

**Research Project:**  
The Impact of Upstream Divestiture on Bargaining  
Power

LEAR - Young Talent Competition

Yann Delaprez \*

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\*Department of Economics, European University Institute, [yann.delaprez@eui.eu](mailto:yann.delaprez@eui.eu)

# 1 Project Description

Merger policies have large consequences on economic welfare. In theory, mergers can have both pro-competitive and anti-competitive effects. A merger can lead to efficiency gains possibly leading to lower final prices paid by consumers. Yet, a merger might also have a higher ability to raise final prices thereby affecting consumers negatively. The empirical evidences available in the economic literature suggest that various mergers caused higher prices paid by consumers (Kwoka (2014)) thereby leading some authors to argue that most merger reviews were likely too lax (e.g. Eeckhout (2021) or Kwoka and Valletti (2020)).

The main approach used by antitrust authorities to limit the negative consequences of a merger on consumer welfare is to request the implementation of remedies. Researchers and practitioners often argue that structural remedies such as divestiture are the most effective policy instruments to mitigate the negative effects of mergers on consumer welfare.<sup>1</sup>

**LITERATURE** Nonetheless, merger remedy policies (including divestiture) are highly debated and the information available in the economic literature are limited as pointed by Asker and Nocke (2021): "*In light of their prevalence, it is surprising how little is known – theoretically and empirically – about merger remedies*".

One of the early exception is Friberg and Romahn (2015). The authors study a merger with divestiture in the Swedish beer market. They find that the divestiture mitigated the anti-competitive of the merger. Moreover, they find that the price of the divested product falls and prices of products initially owned by the buyer of the divested brand raise. These results can be rationalised by the traditional effect of a divestiture on markup in a standard merger simulation model. The buyer of the divested brand being relatively smaller than the merger, absent efficiency gains, the buyer of the divested has a more limited ability to raise prices due to a relatively smaller product portfolio compared to the merged entity. By contrast, the products already produced by the buyer can be sold at a relatively higher price as the divested brand adds a margin of diversion. Another recent contribution is Delaprez (2022). The paper studies a divestiture in the U.S. beer market in a model of price coordination. The results shows that in the presence of price coordination a merger cleared with divestiture is likely to deteriorate consumer surplus more than a merger approved without divestiture. In Friberg and Romahn (2015) and Delaprez (2022), the economic mechanisms through which divestiture affect prices are described by the traditional trade-off between markup and efficiency (Williamson (1968)). Yet, one striking feature of previous empirical works on divestiture is that the vertical market structure is ignored.

In principle, an upstream divestiture could affect prices trough a third channel that is a change in bargaining power. To the best of my knowledge, Delaprez and Guignard (2022) is

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<sup>1</sup>See. for instance, the discussion in Kwoka Jr and Waller (2021), section II, page 4.

the only paper studying an upstream divestiture in a vertical market setting. They study a large upstream merger with divestiture in the French coffee market. The authors estimate a vertical supply model in which manufacturers and retailers bargain in the upstream market and retailers compete in prices in the downstream market. They show that accounting for upstream bargaining, the standard policy recommendation corresponding to request divestiture to a small buyer might not hold. Indeed, they find that a divestiture to a small buyer with a high bargaining power would deteriorate consumer surplus more.

The main limits of [Delaprez and Guignard \(2022\)](#) can be discussed along three lines. First, the simultaneous bargaining model estimated provides somewhat restricted effects of the divestiture on bargaining power. In the model there are two sources of bargaining power. The first source of bargaining power is materialized through bargaining weights that are capturing all the factors that affect the bargaining outcome but are not explicit in the model. The second source of bargaining power is the gain from trade obtained if an agreement to sell the divested brand is reached. After a divestiture the gain from trade associated with the divested brand generally increases and the bargaining power of the manufacturer decreases. This effect goes in the same direction as the "diversion ratio effect" in standard merger simulation model. Then, it suggests that absent cost saving and change in bargaining weights, the model cannot predict more general price effects (e.g. a price increase for the divested brand) than a simple merger simulation model. Second, the choice of the divested brand and the buyer of the divested brand by the merged entity are assumed to be exogenous (or imposed by the antitrust authorities).<sup>2</sup> It is arguably unrealistic. For instance, in the merger between Procter & Gamble and Gillette cleared in the U.S. in February 2006 conditional on a divestiture, the buyer of the divested brand is selected by the merged entity. Models not allowing the merged entity to choose the divested brand and the buyer are likely to overestimate the extent to which a divestiture can remove the anti-competitive effect of a merger.

The last limitation in [Delaprez and Guignard \(2022\)](#) lies on the specific institutional details of the DEMB/Mondelez merger studied that make it difficult to use this specific case as an example of a general proposition. Indeed, the authors argue that the divestiture of Carte Noire to the buyer Lavazza led to cost savings for Lavazza. This finding is supported by the fact that the divestiture of Carte Noire to Lavazza came with in-country production facility thereby allowing Lavazza to obtain an easier access to the French market. Before the merger, Lavazza was selling its product in France but had no production facility in the country. This specificity of the divestiture package is generally not present in merger cases.

The project objective is to overcome these limitations in order to support effective merger remedies policy in vertical markets and, thus, improve consumer welfare. The project will first develop tractable models of vertical markets better suited to study divestiture. Contrary to previous studies in the literature, the model will feature richer sources of bargaining power

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<sup>2</sup>To the best of my knowledge, this assumption is made in all structural models studying divestiture. [Friberg and Romahn \(2015\)](#) is another example.

and embed an endogenous product/buyer choice model. Second, to guide antitrust authorities, the project will empirically evaluate a landmark merger cleared with a divestiture to an entrant in the U.S deodorant market to derive general policy recommendations and develop new measures that can be used easily by practitioners.

## 2 Market and Data

I will study the merger between Procter & Gamble and Gillette cleared conditional on a divestiture in February 2006 in the U.S. deodorant market as a case study. I expect to proceed in three steps: (i) I will use a theory-free approach to investigate the price effects associated with the divestiture in two product categories.<sup>3</sup> (ii) I will develop and estimate a structural model. The observed effects will be used to evaluate the relevance of the model developed and make transparent the source of variation used to identify the structural parameters. The model will be used to evaluate the welfare effects of the divestiture. (iii) Based on the model I expect to derive new measure that can be computed by practitioners to assess a divestiture.

### 2.1 The Case

In October 2005, the Department of Justice approved a merger between Procter & Gamble Company and the Gillette company.<sup>4</sup> Before the merger Procter & Gamble was accounting for 30.56% of sales. Gillette was accounting for 20.29% of sales. The merger is approved conditional on the divestiture of Right Guard men's, soft & dri and dry idea deodorant businesses. The brands are divested to Henkel in February 2006. The Federal Trade Commission accepted the choice of the buyer assessing that Henkel had the "*competitive ability to maintain or restore competition in the marketplace*". Before the acquisition, Henkel is not present in the product category deodorant. However, Henkel owns personal care brands (e.g. liquid hand soap) or brands in the shampoo market. In the merger case it is argued that the acquisition strongly complement the existing products in their portfolio.

### 2.2 IRI Academic Database

To study this merger, I expect to use data from the IRI Academic Database (Bronnenberg et al. (2008)) on sales. I would need two product categories:

1. **Deodorant** product category from 2002 to 2011 for grocery stores.
2. **Shampoo** product category from 2002 to 2011 for grocery stores.

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<sup>3</sup>See. section 3.1

<sup>4</sup>This specific merger case is attractive as the buyer of the divested brand is an entrant endogenously chosen by the merged entity thereby representing a perfect setting to study endogenous choices of the buyer of a divested brand.

In the dataset, one row provides information on total unit and dollar sales for a product (defined by its UPC code) at a given store in a given week. It includes also product characteristics.

## 3 Methodology

### 3.1 Step 1: Reduced Form Evidence

I expect to estimate the price effects of the divestiture using a difference-in-differences approach. The identification strategy compares retail prices of the divested brand to retail prices of products not directly involved in the merger around the time of the merger and divestiture. Precisely, I expect to estimate the following equation:

$$\begin{aligned} \log(p_{jmt}) = & K + \alpha_j + \alpha_m + \alpha_t + \delta_1 \mathbb{1}_{\text{Merger}} \times \mathbb{1}_{\text{Post}} \\ & + \delta_2 \mathbb{1}_{\text{Divested1}} \times \mathbb{1}_{\text{Post}} + \delta_3 \mathbb{1}_{\text{Divested2}} \times \mathbb{1}_{\text{Post}} + \delta_4 \mathbb{1}_{\text{Divested3}} \times \mathbb{1}_{\text{Post}} + u_{jmt}, \quad (1) \end{aligned}$$

where  $p_{jmt}$  is the price of product  $j$  in geographic market  $m$  at time  $t$ ,  $\alpha_j$  is a product specific term,  $\alpha_m$  is a geographic market specific term,  $\alpha_t$  is a month-year specific term.  $\mathbb{1}_{\text{Post}}$  equal to 1 in the post-divestiture period, otherwise it is equal to 0.  $\mathbb{1}_{\text{Merger}}$  is an indicator variable equal to 1 for products from the merger entity. The regression also includes an indicator variable equal to 1 for the divested brands:  $\mathbb{1}_{\text{Divested1}} \times \mathbb{1}_{\text{Post}}$ ,  $\mathbb{1}_{\text{Divested2}} \times \mathbb{1}_{\text{Post}}$  and  $\mathbb{1}_{\text{Divested3}} \times \mathbb{1}_{\text{Post}}$ .

Estimating price effects of a merger and divestiture is challenging (Ashenfelter and Hosken (2010)) because any control groups might strategically react to the merger and divestiture in the post-divestiture period. If prices in the control group increase in response to the price increase by the merger and divestiture, the anti-competitive effects are likely underestimated. In order to mitigate this issue I will exploit the fact that Procter & Gamble is present in the shampoo category but some rivals of Procter & Gamble in the shampoo category are not present in the deodorant category. Therefore, prices of these rivals are likely to display a parallel trend but react less to the merger.

### 3.2 Step 2: Structural Model

I expect to develop and estimate a model of bilateral Nash bargaining problems between several upstream manufacturers and several competing retailers in line with Draganska et al. (2010) and Delaprez and Guignard (2022).<sup>5</sup> In order to describe well the grocery sector, I will assume that outcome of each retailer's negotiations is unobserved to other retailers.<sup>6</sup>

<sup>5</sup>Note that these models allow to evaluate the price and welfare effects of an upstream divestiture without observing wholesale prices.

<sup>6</sup>For instance, Iozzi and Valletti (2014) state that they "believe that there is not a superior or more realistic modeling disagreement choice; rather, it will depend on the circumstances. For instance, in the example of

Nonetheless, I aim to relax two assumptions to better represent the observed divestiture of brands owned by Gillette to Henkel. First, I will assume a sequential timing in which retailers observe wholesale prices and set retail prices after having observed the wholesale price. This assumption would allow to display richer effect of a divestiture on the bargaining power of the buyer of the divested brand.<sup>7</sup> To do so, I expect to build and extend previous work in [Crawford and Yurukoglu \(2012\)](#), [Bonnet et al. \(2021\)](#) and [Dix and Lensman \(2022\)](#).

Second, I expect to embed an endogenous product and buyer choice model. The central point is to acknowledge that the divested brand and the buyer of the divested are often chosen by the merged entity rather than imposed by the antitrust authorities. I expect to use and adjust approaches developed by [Fan and Yang \(2020\)](#) to model endogenous product/buyer choice.

### 3.3 Step 3: Tools for Policy Maker

In merger analysis, a key measures used by antitrust authorities are diversion ratios. Higher diversion ratios are likely to allow a merger to set higher price effects. In vertical markets in industries where bargaining is a key feature, it is unknown how bargaining weights interact with diversion ratios. The final objective of this project is to derive new measure to adjust standard measure of diversion ratios in vertical markets and in setting with endogenous product/buyer choices.

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grocery stores and retailing, if negotiations fail, competing stores will probably not observe this immediately and may be sluggish in adjusting their choices (while customers will not find the product available on the shelves)."

<sup>7</sup>Indeed this extra assumption allow more realistic concession costs that can lead to higher or lower prices depending on the pass-through of wholesale to retail prices matrix. It suggests that these models can rationalise an increase in prices for a divested brand without relying on strong assumption on costs.

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