On Bargaining Power and the Inconsistencies Between Prices, Costs and Markups*

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Abstract

This article examines the relationships between prices, markups, and costs in the US shampoo market from 2002 to 2012. We find that real retail prices decreased during this period. This decline is not explained by a reduction in costs, but rather by an increase in retail bargaining power and a decrease in manufacturing markups. Additionally, we estimate a moderate increase in downstream markups. These results suggest that changes in bargaining power is a key factor in understanding the evolution of markups and help to explain the inconsistencies between prices, costs and markups previously documented in the economic literature.

Keywords: Markups, Bargaining power, Vertical relationships, Pricing, Market structure.

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1 Motivation

Recent articles are examining the evolution of market concentration and markups (e.g., De Loecker et al. (2020), Döpper et al. (2024), Smith and Ocampo (2024)) leading to investigations into how this trend affects prices. Despite an observed rise in markups, several studies point out a weak relationship between increased markups and prices (e.g., Döpper et al. (2024), Benkard et al. (2023), Grieco et al. (2024), Conlon et al. (2023)). Notably, Syverson (2019) and Conlon et al. (2023) find no strong correlation between changes in markups and changes in prices. They posit that a reduction in production cost could explain this. However, Syverson (2019) also highlights an inconsistency in the relationship between price fluctuations, markups, and costs. The author argues, "*if price growth is relatively low and markups are growing quickly, costs must be falling quickly. It is not clear in the data that this is the case*" leaving open the possibility that other factors may be driving this relationship.

A common limitation in this literature is the lack of consideration that most markets are vertically related. In many markets, upstream manufacturers sell their products to downstream firms, through negotiations, to access final consumers. An increase in downstream bargaining power might lead to higher downstream markups and lower upstream markups. Consequently, the extent to which the evolution of markups impact prices may depend on how bargaining power shapes firm relationships along the supply chain. This article explores this possibility using data on shampoo sales by retailers in the United States from 2002 to 2012.

We find that, between 2002 and 2012, real retail prices in the U.S. shampoo market decreased. Consistent with Syverson (2019), our estimates show that costs remained largely unchanged over this period, while upstream markups declined. This decline is primarily due to the significant increase in retailers' bargaining power over time. Retailer markups, on the other hand, saw a moderate rise. These shifts in bargaining power play a crucial role in explaining the discrepancies between price fluctuations, costs, and markups noted in previous literature. It is also key, to rationalise a drop in average total markups despite a rise in retail markups.

Our work contributes to the growing body of literature that seeks to explain the evolution of markups over time.[1] Research is advancing along two dimensions. First, Benkard et al. (2023) highlight the importance of using product-level data rather than census-level data. Their main argument is that antitrust authorities are primarily concerned with the concentration of products that are close substitutes. Census-level data, however, may group together products that are not substitutes, potentially inflating concentration figures in ways that do not meaningfully impact markups or consumer welfare. In a separate study, Grieco et al. (2024) analyze the evolution of markups in the U.S. car market using product-level data. Their findings complement the work of De Loecker et al. (2020), who document rising markups across the U.S. economy using census-level data, by showing that this trend may reverse when product-level data are used. In the U.S. car market, they find that markups have actually declined, which they attribute to improvements in product quality and falling marginal costs. However, in their model, markups are derived under the assumption of Nash-Bertrand competition, where upstream manufacturers sell directly to consumers, conflating costs with retail margins. In contrast, our study separately estimates retail margins and costs.

In the shampoo market, we find that while costs remained relatively stable, both retail bargaining power and markups increased. To the best of our knowledge, this article is the first to demonstrate that changes in bargaining power are a key channel in explaining the relationship between prices, markups, and costs. These results contribute to the second line of recent advancements in the literature, which examines markups across the entire supply chain. For example, Alvarez et al. (2024) examine the markup of one manufacturer and downstream markups along the supply chain, using data from a specific manufacturer. They also recover online retail prices from retailers selling its products. They find a negative correlation between markups of one manufacturer and downstream markups, which helps explain a relatively stable pattern of total markups over time. We complement their work by showing that a key factor shaping the relationship between upstream and downstream markups is the asymmetric bargaining power between multiple retailers and manufacturers. We estimate a drop in total markups caused by changes in bargaining power. Precisely, our findings indicate that an increase in retail bargaining power led to a decrease

[1] See Miller (2024) and Syverson (2024) for two reviews of this literature.

in upstream markups larger than the rise in retail markup. This new channel allows to explain the inconsistencies between prices, costs and markups previously documented in the literature.

This article is structured as follows: Section 2 describes the data we use and the market we study. Section 3 presents the methodology and the estimation results. Last, in Section 4, we document the key role of bargaining power in the analysis of markups and examine the relationship between prices, costs, and markups. Section 5 concludes.

2 Data and Market

We use the IRI academic database, which contains price and sales data for shampoo products sold in grocery stores from 2002 to 2012.[2][3] This narrowly defined product market is crucial for analyzing markups over time (Benkard et al. (2023)). An advantage of our data, compared to Benkard et al. (2023), is that we also observe final prices.[4] The data we use are well-suited for studying vertical supply models. We examine four types of shampoo: regular shampoo, shampoo and conditioner, dandruff shampoo, and dandruff shampoo with conditioner. We focus on the top six manufacturers and the top ten retailers, which include Procter & Gamble, Unilever, Alberto Culver, L'Oreal USA, Johnson & Johnson, Innovative Brands, Helen of Troy, and Brynwood Partners. We define a product as a combination of brand, type, and retailer.[5] Figure 1, panel (a), plots the evolution of average real retail prices by manufacturers from 2002 to 2012. Prices trend downward for all manufacturers except Unilever.[6] Figure 1, panel (b), plots instead the average market share by manufacturers. An interesting point from panel (b) is that, except for Unilever, market shares

[2]All estimates and analyses in this paper based on Information Resources Inc. data are by the authors and not by Information Resources Inc.

[3]Note that, in 2010, months 6 to 12 are missing in our database.

[4]We deflate prices using consumer price index and use 2002 as reference.

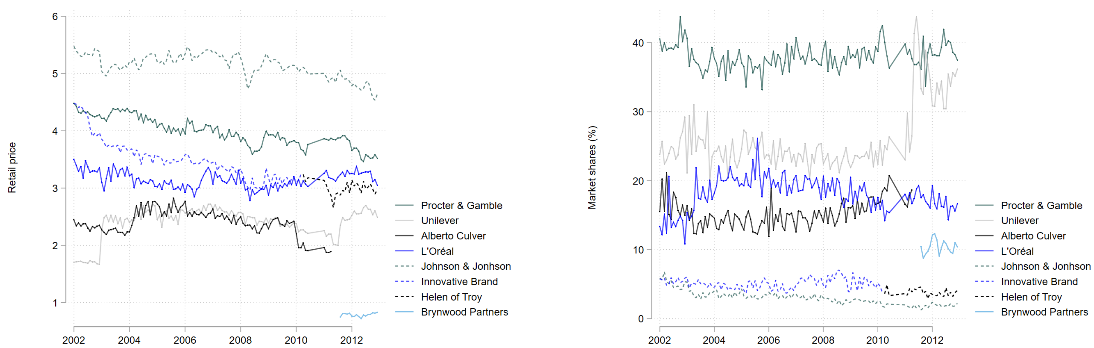
[5]Table A of the Appendix summarizes the mean retail price and market share by firm from 2002 to 2012.

[6]Interestingly, this downward trend for shampoo prices corresponds to the trends reported by Miller and Weinberg (2017) for beer prices over the same period in another product category.

do not reveal specific trends. Indeed, the average market share of Unilever increases substantially after 2011 which is explained by the fact that Unilever bought Alberto Culver.[7]

Figure 1. Retail Price and Market Share Changes Over Time Across Firms

(a) Retail Prices **(b)** Market Shares

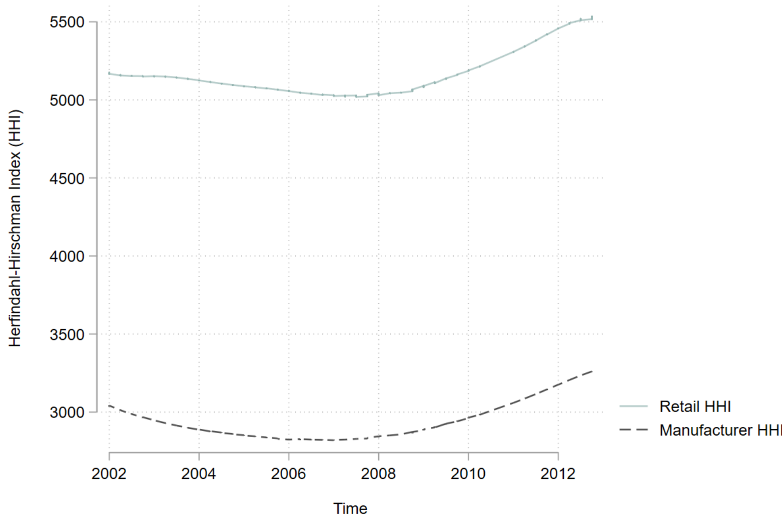


Note: This figure shows the evolution of average retail prices and market shares over time across products, markets, and time periods by firm.

Next, we study the market structure and evolution of concentration. To analyze the market structure of the shampoo industry, we start by assessing the changes in market concentration using the Herfindahl-Hirschman Index (HHI) for both the manufacturing and retail sectors. In Figure 2, we plot the evolution of the average HHI (across geographic markets) in the manufacturing and retail sectors. There are two striking facts. First, the level of concentration is much higher in the retail sector. The average HHI is around 5500 at the beginning of the period, falls to 4700 in 2009 and rises again to around 5300. These measures are slightly lower than those reported in Smith and Ocampo (2024) at the level of commuting zones. This is expected as commuting zone are narrower than IRI geographic market. By contrast, the average HHI in the manufacturer sector is systematically lower. In 2002, the average HHI is equal to about 3000, it decreases to 2700 in 2008 and increases to 3200 in 2012. These figures are above 2500, the threshold above which a market is

[7]This unique source of variation generated by the acquisition of Alberto Culver by Unilever, is used in our analysis to identify demand.

Figure 2. Evolution of HHI



Note: The figure displays the Herfindahl-Hirschman Index (HHI), a measure of market concentration calculated as the sum of the squares of market shares for all firms in the market. The trend line is smoothed using lowess regression, which fits a curve through the data by locally averaging points.

considered highly concentrated under the US Horizontal Merger Guidelines. A second striking fact is that, despite these important differences in levels, concentration as measured by the HHI follows the same patterns in both retail trade and manufacturing. This suggests that there are common factors that impact the concentration in both sectors so that these sectors are not independent. A key feature linking the retail and manufacturing sectors is the asymmetric bargaining power of manufacturers vis-à-vis retailers. While previous work seeking to understand the evolution of markups has assumed that these sectors are independent, we will now examine markups, costs and prices, recognizing the link between these two sectors.

3 Empirical Framework

We use the methodology developed in Delaprez (2024) to relate prices to costs, markups, and bargaining power. This approach allows us to estimate product-level bargaining power varying over time by exploiting cost restrictions within a Nash-bargaining model.[8]

The model assumes that several manufacturers and retailers engage in bilateral negotiations over the wholesale prices for each product. Each manufacturers has multiple products sold to several retailers. A given manufacturer sells its products to a retailer at a wholesale price, covers the production costs, and earns a markup over those costs. Similarly, a retailer sells the products to consumers, pays the wholesale price to the manufacturer, covers distribution costs, and earns a markup over those costs. To sum up, there are double markups: upstream and downstream.

The contracts signed by manufacturers and retailers are assumed to be based on a linear tariff, leading to gains from trade.[9] These gains correspond to the difference between the benefits of reaching an agreement and those that would have been obtained if negotiations had failed. In the event of a failed negotiation, a manufacturer can still sell all its other products. Therefore, a manufacturer with a large number of products tends to have lower gains from trade, which increases its bargaining leverage. The gains from trade are shared between manufacturers and retailers, and in this model, bargaining power corresponds to each party's share of these gains. Finally, it is assumed that retailers compete on price in the downstream market. Negotiations in the upstream market are assumed to occur simultaneously with price competition in the downstream market.

In this model the relationship between prices, costs and markups is given by the following equilibrium condition:

$$p_{jmt} = \gamma_{jmt}(p_{mt}, \alpha) + \Gamma_{jmt}(\lambda_{jmt}, p_{mt}, \alpha) + c_{jmt}, \tag{1}$$

where p_{jmt} is the price of product j in geographic market m at time t, $\gamma_{jmt}(p_{mt})$ is re-

[8] For further details on the methodology, see Delaprez (2024).

[9] This assumption is maintained in studies using Nash-bargaining models such as Crawford et al. (2018) or Gowrisankaran et al. (2015).

tail markup associated with product j in geographic market m at time t, $\Gamma_{jmt}(\lambda_{jmt}, p_{mt})$ is manufacturer markup associated with product j in geographic market m at time t, λ_{jmt} is the bargaining weight of the retailer ($1 - \lambda_{jmt}$ is the bargaining weight of the manufacturer) and c_{jmt} represents the marginal costs of production and distribution. Lastly, α is a vector of preference parameters from demand of product j. Note that $\frac{\partial \Gamma_{jmt}(\lambda_{jmt}, p_{mt})}{\partial \lambda_{jmt}} < 0$, meaning that as retail bargaining power increases, upstream markups decrease. However, retail markups do not depend on retail bargaining power due to the simultaneous timing assumption in the model.

To estimate the model, we rely on two main steps. First, we estimate consumer preferences. Once preferences are estimated, downstream markups $\gamma_{jmt}(p_{mt}, \alpha)$ can be estimated. Second, we exploit the structure of the model, along with one key assumption, to estimate costs, bargaining power, and upstream markups. Specifically, we use the Nash bargaining framework to compute the costs of private labels.

In the model, when retailers have all the bargaining power ($\lambda_{jmt} = 1$), upstream markups are zero. This typically occurs for private labels, which are products sold under the retailer's brand name. Thus, using Equation (1), we can compute the costs for private labels as $p_{PL,mt} - \gamma_{PL,mt}(p_{mt}) = c_{PL,mt}$.

Next, we assume that the costs for all products within a given form of shampoo and time period are equal to the average costs of private labels in that category. With these assumptions, we can compute the bargaining weights λ_{jmt} and upstream markups $\Gamma_{jmt}(\lambda_{jmt}, p_{mt}, \alpha)$.

In next section, we explain how we estimate demand, and thereby preferences, costs, markups, and retail bargaining power.

3.1 Demand estimation

We estimate a model of demand based on a simple Logit. Consumers can choose products j, defined as a brand-type-retailer or choose not to consume and select the outside good. A given brand of shampoo can be sold under four types of shampoo: regular shampoo, shampoo and conditioner, dandruff, and dandruff shampoo with conditioner. In the model, a consumer i in geographic market m at time t has the following indirect utility for product j:

$$U_{ijmt} = \alpha_0 + \alpha_1 p_{jmt} + \alpha_2 \times \text{size}_{jmt} + \alpha_{\text{brand-type}} + \alpha_r + \alpha_m + \alpha_t + \xi_{jmt}, \tag{2}$$

where K is a constant, p_{jmt} is the price of product j in geographic market m at time t, size_{jmt} is the average weight of product j in geographic market m at time t, $\beta_{\text{brand-type}}$ captures brand-type-specific valuations, β_r represents retailer-specific terms, β_m represents valuations that are specific to each geographic market m, and β_t is period-specific term.

Omitting the subscript mt the market share of product j is given by:

$$s_j(\delta_j) = \frac{exp(\alpha_0 + \alpha_1 p_{jmt} + \alpha_2 \times \text{size}_{jmt} + \alpha_{\text{brand-type}} + \alpha_r + \alpha_m + \alpha_t)}{1 + \sum_{k=1}^{Jt} exp(\alpha_0 + \alpha_1 p_{kmt} + \alpha_2 \times \text{size}_{kmt} + \alpha_{\text{brand-type}} + \alpha_r + \alpha_m + \alpha_t)}, \tag{3}$$

Denote q_j the observed quantity of product j and q_0 the quantity of the outside good. The observed market share of product j is equal to $s_j = \frac{q_j}{\sum_j q_j + q_0}$. The system of market shares is defined by the following equation in each geographic market m at time t:

$$s_j(\delta_j) = s_j. \tag{4}$$

We use the approach in Berry (1994) to obtain the following equation:

$$log(\frac{s_{jmt}}{s_{0mt}}) = \alpha_0 + \alpha_1 p_{jmt} + \alpha_2 \times \text{size}_{jmt} + \alpha_{\text{brand-type}} + \alpha_r + \alpha_m + \alpha_t. \tag{5}$$

Identification The price p_{jmt} is endogenous, meaning it may be correlated with unobserved factors such as quality. Hence, simple OLS regressions would likely provide biased downward estimates of α_1. We address this issue by using instrumental variables, exploiting several changes in ownership through mergers and divestitures as supply shifters. First, in April 2010, Helen of Troy acquired Pert Plus. Second, in May 2011, Unilever purchased Alberto, subject to the divestiture of the Alberto VO5 brand to Brynwood Partners. To capture these shocks, we create three dummy variables: $\mathbb{1}_{\text{Post Merger}} \times \mathbb{1}_{\text{Unilever + Alberto}}$; $\mathbb{1}_{\text{Post Divestiture}} \times \mathbb{1}_{\text{Brynwood Partners + Alberto Vo5 brand}}$ and $\mathbb{1}_{\text{Post Merger}} \times \mathbb{1}_{\text{Helen of Troy + Pert Plus}}$ that are equal to 1 in each post merger period. These shocks impacted markups, making them likely relevant. We also use a BLP-type instrument corresponding to the number of competitors' products in rival retailers within each market. This variable influences the degree of competition in the market but is assumed to be orthogonal to unobserved demand shocks.

Results The estimated preference parameters are presented in Table 1. In column (i), we show the results based on OLS, while column (ii) presents the results using instrumental variables. The estimate associated with α is more negative after instrumenting, suggesting that the instruments help address the endogeneity issue. The F-statistic for the first stage is 488.38, which formally confirms that the instruments are relevant. The estimates in column (ii) of Table 1 yield an average own-price elasticity of -4.273.

Table 1. Demand Parameter Estimates

	OLS	IV
	(i)	(ii)
p_{jmt}	-0.285	-1.311
	(0.005)	(0.044)
size$_{jmt}$	0.023	0.113
	(0.001)	(0.004)
Brand-form FE	✓	✓
Retailer FE	✓	✓
Geographic FE	✓	✓
Time FE	✓	✓
N	155834	155834
F-stat 1st stage		488.38
Mean own-price elasticity		-4.273

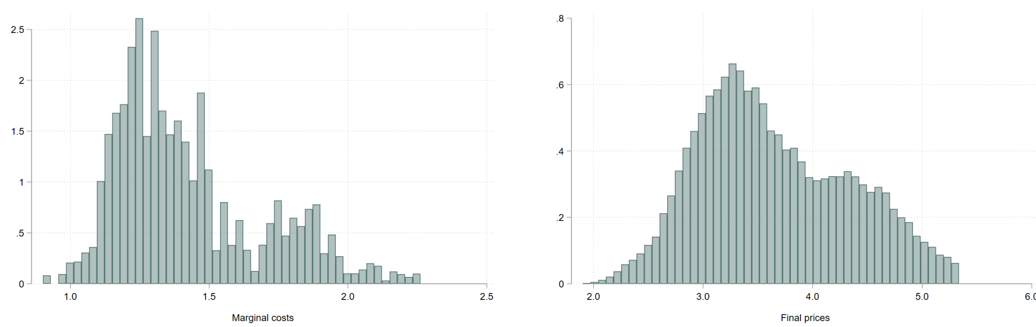
Notes: The table reports the estimated demand parameters based on the Logit demand implied by the utility functions in (2). There are 155,834 observations for the period 2002 to 2012. Specifications include 38 brand-form-size dummies, 8 retailer dummies, 30 geographic market dummies and 125 time dummies. Robust standard errors in parentheses. + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

3.2 Supply Estimation: Costs, Markups and Bargaining Power

Once the preference parameters are estimated, we can compute the downstream markups $\gamma_{jmt}(p_{mt}, \alpha)$ and costs. We start by briefly discussing our cost estimates. Figure 3, panel (a), shows the frequency distribution of marginal costs. Figure 3, panel (b), shows the frequency distribution of prices. The average price is 3.70$, while the average cost is 1.40$, which is about 38% of the final price. Since costs represent a relatively small share of final prices, changes in markups or bargaining power may play a more significant role in influencing final prices. Next, we examine

Figure 3. Frequency Distribution of Costs and Prices

(a) Marginal costs **(b)** Prices



Note: This figure displays the distribution of marginal cost and average final prices across products, time and geographic markets.

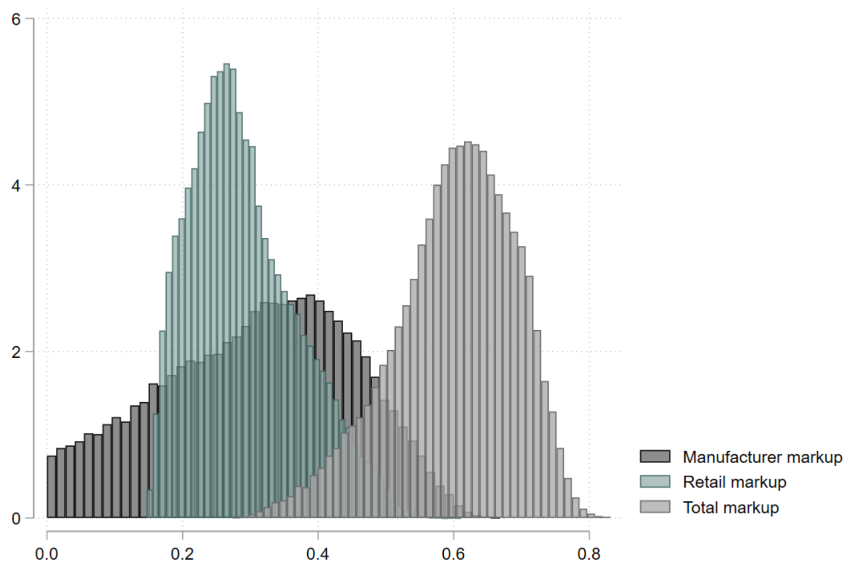
retail and manufacturer markups. In Figure 4, we plot the frequency distribution of total markups; retail and manufacturer markups.[10] The average total markup is equal to 0.6, which is in line with average total markups reported in Alvarez et al. (2024) where average markups are equal to 0.65.

A striking feature is that the distribution of retail markups overlaps with the distribution of manufacturer markups. However, manufacturer markups display greater heterogeneity, with some markups being both lower and higher than retail markups. In a Nash-bargaining model, this variation could be explained by a heterogeneous product portfolio generating differences in disagreement payoffs, which in

[10]The manufacturer markup is defined as $\frac{\Gamma}{p}$ and the retail markup as $\frac{\gamma}{p}$.

turn affects markups or bargaining weights.[11]

Figure 4. Frequency Distribution of Markups



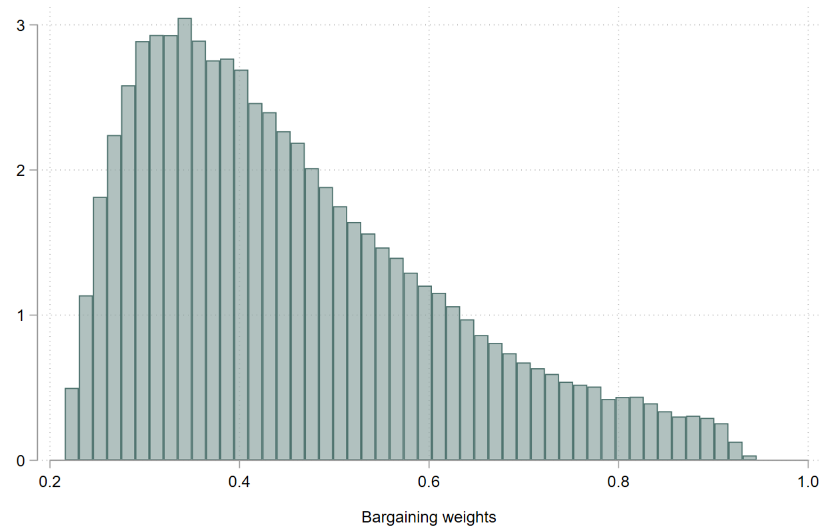
Note: This figure displays the distribution of retail, manufacturer and total markups across products, time and geographic markets.

To better evaluate the second possibility, Figure 5 presents the frequency distribution of bargaining weights.[12] It reveals that, on average, manufacturers have more bargaining power than retailers. The average retail bargaining weight is 0.45, but there is significant heterogeneity across products, with a standard deviation of 0.18. Notably, a substantial portion of the distribution displays bargaining weights greater than 0.5, indicating that for these products, retailers have, on average, more bargaining power than manufacturers. This heterogeneity is important for understanding market outcomes, as products for which retailers hold relatively more bargaining power may limit the extent to which changes in costs are passed on to final prices.

[11] See Figure A of the Appendix for the distribution of manufacturer markups by firm. Figure B displays the evolution of markups over time.

[12] See Figure C of the Appendix for the distribution of bargaining weights by firm.

Figure 5. Frequency Distribution of Bargaining Weights



Note: This figure shows the distributions of bargaining weights across products, markets, and time periods.

4 The Relationship Between Prices, Costs and Markups

4.1 The Extent to Which Bargaining Power Influences Markups

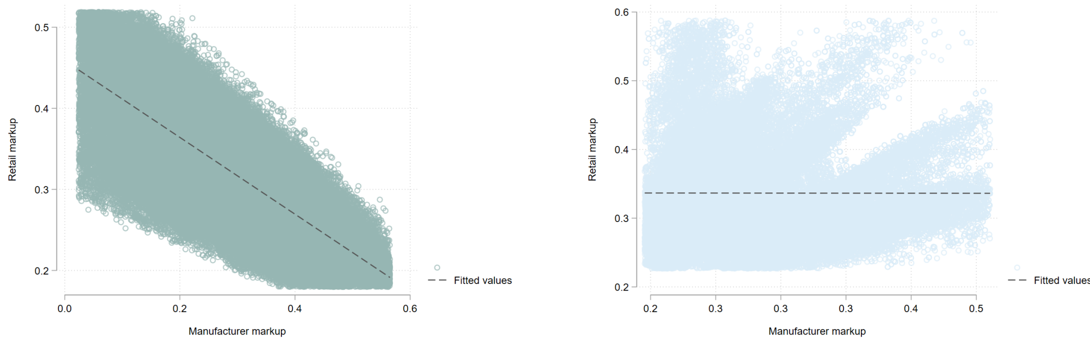
We first study the relationship between markups. In Figure 6, panel (a), we present a scatter plot of retail and manufacturer markups. The plot shows a strong negative correlation between upstream and downstream markups. High retail markups are correlated with low manufacturer markups. This result supports the findings in Alvarez et al. (2024).

To understand to what extent this negative correlation is shaped by asymmetric bargaining power between manufacturers and retailers, we use counterfactual simulation. We study what would have been this correlation in a counterfactual world in which the retailers and manufacturers have equal bargaining power.

Using Equation (1), we fix all bargaining weights equal to 0.5 and recompute

Figure 6. Correlation Markups

(a) Asymmetric Bargaining Power **(b)** Symmetric Bargaining Power



Notes: This figure shows the correlation between retailer and manufacturer markups. Panel (b) plots the correlation with symmetric bargaining power (i.e. λ_{ijt} are set to 0.5); panel (a) plots the correlation with asymmetric bargaining power, recovered from the methodology explained in Section 3.

equilibrium prices and the associated markups. We report a scatter plot of these counterfactual markups in Figure 6 panel (b). In stark contrast with the scatter plot in panel (a), the results show almost no correlation between markups. These results show that asymmetric bargaining power between manufacturers and retailers is a key determinant linking different levels of the supply chain.

4.2 Decomposition of the Evolution of Prices

We decompose the evolution of prices into changes in costs, markups and bargaining power using regression analysis. Döpper et al. (2024) undertake a similar exercise but they distinguish neither between upstream and downstream markups nor bargaining power. We exploit the panel structure of our data to estimate the evolution of these variables while controlling for unobserved factors:

$$log(y_{jt}) = \phi_t + \mu_j + \epsilon_{jt},$$

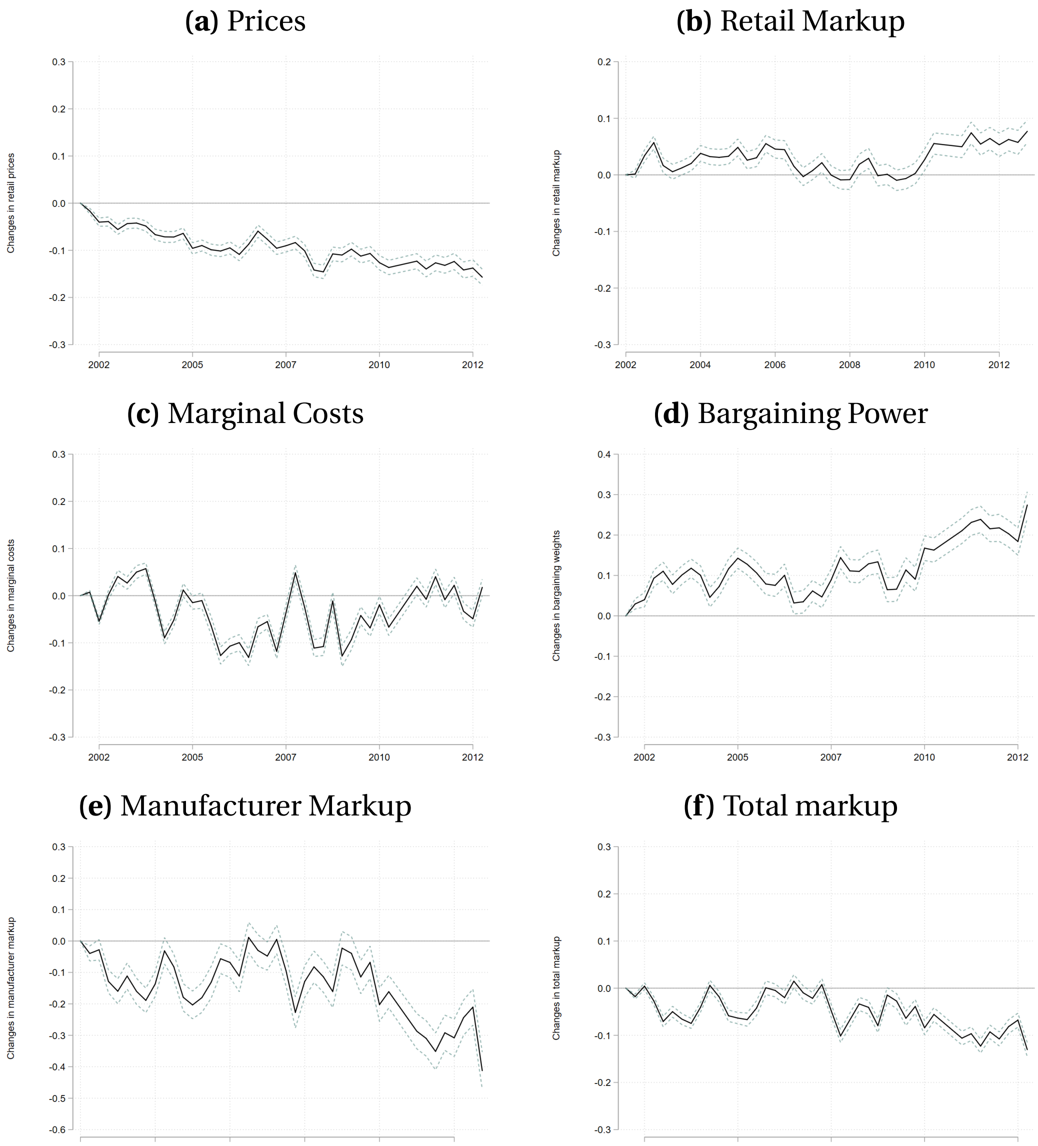
where y_{jt} is either bargaining power, downstream and upstream markups, total markups, or costs and μ_j is a product region specific effect.[13]

We plot the estimates ϕ_t along with standard errors in Figure 7. Panel (a) in-

[13]We define a product as brand-size-retailer combination.

dicates that in the shampoo market, over the 2002 to 2012 period, real prices decreased by about 15%. The two traditional channels to explain this pattern are a change in costs and retail markups. Yet, the observed pattern for costs and retail markups, quite surprisingly, do not align with this observed price pattern. Indeed, on the one hand, results in panel (b) show an increase in retail markups by about 8%, which is consistent with results reported by De Loecker et al. (2020) for the U.S. retail sector. On the other hand, in panel (c) we show that costs remain almost unchanged, which is consistent with Syverson (2019). In this article, we introduce a third channel to explain changes in prices: changes in bargaining power. The main comparative advantage of the approach we take in this article is that it allows us to also compute downstream bargaining power alongside separate upstream and downstream markups. In panel (d), we report the evolution of downstream bargaining power. Retailer bargaining power increased by more than 20% over the 2002 to 2012 period, which subsequently resulted in a decrease in upstream markups. Interestingly, the increase in retail bargaining power has paralleled the growth of big-box stores since the early 2000s (Basker et al. (2012)). Next, to assess to what extent the variation in retail markup offset the variation in manufacturer markup, in panel (f), we report the evolution of total markups. Total markups decreased by up to 10% despite potentially offsetting channels. This result is different from findings reported in Alvarez et al. (2024), where total markups are found to be stable. Here we show that, despite the negative correlation between upstream and downstream markups, total markups dropped. This is driven by the fact that manufacturers have relatively more bargaining power than retailers, such that variation in upstream markups have an important influence on final prices. This also supports findings in Grieco et al. (2024) by showing that markups dropped in other markets than the car market. Even after accounting for the entire vertical chain, total markups dropped. Overall, the results provide a new channel of explanation to rationalise changes in prices which has been shown to be challenging in most recent works. In the shampoo market, prices declined mainly because retailers became more powerful over time, which led to reduced markups in the manufacturing sector. Thus, we also document a new mechanism to explain a drop in manufacturer markups and the relationship between prices, costs and markups: an increase in bargaining power.

Figure 7. Prices, Markups, Marginal Costs and Bargaining Power Over Time



Notes: The figures use U.S. sales data for the shampoo category between 2002 and 2012. These figures show coefficients of a regressions of the log of the real prices, real marginal costs, bargaining power, and markups at the brand-size-form-retailer-quarter level on quarter dummies controlling for brand-size-form-retailer-region fixed effects clustered by brand-size-form-retailer. January 2002 is the base category. Real marginal costs, bargaining power and markups are obtained using the methodology described in Section 3 assuming that costs are equal to the one of private labels.

5 Conclusion

Recent research documents a significant rise in markups within the U.S. economy, leading to a growing body of work exploring its drivers and consequences. However, previous studies encountered inconsistencies between observed price fluctuations, markups, and costs (Syverson (2024), Conlon et al. (2023)) without offering a clear explanation for these discrepancies.

To make progress, one approach taken has been to study markups across the supply chain. Alvarez et al. (2024), studying markups of one manufacturer, find that it correlates negatively with retail markups, explaining a stable pattern of total markups over time. In this article, we study the evolution of markups for multiple manufacturers and retailers. Our findings indicate that while retail markups increased moderately, manufacturer and total markups declined.

We identify the evolution of bargaining power over time as a crucial factor in explaining these inconsistencies. By applying the empirical framework developed by Delaprez (2024), we examine the evolutions of prices, markups, costs, and bargaining power in the U.S. shampoo market. Our results reveal that while real prices declined and costs remained relatively stable, retail markups experienced a moderate increase. The key factor reconciling these trends is the rise in retailer bargaining power, which led to a decrease in manufacturer markups and total markups. Our paper has several limitations. First, we assume a Nash bargaining model. Consequently, we identify changes in bargaining power and markups that are contingent on the functional form assumption of this model. We adopt this approach because we do not observe wholesale prices, and our model allows us to address this limitation. Also, the model we estimate takes as special case the Nash-Bertrand competition model, which is widely used to study markups (e.g. Grieco et al. (2024) or Döpper et al. (2024)). Second, we do not explore factors that may have influenced bargaining power. Our objective is to introduce a new channel relevant to the study of markups while maintaining a fairly general approach. In future research, it will be useful to study the extent to which the rise of large digital platforms, like Amazon, has led to a rise in retail bargaining power in more recent periods.

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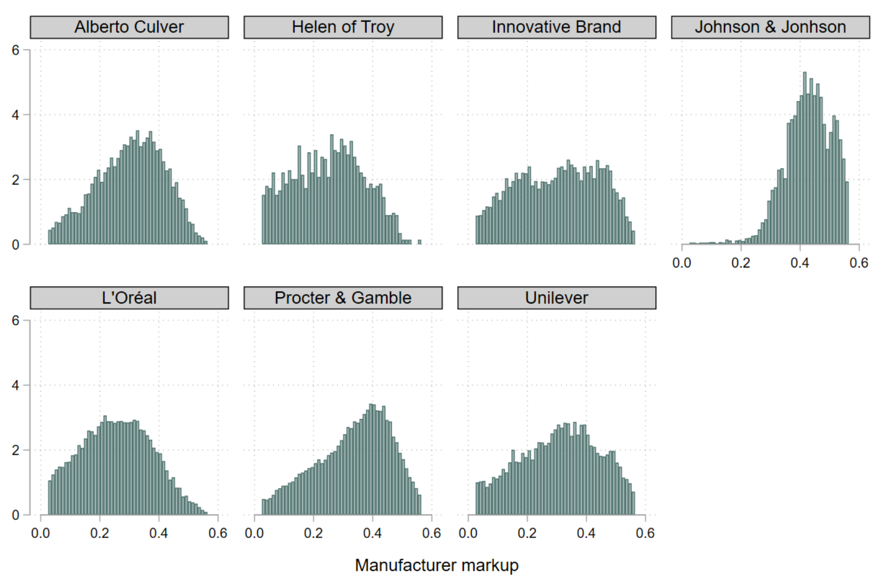
Appendix

Table A. Mean Retail Prices and Market Shares by Firme

	Retail prices ($)		Market Shares (%)	
	mean	s.d	mean	s.d
Procter & Gamble	4.11	0.77	37.99	7.63
Unilever	2.41	1.01	26.47	12.45
Alberto Culver	2.17	1.18	15.30	6.44
L'Oréal	3.11	0.53	18.49	6.70
Johnson & Johnson	4.90	0.58	3.29	1.85
Innovative Brands	3.62	0.79	5.17	2.55
Helen of Troy	2.93	0.48	3.85	1.72
Brynwood Partners	0.96	0.11	10.44	6.18
Private Labels	2.53	0.57	7.24	4.58

Note: Standard deviation are variation across times and market.

Figure A. Frequency Distribution of Markups by Firm



Note: This figure shows the distributions of markups across products, markets, and time periods by firm.

Figure B. Evolution of Markups over Time

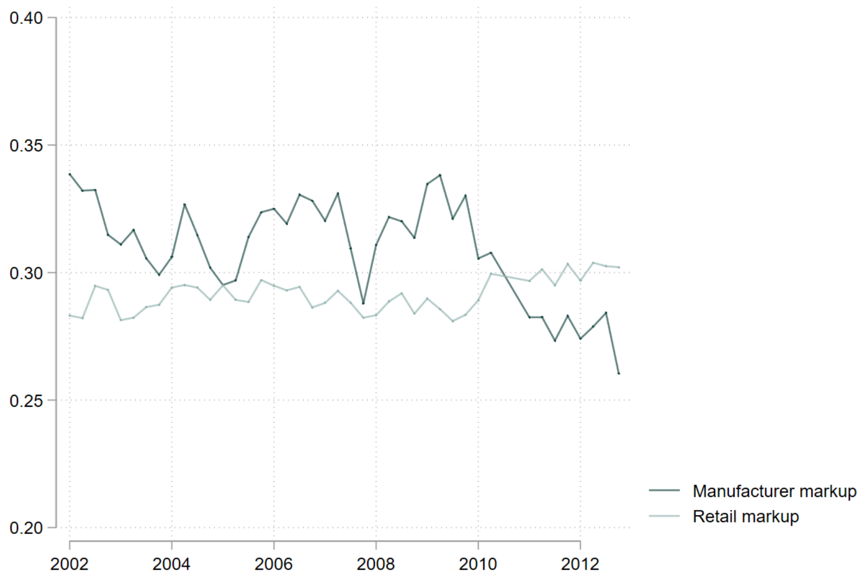
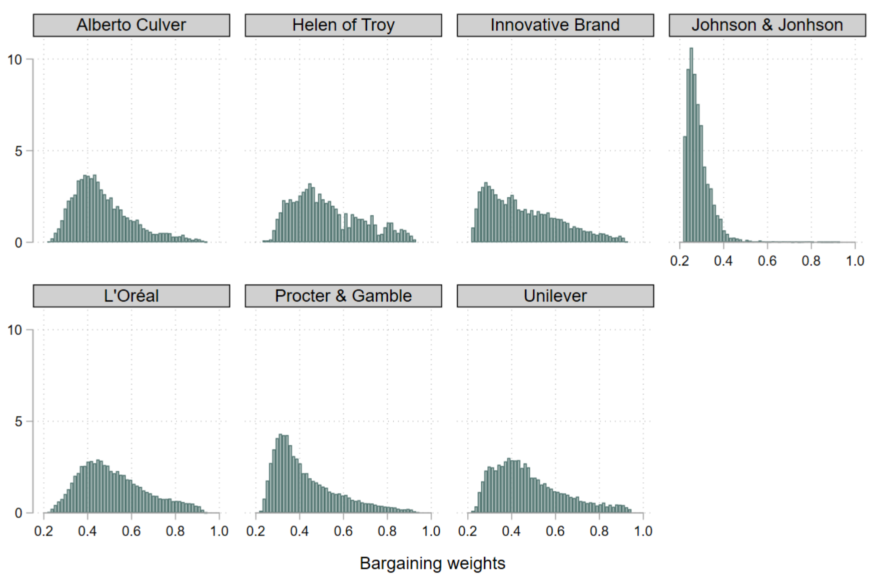


Figure C. Frequency Distribution of Bargaining Weights by Firm



Note: This figure shows the distributions of bargaining weights across products, markets, and time periods by firm. The bargaining weights of Brynwood Partners are estimated to be 1.

Table B. Log prices estimates

	Estimate	Standard Error
2002q2	-0.0174***	0.00280
2002q3	-0.0420***	0.00421
2002q4	-0.0404***	0.00480
2003q1	-0.0535***	0.00510
2003q2	-0.0461***	0.00553
2003q3	-0.0450***	0.00531
2003q4	-0.0509***	0.00548
2004q1	-0.0700***	0.00568
2004q2	-0.0724***	0.00590
2004q3	-0.0745***	0.00575
2004q4	-0.0649***	0.00582
2005q1	-0.0964***	0.00605
2005q2	-0.0927***	0.00591
2005q3	-0.0991***	0.00608
2005q4	-0.103***	0.00604
2006q1	-0.0951***	0.00658
2006q2	-0.105***	0.00677
2006q3	-0.0889***	0.00668
2006q4	-0.0580***	0.00669
2007q1	-0.0773***	0.00662
2007q2	-0.0952***	0.00680
2007q3	-0.0929***	0.00683
2007q4	-0.0847***	0.00683
2008q1	-0.100***	0.00693
2008q2	-0.140***	0.00706
2008q3	-0.147***	0.00729
2008q4	-0.110***	0.00750
2009q1	-0.113***	0.00752
2009q2	-0.0987***	0.00744
2009q3	-0.111***	0.00752
2009q4	-0.108***	0.00770
2010q1	-0.125***	0.00797
2010q2	-0.136***	0.00790
2011q1	-0.128***	0.00821
2011q2	-0.144***	0.00854
2011q3	-0.130***	0.00845
2011q4	-0.135***	0.00846
2012q1	-0.127***	0.00879
2012q2	-0.146***	0.00876
2012q3	-0.143***	0.00887
2012q4	-0.161***	0.00868
N	88462	

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C. Log retail markups estimates

	Estimate	Standard Error
2002q2	0.00267	0.00340
2002q3	0.0352***	0.00490
2002q4	0.0544***	0.00555
2003q1	0.0135*	0.00633
2003q2	0.00497	0.00650
2003q3	0.0131*	0.00626
2003q4	0.0207**	0.00662
2004q1	0.0401***	0.00691
2004q2	0.0323***	0.00700
2004q3	0.0328***	0.00711
2004q4	0.0318***	0.00693
2005q1	0.0487***	0.00748
2005q2	0.0283***	0.00767
2005q3	0.0300***	0.00801
2005q4	0.0576***	0.00744
2006q1	0.0456***	0.00819
2006q2	0.0395***	0.00802
2006q3	0.0155	0.00806
2006q4	-0.00661	0.00799
2007q1	0.00555	0.00804
2007q2	0.0194*	0.00825
2007q3	0.000603	0.00826
2007q4	-0.00881	0.00824
2008q1	-0.0119	0.00876
2008q2	0.0135	0.00909
2008q3	0.0288**	0.00899
2008q4	-0.00219	0.00926
2009q1	0.00212	0.00925
2009q2	-0.0114	0.00919
2009q3	-0.0102	0.00947
2009q4	0.00130	0.00949
2010q1	0.0241*	0.00973
2010q2	0.0526***	0.00957
2011q1	0.0557***	0.00978
2011q2	0.0653***	0.00976
2011q3	0.0543***	0.0105
2011q4	0.0656***	0.0103
2012q1	0.0595***	0.0107
2012q2	0.0798***	0.0100
2012q3	0.0723***	0.0102
2012q4	0.0681***	0.0104
N	88462	

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table D. Log marginal costs estimates

	Estimate	Standard Error
2002q2	0.00735***	0.00197
2002q3	-0.0560***	0.00303
2002q4	0.000100	0.00486
2003q1	0.0406***	0.00666
2003q2	0.0263***	0.00681
2003q3	0.0490***	0.00711
2003q4	0.0567***	0.00608
2004q1	-0.0115*	0.00558
2004q2	-0.0908***	0.00649
2004q3	-0.0525***	0.00652
2004q4	0.0121	0.00717
2005q1	-0.0128	0.00692
2005q2	-0.0109	0.00845
2005q3	-0.0679***	0.00982
2005q4	-0.127***	0.00938
2006q1	-0.108***	0.00851
2006q2	-0.101***	0.00879
2006q3	-0.132***	0.00894
2006q4	-0.0660***	0.00901
2007q1	-0.0564***	0.00761
2007q2	-0.119***	0.00772
2007q3	-0.0375***	0.00886
2007q4	0.0486***	0.00856
2008q1	-0.0282**	0.00954
2008q2	-0.116***	0.00915
2008q3	-0.114***	0.00966
2008q4	-0.0190*	0.00953
2009q1	-0.135***	0.0114
2009q2	-0.102***	0.0109
2009q3	-0.0459***	0.00940
2009q4	-0.0712***	0.00910
2010q1	-0.0223*	0.00926
2010q2	-0.0700***	0.00912
2011q1	0.0186*	0.00924
2011q2	-0.00970	0.00864
2011q3	0.0386***	0.00837
2011q4	-0.0101	0.00884
2012q1	0.0210*	0.00890
2012q2	-0.0364***	0.00930
2012q3	-0.0506***	0.00928
2012q4	0.0135	0.00884
N	88462	

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table E. Log bargaining power estimates

	Estimate	Standard Error
2002q2	0.0316***	0.00608
2002q3	0.0417***	0.00854
2002q4	0.0912***	0.00999
2003q1	0.104***	0.0112
2003q2	0.0804***	0.0118
2003q3	0.105***	0.0116
2003q4	0.121***	0.0116
2004q1	0.107***	0.0117
2004q2	0.0460***	0.0120
2004q3	0.0763***	0.0119
2004q4	0.116***	0.0124
2005q1	0.145***	0.0127
2005q2	0.132***	0.0134
2005q3	0.103***	0.0140
2005q4	0.0831***	0.0134
2006q1	0.0757***	0.0139
2006q2	0.0929***	0.0140
2006q3	0.0336*	0.0138
2006q4	0.0307*	0.0141
2007q1	0.0608***	0.0132
2007q2	0.0457***	0.0135
2007q3	0.0919***	0.0138
2007q4	0.146***	0.0140
2008q1	0.104***	0.0140
2008q2	0.102***	0.0140
2008q3	0.125***	0.0142
2008q4	0.130***	0.0148
2009q1	0.0635***	0.0153
2009q2	0.0594***	0.0153
2009q3	0.107***	0.0153
2009q4	0.0894***	0.0151
2010q1	0.161***	0.0156
2010q2	0.158***	0.0152
2011q1	0.216***	0.0159
2011q2	0.237***	0.0160
2011q3	0.242***	0.0164
2011q4	0.219***	0.0160
2012q1	0.222***	0.0170
2012q2	0.209***	0.0166
2012q3	0.191***	0.0171
2012q4	0.277***	0.0166
N	88462	

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table F. Log manufacturer markups estimates

	Estimate	Standard Error
2002q2	-0.0418***	(0.0108)
2002q3	-0.0262	(0.0151)
2002q4	-0.120***	(0.0168)
2003q1	-0.151***	(0.0192)
2003q2	-0.112***	(0.0201)
2003q3	-0.166***	(0.0206)
2003q4	-0.192***	(0.0193)
2004q1	-0.142***	(0.0186)
2004q2	-0.0275	(0.0202)
2004q3	-0.0835***	(0.0195)
2004q4	-0.171***	(0.0210)
2005q1	-0.202***	(0.0214)
2005q2	-0.185***	(0.0230)
2005q3	-0.119***	(0.0247)
2005q4	-0.0623**	(0.0235)
2006q1	-0.0675**	(0.0233)
2006q2	-0.0978***	(0.0238)
2006q3	0.0112	(0.0236)
2006q4	-0.0205	(0.0243)
2007q1	-0.0480*	(0.0219)
2007q2	0.00476	(0.0222)
2007q3	-0.0982***	(0.0239)
2007q4	-0.227***	(0.0245)
2008q1	-0.112***	(0.0242)
2008q2	-0.0657**	(0.0239)
2008q3	-0.103***	(0.0241)
2008q4	-0.150***	(0.0249)
2009q1	-0.0150	(0.0260)
2009q2	-0.0203	(0.0261)
2009q3	-0.103***	(0.0257)
2009q4	-0.0638*	(0.0250)
2010q1	-0.183***	(0.0259)
2010q2	-0.150***	(0.0250)
2011q1	-0.289***	(0.0270)
2011q2	-0.313***	(0.0271)
2011q3	-0.346***	(0.0280)
2011q4	-0.292***	(0.0271)
2012q1	-0.309***	(0.0288)
2012q2	-0.246***	(0.0273)
2012q3	-0.215***	(0.0279)
2012q4	-0.400***	(0.0284)
N	88462	

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table G. Log total markups estimates

	Estimate	Standard Error
2002q2	-0.0186***	(0.00248)
2002q3	0.00417	(0.00343)
2002q4	-0.0270***	(0.00455)
2003q1	-0.0684***	(0.00562)
2003q2	-0.0514***	(0.00588)
2003q3	-0.0671***	(0.00602)
2003q4	-0.0761***	(0.00537)
2004q1	-0.0437***	(0.00507)
2004q2	0.00616	(0.00552)
2004q3	-0.0197***	(0.00551)
2004q4	-0.0589***	(0.00614)
2005q1	-0.0645***	(0.00603)
2005q2	-0.0682***	(0.00710)
2005q3	-0.0396***	(0.00797)
2005q4	-0.0000268	(0.00740)
2006q1	-0.00423	(0.00688)
2006q2	-0.0172*	(0.00705)
2006q3	0.0141*	(0.00708)
2006q4	-0.00858	(0.00744)
2007q1	-0.0212***	(0.00613)
2007q2	0.00804	(0.00626)
2007q3	-0.0484***	(0.00694)
2007q4	-0.102***	(0.00696)
2008q1	-0.0628***	(0.00722)
2008q2	-0.0290***	(0.00689)
2008q3	-0.0364***	(0.00715)
2008q4	-0.0748***	(0.00720)
2009q1	-0.0110	(0.00796)
2009q2	-0.0215**	(0.00798)
2009q3	-0.0594***	(0.00755)
2009q4	-0.0371***	(0.00725)
2010q1	-0.0794***	(0.00742)
2010q2	-0.0525***	(0.00706)
2011q1	-0.108***	(0.00734)
2011q2	-0.0985***	(0.00730)
2011q3	-0.124***	(0.00738)
2011q4	-0.0935***	(0.00729)
2012q1	-0.109***	(0.00747)
2012q2	-0.0820***	(0.00741)
2012q3	-0.0700***	(0.00747)
2012q4	-0.129***	(0.00745)
N	88462	

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$