiency justifications for the practice? Can consumer experience or firm reputation limit harm from drip pricing? What types of policies would lead to more transparent prices and improved consumer decision making?

Drip pricing bridges consumer protection and antitrust economics. Since the practice can be deceptive, it is in the bailiwick of consumer protection. However, an understanding of its effect on consumers requires models of competition and markets, which are in the domain of antitrust economics. To cover the wide range of topics relevant to drip pricing, the conference hosted speakers with expertise in several areas, including search theory, aftermarket, behavioral economics, and consumer behavior.

Firms use drip pricing for different reasons, and a variety of factors influence its effect on consumers and firms. One motivation for using drip pricing is to deceive consumers about a product's price by advertising only part of the price. This is what concerns regulators such as the FTC.

However, there are other reasons that firms use drip pricing that are not necessarily harmful and may even be efficient. One common use of drip pricing is to tailor product offerings to heterogeneous consumers. Commonly referred to as a la carte pricing, this practice allows firms to sell a stripped-down version of the product and offer add-ons to consumers who are willing to

²¹ The conference agenda, presentation slides, and transcript are available at the conference website:

<http://www.ftc.gov/be/workshops/drippricing/index.shtml>

pay for them. A la carte pricing can increase demand by providing marginal consumers with a basic product at a lower price than if non-essential features were bundled with the product. For example, some airline passengers want a snack during the flight, but others do not. This meets the definition of drip pricing because the prices of the optional add-ons are not listed with the advertised price of the basic product. A la carte pricing is more complex than purely deceptive drip pricing. Some consumers are initially surprised by the add-on fees, but for products that are frequently purchased, consumers learn when firms use a la carte pricing and check the fee schedules before deciding what to buy.

Partitioned pricing, which has been studied by consumer behavior researchers in marketing, is the practice of separating a product's price into two or more components. Because partitioned pricing is so similar to drip pricing, it may be difficult to distinguish from drip pricing in the marketplace. Consumer behavior studies have shown that partitioned pricing causes consumers systematically to underestimate the total price of the product, even when all of the components are disclosed up-front. Empirically, the effects of deceptive drip pricing and partitioned pricing are the same: For a given total price, both practices increase the demand for a product. However, partitioned pricing need not rely on deception to make consumers believe that the total price is lower than it is.

A variety of factors can affect the extent to which drip pricing is harmful. First, drip pricing may complicate the way consumers search for products. When firms do not advertise their prices, consumers must engage in costly search to learn prices. Diamond (1971) shows that the existence of consumer search costs allows sellers to charge the monopoly price, even when there is free entry into the market. This phenomenon is known as the Diamond paradox. One important question is whether drip pricing, by hiding part of a product's price, will result in the Diamond paradox.

Second, competition complicates the analysis of drip pricing. When firms compete to attract consumers with a low base price, they may pass through some or all of the profits from the high-margin add-ons, reducing or eliminating the harm from drip pricing. Furthermore, under certain conditions, competing firms may be able to attract consumers who do not like drip pricing by

making prices transparent. These issues have been explored in the literature on aftermarket pricing. We need to understand how competition works in drip pricing markets to understand when the practice is harmful and when it is benign.

Finally, consumer learning plays an important role in the ability of a firm to mislead consumers through drip pricing. It is hard

Michael Baye (Indiana University) considered what three classes of “off-the-shelf” theory models -- search, clearinghouse, and cheap talk/persuasion -- say about drip pricing. It may be tempting to assume that drip pricing raises search costs, and therefore increases price dispersion and/or prices. However, this logic could be wrong because equilibrium effects often differ from partial equilibrium effects that are derived from examining behavior of only one side of the market. It is necessary to use a more complete equilibrium approach because drip pricing can affect the incentives of consumers, retailers, and platforms. Baye finds that drip pricing may be benign, beneficial, or harmful, depending on the environment.

Baye pointed out that drip pricing does not increase equilibrium prices

have high switching costs. This shifts rents from consumers to the firm and may cause inefficiencies in consumption. While pass-through can eliminate the rent shifting, some inefficiencies may remain if too many consumers buy the primary product because of its low

3.2 Empirical Analysis of Drip Pricing

Vicki Morwitz (New York University) described two experimental studies that she conducted with Shelle Santana to investigate how consumers react to drip and partitioned pricing in rental cars and air travel. In the air travel experiment, subjects chose between Spirit and Delta airlines for a hypothetical weekend trip. Delta's advertised fares included mandatory fees as well as fees for some features that were optional on Spirit, such as bringing a carry-on and reserving a seat. The scenarios varied according to the treatment of Spirit airlines: whether mandatory fees were included in the advertised fare and whether fees for options were provided before or after the airline choice. In the rental car experiment, the subjects decide

theory predicts that the margins on the different components of the negotiation will be negatively correlated. Alternatively, the “double jeopardy” theory posits that some buyers are better at negotiating than others, and that negotiating ability will be reflected in the margins of each of the components. This hypothesis predicts that the margins on the different components will be positively correlated.

Using a matched sample, the study computed the correlation between the car margins and, respectively, trade-in margins and financing margins. The results show that the car margins are negatively correlated with trade-in margins, but are positively correlated with financing margins. The negative correlation between car margins and trade-in margins is consistent with the pass-through that can occur with drip pricing. Under this interpretation, the dealer figures out when it is important for a buyer to get a good deal on one component of the transaction, and negotiates a larger margin on other components to make up for it. The positive correlation between the financing margin and car margin could mean that buyers who are poor negotiators do not know they can negotiate financing, but buyers who are good negotiators obtain outside offers for credit before starting the negotiation with the dealer. It could also mean that the consumers who are poor negotiators are less likely to negotiate later in the transaction.

Sara Ellison (Massachusetts Institute of Technology) described research that explored how add-on pricing strategies affect demand and competition (Ellison and Ellison, 2009). The study was based on an Internet market – memory modules – in which firms advertised through a specific price search engine: Pricewatch. Price search engines provide a cheap and easy way for consumers to learn the prices of competing products. Typically a firm that advertises through a price search engine will list the price of its lowest-quality, lowest-priced product and then offer upgrades to consumers who click through to the firm’s website. The study classified the product offerings into low, medium, and high quality depending on the add-on features that were sold with the product.

The results showed that the low-quality products had own price elasticities of demand ranging from -33.1 to -17.4 and accounted for a large percentage of the total quantity sold.²² This shows that the low search costs from using a price search engine can result in aggressive price competition. Another important result is that charging a low price for the low-quality product increased the demand for the higher-quality products. This shows that advertising a low base price attracts customers who then switch up to a more expensive, higher margin product. This form of drip pricing is effectively a bait-and-switch strategy. Ellison concluded by saying that the Internet facilitates price search, but can also facilitate sales strategies that frustrate price search, like add-on pricing.

Amelia Fletcher (OFT), in her keynote presentation, discussed an experimental study of drip pricing that was conducted by Steffan Huck and Brian Wallace (Huck and Wallace, 2010) for the OFT's (2010) report: *Advertising of Prices*. The study compares subjects' shopping behavior in a drip pricing scenario and a baseline scenario. In the baseline treatment, the firm reveals the total price as soon as a subject enters the virtual store. In the drip pricing treatment, the subject sees only the base price upon entering the store and learns about two separate drips (mandatory postage and shipping fees) after the purchase transaction is underway. In each treatment, the subject has two stores to choose from and incurs a cost of visiting a store. The results show that when confronted with drip pricing, subjects are more likely to engage in too little search than under the baseline treatment.

The results can be explained by the behavioral constructs of anchoring, the endowment effect, and loss aversion. Consumers may anchor, or focus, on the base price and adjust incompletely when the additional charges are revealed. The endowment effect can cause consumers to feel as if they own the good as soon as they initiate the buying transaction. At this point, the prospect of not buying it is perceived as a loss, and loss aversion could induce the consumer to go through with the purchase, even if he would not have purchased it had he known the total price up front.

²² For the 128MB PC100 module, the low-quality product accounted for about 75 percent of total quantity sold (Table 1).

interventions would affect the use of drip pricing and consumer harm from it. Laibson recommended conducting many small-scale studies, market by market, to develop a body of empirical knowledge and implementing on a wider scale the pilot studies that proved effective. Zinman advanced the idea that empirical analyses could be used to identify actions that could destabilize shrouded equilibria, such as consumer education or reducing switching costs.

Some participants raised concerns about this empirical approach to understanding and regulating drip pricing. Michael Waldman said it would be more practical to rely on theory to guide policy because the practice is so common that one would have to study thousands of markets. Michael Baye argued that drip pricing disclosures would make firms less nimble in their response to changes in the business environment and lead to stickiness in prices. This would be particularly problematic in stores that sell thousands of products or in situations where different customers face different add-on prices. In addition, mandating more complex or complete up front disclosure of prices may confuse consumers rather than foster competition, as was the case with federal mortgage disclosures (Lacko and Pappalardo, 2007). Baye added that voluntary disclosure may mitigate the harm and inefficiencies from drip pricing. For example, firms on the Internet have come up with better ways to provide information to consumers, such as price comparison sites that display shipping charges and taxes along with the product price.

Several participants advised policy makers to be cautious in their approach to a la carte pricing. Florian Zettelmeyer noted that in some industries the ability to configure products is an enormous benefit. Forcing manufacturers to offer fewer option packages would reduce the choices that are available to consumers. If policy makers start regulating product offerings and how prices are advertised, firms will devise ways to get around the regulations. Increases in flexible manufacturing are only going to increase the options that manufacturers offer and this will raise the complexity of pricing. Michael Waldman cautioned that it would be complicated and confusing to reveal so many add-on prices to consumers. Sara Ellison argued that it would be difficult even to articulate a policy of transparency for add-on pricing. Would a pizza restaurant be required to announce that the average customer buys pepperoni and mushroom and use that as the basis of the quoted price? However, Vicki Morwitz pointed out that if a very large

percentage of customers – say, 95 percent – purchase a product feature, there is a question about whether the feature is really optional.

Michael Salinger advised policy makers to focus on situations when drip pricing is deceptive and avoid pursuing situations in which price discrimination is the motive for drip pricing. Michael Baye pointed out that price discrimination through drip pricing helps high fixed cost companies like airlines cover their average variable costs. Sara Ellison said that the use of add-on pricing on the Internet provides a way for firms to escape the extremely high price elasticities that have accompanied the large reductions in the cost of search on the Internet. However, David Laibson, while not objecting to price discrimination generally, argued that consumers with low financial literacy, low education, and low income tend to be disproportionately harmed by drip pricing.

Michael Salinger raised the question of whether the regulation of drip pricing could facilitate collusion. Some multidimensional products and services are complex, and it is hard for consumers to compare the pricing of competing alternatives. Requiring companies to price their products and services in a way that makes them easily comparable to consumers could also make it easier for companies to collude on price.

Vicki Morwitz and Rebecca Hamilton discussed partitioned pricing and how it differs from drip pricing. Morwitz said that with partitioned pricing, there can be full disclosure of the components of a price, but the firm does not list the total price of the product. However, even when all the components of the price are disclosed, consumers tend to underestimate the price in certain situations and can make mistakes. For example, they might assume that mandatory surcharges are the same across competitors – even when they are not – and just compare the base prices. Hamilton added that partitioned pricing studies found that consumers are differentially price sensitive to the various components of the price and are more sensitive to shipping charges than the price of the product. Partitioned pricing can even make consumers feel better off by increasing the salience of a product feature that provides a large benefit.

The conference advanced our understanding of drip pricing, yet we did not find definitive answers to the questions that motivated the conference. Firms use drip pricing for a variety of

reasons, and the practice can be harmful, benign, or efficient. Importantly, the participants identified a number of factors that influence the potential harm from drip pricing and therefore serve as targeting criteria for regulations and enforcement actions. One key recommendation is to conduct empirical studies to identify disclosures that will reduce harm from drip pricing and interventions that can induce firms to use transparent pricing.

4 Conclusion

Evaluating the likely effects of mergers is one of the primary functions of the FTC. Our work on mergers in the pharmaceutical area this year has been more interesting than most. One merger, in the PBM industry that might have appeared to be anticompetitive was found, upon closer examination, to pose fewer problems than we thought. A pharmaceutical merger raised interesting factual and analytical questions regarding possibilities for therapeutic substitution by physicians and hospitals. On the consumer protection front, our examination of drip pricing might allow us to gauge better the circumstances under which that pricing practice could have deleterious effects for consumers and allow better focused enforcement against deception and unfair practices.

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