

# Divestiture as Conglomerate Merger Remedy, with Case Study of 2005 P&G-Gillette Merger \*

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## Abstract

This paper closely follows a merger and divestiture in the deodorant market to document the efficacy of divestiture as a structural merger remedy. The divestiture has eliminated almost all increase in market share that would otherwise result in the merger. However, market concentration has increased to new levels, unseen before the merger, just three years after the transaction. On the one hand, the buyer of divested brands competes weakly; on the other hand, the two leading manufacturers compete aggressively with new brand positioning, new product introduction, and heavy advertising. The data shows that their aggressive competitive behavior has resulted in increased market shares. It is possible that the new competition intensity is partially due to the divestiture. This paper sheds light on the difference between the *outcome* of competition (market shares and concentration) versus the *substance* of competitive behavior (pricing, product positioning, advertising), and that any structural merger remedy, by definition, addresses only the former, not the latter.

**JEL classification:** D12; L11; L13; L41

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\*I thank seminar participants at the NZAE and APIOC 2016 conferences. All errors are my own.

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# 1 Introduction

Divestiture of assets is one of the most commonly used structural merger remedies. When two conglomerates have business in overlapping product categories, a merger between them would result in a horizontal merger in these overlapping categories, thus an increase in market power. Divestiture of assets from one of the merging parties to a third company with no existing business in the market should eliminate the increase in market shares of the merging parties. However, this does not necessarily lead to no change in market power or competitive landscape in the market. In one extreme, the buyer might fail in the business and exit; in another extreme, the buyer might be selected by the merging parties as a future collusion partner. In addition, any number of external factors might influence this market to render the merger harmless or the divestiture ineffectual. There are very few systematic studies on the effects of divestitures as a merger remedy and their ability to return competition to pre-merger levels, partly due to their idiosyncratic nature. The Federal Trade Commission (FTC) released its first merger remedy study in 1999; recently in January 2017 it has released a second round of results.<sup>1</sup> This paper aims to complement this study by looking into one particular merger and divestiture in detail, to document firms' competitive behavior and market outcome post-transaction.

The FTC clears the merger between P&G and the Gillette Company in October 2005, with the condition for P&G to divest business in overlapping categories. These include battery-powered toothbrushes and teeth whitening products. Also, since they both have a best-selling men's deodorant brand in their portfolio (Old Spice and Right Guard, respectively), the FTC requires P&G to divest the Right Guard brand. P&G is allowed to keep the Gillette brand of deodorants because of marketing synergies with the Gillette brand of shaving razors, which P&G is allowed to keep because it has no prior presence in the razors category. In addition, P&G also voluntarily divested two smaller women's deodorant brands, Dry Idea and Soft & Dri, both formerly belonging to Gillette Co. Divestiture of these three deodorant brands is completed in February 2006, with all three brands sold to Henkel Dial. The buyer has no existing presence in the deodorant market but has substantial experience in other personal care categories, such as soap and body wash.

Data shows that while the divestiture of three deodorant brands has almost eliminated all increase in market share on the merging parties, the competitive behavior of firms, in particular

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<sup>1</sup><https://www.ftc.gov/policy/studies/remedy-study>

the two leading manufacturers in deodorants, P&G and Unilever, has changed soon after the transaction. Within three years, measures of market concentration has increased to new high levels never seen before the merger. P&G and Unilever have both raised the price points of their deodorant brands, introduced expensive clinical strength products, and spent heavily on advertising. These observed behavior match the narrative of brand re-positioning. Their increased market shares suggest their success. The buyer of the divested brands is observed to compete more weakly than the original owner, which might have enabled this competition intensity.

## 2 Literature

There are not many empirical merger retrospective studies. This is often due to the non-availability of post-merger data: if industry data is not publicly available, merging firms have no obligation to release information to the antitrust authorities after the merger. Notable studies include Breen (2004) on rail, Peters (2006) on airlines, and Farrell, Pautler, and Vita (2009) on hospitals.

There are even fewer empirical studies on merger remedies. Here I mention three recent studies most similar to the approach in this paper. Tenn and Yun (2011) investigates six divested brands from Johnson & Johnson's acquisition of Pfizer's consumer health division in 2006. They find that three brands show similar pre- and post-divestiture performance, while the other three remaining brands experience changes that do not appear to be related to the divestiture. They conclude that divestitures maintain the pre-merger level of competition. Soetevent, Haan, and Heijnen (2014) compares the redistribution of tenancy rights of highway gasoline stations through annual auctions organized by the government versus obligated divestitures. They find that auctions alone do not lead to much change in retail price, since the incumbent owner is allowed to bid and often wins. However, when auctions are combined with an obligation to divest, prices decrease by 1.3-2.3% on average. Friberg and Romahn (2015) looks at the Carlsberg-Pripps merger Swedish beer market. Following the market for almost two years after the merger, they find that divestitures have cut the price increase from the merger in half for the entire beer market.

### 3 Data and Analysis

Data on prices, quantity sold, and product characteristics come from the IRI Academic Data Set, documented by Bronnenberg, Kruger, and Mela (2008). This dataset contains weekly store data in years 2001-2011, including both grocery stores and convenience stores. The dataset contains the complete list of stores under that chain whenever a store chain is sampled. The resultant sample of stores cover 47 geographic markets in the U.S. Within each sampled store, the entire list of consumer products under the 30 defined categories is recorded. One of these categories is deodorants; other categories include food (e.g. beer, carbonated beverage, coffee), personal care (e.g. razors, shampoo, toothbrush), and household (e.g. laundry detergent, paper towel, toilet tissue). Each product is defined by its unique UPC (universal product code) and observed at weekly frequency in each store. Each week-store-UPC observation contains the number of units sold, total revenue in dollars, and some information on store feature and display. In addition, there are some textual description and category-specific characteristics for each product. In this paper, I use all deodorant UPC's from all grocery stores, across all available 11 years. I have also aggregated all variables from weekly to monthly frequency, to smooth out some of the prices and quantity shocks due to the weekly supermarket discount cycles.

Advertising data comes from the *Ad \$ Summary* reports published annually by TNS Media Intelligence (until 2008) and Kantar Media (starting 2009). These reports contain yearly advertising spending by product line and media outlet, which includes print, television, and radio, but not the internet. A deodorant “product line” (e.g. “Secret Clinical Strength solid”) is an aggregation of UPC's of different sizes and scents, under the same brand (“Secret”), line (“Clinical Strength”), and form (“solid”). The vast majority of deodorant advertising expenditure is spent on television, followed by magazines.

#### 3.1 Industry concentration

The deodorant industry is characterized by about two dozens of best-selling brands, and a long tail of much smaller brands. I focus on the former in my all my subsequent discussion, with the latter accounting for 5% or less of total ounce sold or gross revenue. Leading personal care product manufacturers, such as P&G, Gillette Co., and Unilever, own multiple best-selling brands. Other major manufacturers include Adidas Group, Church Dwight, Carter Wallace, Colgate-Palmolive, Helen of Troy, Kao Corp., Revlon, and Henkel Dial (after divestiture). I be-

gin my industry analysis on the parent company level. In the first half of the decade, before the P&G-Gillette merger in late 2005, the four leading manufacturers of deodorants are (in descending order) P&G, Gillette Co., Colgate-Palmolive, and Unilever. Their combined market share sums to about 80%, calculated in terms of either total ounce sold or total gross revenue. The Herfindahl-Hirschman Index (HHI) calculated with the market shares of the major manufacturers above, ignoring market shares of the long tail of much smaller brands, is around 1800, which is usually considered as “moderately concentrated”. Figure 1 shows the 4-firm concentration ratio and HHI from 2001 to 2011.

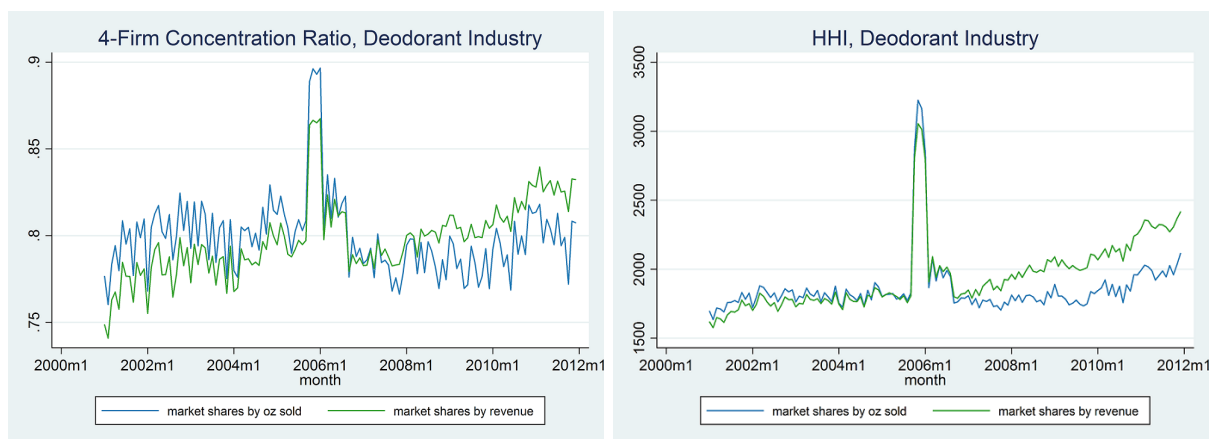


Figure 1: HHI and 4-firm concentration ratio of the deodorant industry

The spikes in figure 1 around the beginning of 2006 are caused by the P&G-Gillette merger and subsequent divestiture. The FTC clears the merger in October 2005 (left edge of the spikes), and divestitures to Henkel Dial are complete in February 2006 (right edge of the spikes), giving the spikes on the graphs a duration of four months. Recall that P&G has divested all of Gillette Co.’s deodorant brands, with the exception of the Gillette brand, which is then ranked close to the bottom of men’s top-10 brands. In other words, P&G, the biggest manufacturer in the deodorant industry, does gain one additional brand after the merger and divestiture, albeit a smaller brand. This is reflected in figure 1: the end of the spikes sees the 4-firm concentration ratio and HHI returning to *almost* their pre-spike levels, but not exactly. Comparing 2006Q2 against 2005Q3, the HHI has increased from about 1800 to 1950, and the 4-firm concentration ratio has increased from about 0.80 to 0.82. (These graphs show another visible drop after the divestiture, in September 2006. This drop is due to an unrelated divestiture by P&G of the Sure brand of women’s deodorants. The buyer was the private company Innovative Brands. The

Sure brand ranks around 5th among women’s brands in terms of ounce sold or gross revenue in 2006.)

The second half of this decade sees both the 4-firm concentration ratio and HHI increasing, such that both surpass levels prior to merger. These increases are particularly significant when measured using gross revenue (as opposed to ounce sold). This divergence between gross revenue and ounce sold is due to two changes in the industry: the price-repositioning of existing product lines and the introduction of clinical strength product lines. They are practiced by both P&G and Unilever. I will present these changes in detail in subsequent sections and brand-level dynamics.

At the very least, the deodorant industry in this decade is one example showing that, even if a divestiture remedy returns market concentration measures (such as the 4-firm concentration ratio and HHI) to pre-merger levels, there is no guarantee that the competitive landscape in the market or industry will remain unchanged, even within a short foreseeable future of, say, five years. These measures of market concentration, commonly used in merger analysis, are reflections on the *outcomes* of the competitive process, not of competition itself. Competition between firms can be observed more directly in their prices, product characteristics, introduction of new product lines, and advertising behavior. Firms’ competitive behavior can change rapidly, as we see happening in major deodorant brands that I detail below. This raises the question of the degree to which the antitrust agency should take potential changes in firm behavior into account when contemplating a merger proposal or remedy. In the FTC’s 2017 study on merger remedies, a merger remedy is considered a “success” if “competition in the relevant market remained at its pre-merger level or returned to that level within a short time (two to three years)”.<sup>2</sup> In this deodorant case, divestitures are complete within four months after merger approval, and some observable aspects of firm behavior, such as pricing, are comparable to pre-merger levels. However, the competitive behavior of major manufacturers do change quickly after the divestitures. Within three years, in 2009, both P&G and Unilever have repositioned the prices of their brands and introduced clinical strength products; data shows that these competitive behavior has resulted in a further increase of their market shares and industry concentration. This deodorant case might illustrate the need for antitrust agencies to consider

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<sup>2</sup>[https://www.ftc.gov/system/files/documents/reports/ftcs-merger-remedies-2006-2012-report-bureaus-competition-economics/p143100\\_ftc\\_merger\\_remedies\\_2006-2012.pdf](https://www.ftc.gov/system/files/documents/reports/ftcs-merger-remedies-2006-2012-report-bureaus-competition-economics/p143100_ftc_merger_remedies_2006-2012.pdf), page 15.

potential changes in firm competitive behavior when analyzing merger proposal or remedy.

### 3.2 Brand-level comparison



Figure 2: Brand-level average price per ounce and aggregated ounce sold, by gender

We now explore changes in pricing and quantity sold at the brand-level. All prices are nominal and normalized by product weight, and the brand-level price-per-ounce is the average weighted by total ounce sold in each UPC.<sup>3</sup> All quantities are expressed in terms of total ounce sold, instead of units sold. This is because a brand often contains different product lines at different price points, and within them products of different weights. Figure 2 shows the brand-level price per ounce and total ounce sold for each major deodorant brand, separated into men's

<sup>3</sup>I also have a version of these graphs where price-per-ounce is further normalized by the CPI, available upon request. Normalization by the CPI does not change these graphs much, since inflation in this decade is quite low and stable.

and women’s markets.<sup>4</sup> The price-per-ounce graphs show that there is a range of different price points between brands. Low-end brands average about \$0.70 per ounce, while high-end brands can exceed \$1.50 per ounce. While the nominal price-per-ounce for some brands are surprisingly flat and stable throughout the decade, a few brands are observed to raise its price point in the second half of the decade. Secret and Gillette (both under P&G) both start to raise in 2007, and stabilize around 2009. Secret’s average price-per-ounce has increased by about \$0.40 (a roughly 33% increase, from \$1.20), and Gillette’s average has increased by about \$0.50 (a roughly 50% increase, from \$0.95). Degree and Dove (both under Unilever) in the women’s market also have a price increase of similar magnitude, starting earlier in the beginning of 2006. As a result, these brands have risen from the middle of the pack in the beginning of the decade, to being the most expensive mid-range brands by the end of the decade. I will dig into the details of these price changes in the following section.

Not all quantities fall as a response to these price increases. Secret is still the number one women’s brand and there is little change to its quantity sold from 2007 to 2009. The same is true for Dove in the women’s market: from the beginning of 2006 to the end of 2008, its average price increased by almost 50%, yet there is not much observable decrease in its total ounce sold, and it remains the number two brand in the women’s market. (It is curious to note that Dove’s quantity sold does start to fall in 2009, when its price has already stabilized at its new high level.) The Gillette brand does show some decline in total ounce sold from 2007 to 2009. However, it raises again in 2010 and 2011 to 2007 levels. Lastly, for the Degree brand, although it is difficult to compare its total ounce sold in 2008 vs. 2006-07 (because of its new gender-specific products in 2008), we can focus on its dynamics in the two years, 2006 and 2007, alone. Its average price-per-ounce has increased by about \$0.20, and its total ounce sold has also increased mildly.

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<sup>4</sup>The Degree brand was unisex prior to 2008. Since it would be arbitrary guesswork if I were to separate its products by gender, I have included *all* its products in *both* the men’s and women’s graphs in years 2001-2007. This is the reason why, on the two “total ounce sold” graphs, the two lines for the Degree brand are identical prior to 2008. In 2008, the brand changed marketing strategy and introduced gender-specific products and advertising. This is the reason why these two lines for the Degree brand’s total ounce sold show an obvious drop from December 2007 to January 2008: because starting 2008, only women’s products appear in the women’s graphs, and only men’s products appear in the men’s graphs. I assign the “Degree Men” product line to the men’s market and all other Degree product lines to the women’s market.



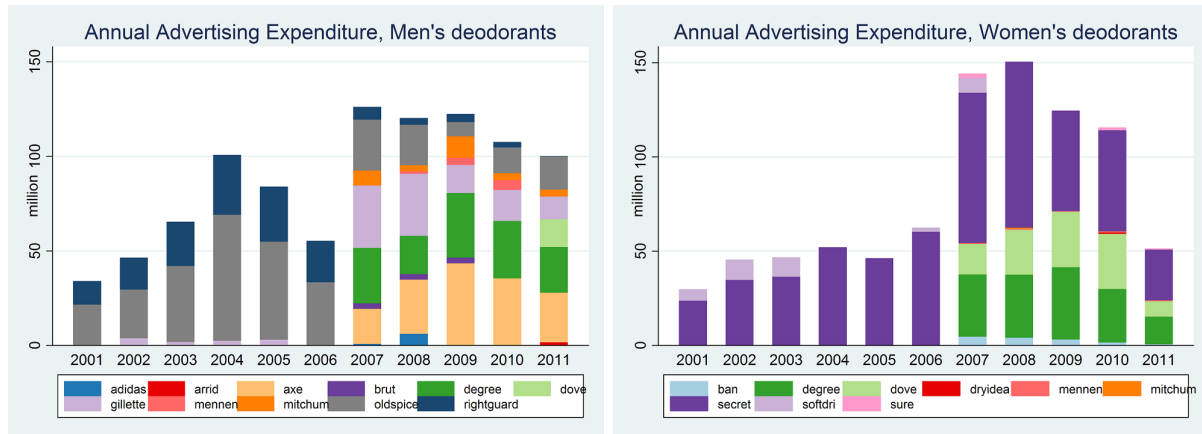


Figure 3: Brand-level annual total advertising expenditure, by gender (see footnote 5)

These graphs are not to suggest that consumers of deodorants defy the law of demand! Many factors can shift the market equilibrium, and one important demand shifter for consumer products is advertising expenditure. Figure 3 shows the brand-level annual total advertising expenditure by gender.<sup>5</sup> One sees that P&G has greatly boosted advertising on the Gillette brand starting 2007. It is in stark contrast to the minimal advertising Gillette Co. had spent on the brand in the first half of the decade. P&G has also increased advertising on its Secret brand in 2007 and 2008. In fact, Secret is the most heavily advertised deodorant brand in the second half of the decade. The advertising evidence supports the idea of deliberate product re-positioning by P&G. We also observe that P&G has cut back on advertising its leading Old Spice brand. However, Old Spice's total ounce sold has *not* dropped. In fact, figure 2 shows that it has risen to be the number one best-selling men's brand since 2006.

This is also a fitting place to investigate whether the buyer of the divested brands have continued the competitive behavior of the prior owner. Henkel Dial purchases Right Guard, Dry Idea, and Soft & Dri from the merged firm in February 2006. It has not changed these brands' price points much in the first three years. However, it has cut advertising on Right Guard significantly since 2007. This is surely an important factor to Right Guard's fall from

<sup>5</sup>Unfortunately the author currently has limited access to this data in years 2001-2006. She has full access to data in 2007-2011; but for 2001-2006, she only has access to these brands: Old Spice, Right Guard, Gillette, Secret, Dry Idea, and Soft & Dri. Thus, the absence of other brands in years 2001-2006 in figure 3 does *not* imply that these other brands have zero advertising expenditure in 2001-2006. The author is working on remedying this important limitation.

the leading position in men’s brands starting 2006. Dry Idea and Soft & Dri are not advertised much by Gillette Co., and this continues to be the case with Henkel Dial.

### 3.3 Products in detail

In this section, I detail the strategies each brand has used to raise its overall average price-per-ounce. These strategies include product line overhaul and discontinuation of large sizes. Another important industry trend emerging in 2007 is the introduction of clinical strength products. I focus on the three brands that show the most unambiguous price re-positioning and their most important product forms: Gillette (solid and gel); Secret (solid and gel); Dove (solid).<sup>6</sup> Figures 4 to 6 show more disaggregated prices: each line is the average price-per-ounce for a product-line and size combination. Thus, comparison between lines show two sources of variation in price-per-ounce: different product lines (“classic” vs. “premium” lines), and different sizes (within the same product line, larger sizes are usually cheaper per ounce, while small travel sizes are the most expensive per ounce). Dashed parts of lines (as opposed to solid lines) indicate very low sales, which usually occurs when a product is being discontinued. When sales are low, the average prices are often found to be erratic, thus the dashed parts of the lines are best ignored.

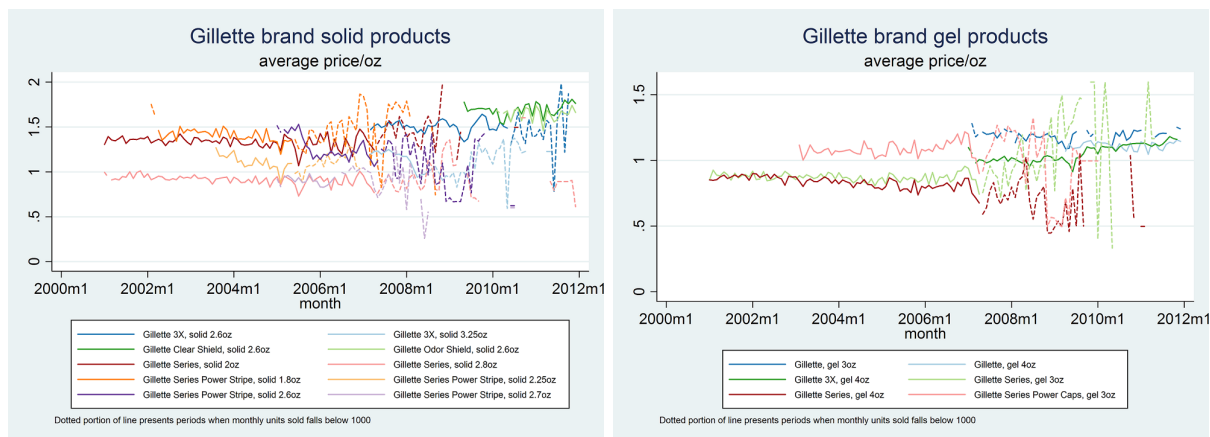


Figure 4: Prices of Gillette by product line and size, solid and gel forms

Figure 4 shows the prices of Gillette by product line and sizes, in solid and gel forms.<sup>7</sup> It

<sup>6</sup>Similar graphs for other brands, or other product forms, are available upon request. Total ounce sold for these brands and product forms are also available upon request. These graphs are not included in this paper for brevity.

<sup>7</sup>In all graphs in this section, *not* all existing product lines and sizes are show. The graphs would be overcrowded

clearly tells the story of product line overhaul. In early 2007, all “Gillette Series” products are discontinued, to be replaced by more expensive “Gillette 3X” products. In early 2009, “Gillette 3X” is in turn discontinued and replaced by yet more expensive new product lines. These comparisons are robust even after holding product size constant. One can consider the most common size for solid form (2.6oz) and gel form (4oz). One should also note that the Gillette brand introduced its clinical strength product (in solid form) in mid-2007, priced around \$4.50 per ounce. It is the best-selling men’s clinical strength product (all in solid form), and accounts for about one third of Gillette brand’s total ounce solid in solid form. Together, they explain Gillette’s drastic increase in overall price-per-ounce in figure 2.

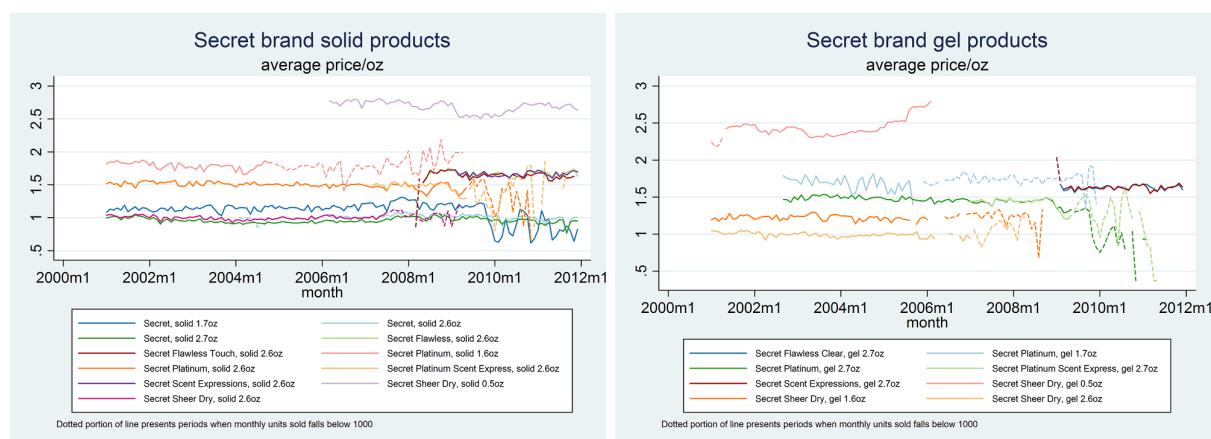


Figure 5: Prices of Secret by product line and size, solid and gel forms

Figure 5 shows the prices of Secret by product line and sizes, in solid and gel forms. It tells a similar story of product line replacements, although the discontinuations and introductions are less distinct. Among Secret’s solid products, new product lines are introduced in early 2008 and early 2009, and all these introductions are more expensive per ounce than existing product lines. Cheaper product lines are discontinued in 2007 and 2009. Secret’s gel products again tell a clear story of price increase through product overhaul. In addition, similar to Gillette, Secret introduces its clinical strength product in early 2007, priced around \$5.0 per ounce. It is first women’s deodorant brand to introduce clinical strength products, and remains the best-selling one in all following years.

Figure 6 shows the prices of Secret by product line and sizes, in solid form. Unlike Gillette, if this were the case. Instead, the author has hand-picked the best-selling and, thus, most important product lines and sizes in the dataset.

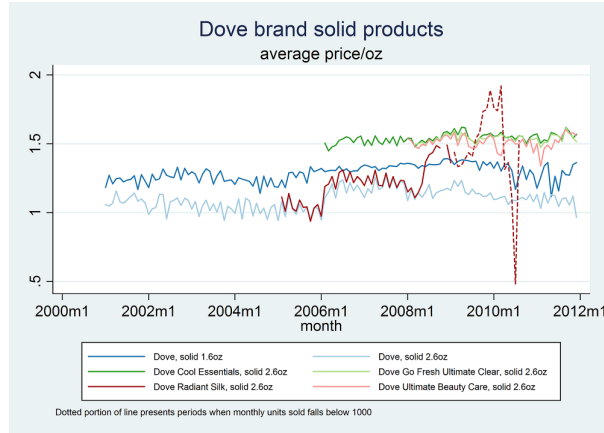


Figure 6: Prices of Dove by product line and size, solid form

Dove has not increased overall price by pure product overhaul. In early 2006, it increases the prices of two existing product lines, and at the same time introduces a more expensive new product line. The same is true in early 2008: it increases the price of an existing product line, and at the same time introduces two more expensive new product lines. All products involved have the same size (2.6 oz).

## 4 Conclusion

Factors both internal and external to the divestiture have contributed to the increase in market concentration just three years after the transaction. On the one hand, the buyer of the three divested brands, Henkel Dial, is observed to compete quite weakly relative to the original owner. Henkel Dial has slashed advertising spending and, as a result, all three of its brands have lost market share. On the other hand, the two leading manufacturers post-transaction, P&G and Unilever, have started to re-position their brands towards the high-end of the market almost immediately, spent heavily in advertising, and been the industry leader in new, expensive clinical strength products. The increase in their market shares is an indication of their success. It is difficult to estimate, purely with data, on how much P&G and Unilever's change in behavior and subsequent success are due to the merger, divestiture, and the identity of the buyer. At the very least, this paper hopes to open the readers' eyes on how quickly firm competitive behavior can change. Although a divestiture might be able to restore pre-merger market shares, these are just *outcomes* of the competitive process; should the substance of competition changes (such

as prices, product characteristics, and advertising behavior), the outcomes of competition will surely change as well. In this case, competition between the two new industry leaders have intensified, partially due to the divestiture.

## References

- BREEN, D. A. (2004): “The Union Pacific/Southern Pacific Rail Merger: A Retrospective on Merger Benefits,” *Review of Network Economics*, 3(3).
- BRONNENBERG, B. J., M. W. KRUGER, AND C. F. MELA (2008): “Database Paper—The IRI Marketing Data Set,” *Marketing Science*, 27(4), 745–748.
- FARRELL, J., P. A. PAUTLER, AND M. G. VITA (2009): “Economics at the FTC: Retrospective Merger Analysis with a Focus on Hospitals,” *Review of Industrial Organization*, 35(4), 369–385.
- FRIBERG, R., AND A. ROMAHN (2015): “Divestiture Requirements as a Tool for Competition Policy: A Case from the Swedish Beer Market,” *International Journal of Industrial Organization*, 42, 1–18.
- NAIN, A., AND Y. QIAN (2016): “The Role of Divestitures in Horizontal Mergers: Evidence from Product and Stock Markets,” *Working Paper*.
- PETERS, C. (2006): “Evaluating the Performance of Merger Simulation: Evidence from the US Airline Industry,” *Journal of Law and Economics*, 49(2), 627.
- SOETEVEENT, A. R., M. A. HAAN, AND P. HEIJNEN (2014): “Do Auctions and Forced Divestitures Increase Competition? Evidence for Retail Gasoline Markets,” *The Journal of Industrial Economics*, 62(3), 467–502.
- TENN, S., AND J. M. YUN (2011): “The Success of Divestitures in Merger Enforcement: Evidence from the J&J–Pfizer Transaction,” *International Journal of Industrial Organization*, 29(2), 273–282.