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Elena Castellari, Dipartimento di Economia Agro-alimentare, Università Cattolica del Sacro Cuore, Piacenza.

Daniele Moro, Dipartimento di Scienze Economiche e Sociali, Università Cattolica del Sacro Cuore, Piacenza.

Silvia Platoni, Dipartimento di Scienze Economiche e Sociali, Università Cattolica del Sacro Cuore, Piacenza.

✉ elena.castellari@unicatt.it

✉ daniele.moro@unicatt.it

✉ silvia.platoni@unicatt.it

I quaderni possono essere richiesti a:
Dipartimento di Scienze Economiche e Sociali,
Università Cattolica del Sacro Cuore
Via Emilia Parmense 84 - 29122 Piacenza - Tel. 0523 599.342
http://dipartimenti.unicatt.it/dises

✉ dises-pc@unicatt.it

www.vitaepensiero.it

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ABSTRACT

We investigate the impacts of Private Label (PL) introduction on prices and market shares of national brands (NBs). During the sample period, PL products were introduced at different times in different geographical markets. The econometric model exploits this fact and compares NB prices in markets where PL was introduced to those in markets where PL had not been introduced. We found the response on price is not homogeneous, but it varies among brands and segments. Moreover, our results suggest that an aggregate level estimation fails to identify the response at the brand level. These results corroborate the importance of using brand specific models in appraising the effects of a PL introduction on market prices and consumer welfare. Lastly, the analysis allows us to consider the possibility of a cross effect by exploiting the effect of a PL introduction on NB market shares in segments close to the refrigerated milk market.

1. INTRODUCTION

A large body of literature analyzes how the introduction of Private Labels (PLs) affects market shares and prices. Indeed, the debate mainly focuses on the effects that PL introduction has on prices. In this regard, Chintagunta and al. (2002) identify two major forces of retailer price strategy decision which can drive the new set of prices in opposite directions. On one hand, the introduction of a PL can attract in the product category consumers who previously did not buy. On the other hand, a PL introduction might increase the price sensitivity by offering the product at a lower price than the NB product does.

The producers, from their side, can decide to set their prices with the aim of targeting the loyal consumers, who are less price-sensitive. Alternatively they can compete for the switching consumers by lowering their prices to mitigate the threat of a significant market share lost. Moreover, a PL introduction changes the relationship environment among producers and retailers, leading them to interact in both the vertical and horizontal forces of the competition. All these different effects play an important role on the producer and retailer decisions on setting their prices, thus leading the final outcome to a not trivial direction.

The theoretical literature predicts controversial effects on NB prices in response to a PL introduction, and these effects depend on the model setup and assumptions made. Many theoretical works (Mills, 1995; Bontemps et al., 1999), on one hand, predict a downward direction of NB prices due to PL introduction. Gabrielsen and Sorgard (2007), on the other hand, infer either a positive or a zero reaction of the NB price due to a PL entry in the market.

In line with the theoretical literature, several empirical studies find mixed effects of PL introductions on NB prices and market shares. For instance, whereas Ward et al. (2002) and Gabrielsen et al.(2006) find that PL introductions result in an increase of NB prices, Chintagunta et al. (2002) find a decrease of NB prices.

These empirical studies generally follow two approaches. Ward et al. (2002) use supermarket scanner data from different grocery stores across the United States and test how PL growth influences the NB pricing strategy regressing the log of NB prices at the category level on the log of PL shares. Likewise, Bontems et al. (2005 and

2008) and Sckokai and Soregaroli (2008) use category level data and a similar reduced-form regression to investigate how PL introduction affects NB prices in different geographic markets. Otherwise, the second approach uses the structural demand model. For instance, Chintagunta et al. (2002) use a structural model framework to investigate the effect of the PL introduction on the markup charged by the retailer. They estimate the demand function of different brands within a product category before and after a PL introduction. Furthermore, using the change on key parameters before and after the PL introduction, these scholars identify producers-retailer interactions and retailer markup under alternative assumptions of pricing behavior.

This paper aims to empirically investigate how NB prices respond to a PL introduction. During our sample period, PL products were introduced at different times in different geographical markets. Our econometric model exploits this fact and compares NB prices in markets where PL was introduced to those in markets where PL had not been introduced. The choice of NB prices might be decided by a mutual agreement between retailer and producers. In this case, retailers simultaneously might decide to introduce a PL product and consequently they may affect the NB price. However, the PL introduction in a new segment changes the degree of contracting power on setting the NB prices between the two parts, retailer and producers. For instance, our analysis cannot distinguish between a change on the equilibrium of the contracting power between producers and retailer and a possible change on pricing strategies by both parts. To our knowledge, this paper is the first one which uses this model specification to identify the effect of a PL introduction. Moreover, we also depart from most of the existing reduced-form studies by using brand level data instead of category data, which allows us to identify heterogeneous brand-level NB price responses.

2. DATA END RESEARCH DESIGN

The analysis uses quarterly (i.e., four weeks) scanner data supplied by Information Resources, Inc. (IRI) from January 2006 to December 2007. The dataset records the province-level sales in volume and value of refrigerated milk market for each retailer in the market,

including PL. Our study focuses on five provinces in the Emilia Romagna region: Cesena-Forlì, Rimini, Ravenna, Ferrara and Bologna.

IRI classified the products sold within the refrigerated milk market in six segments[1], namely, high quality, whole, micro-filtered, semi-skim, enriched, and skim. Within the five provinces of the sample, the most represented segment is the high quality segment (35.9%), followed by semi-skim (28.2%), micro-filtered (21.4%), and whole (13%) milk (see Table 1). The share of the skim and the enriched milk are marginal, under 2%; for this reason, we do not consider them in our analysis.

TABLE 1. Segment share and NB shares in volume, average 2006-2007

Milk market	Share	Brand A	Brand B
High Quality	35.90%	77.50%	11.44%
Semi-Skim	28.20%	70.30%	15.26%
Micro-filtered	21.40%	41.40%	25.22%
Whole	13.00%	56.90%	17.43%
Enriched	1.50%	98.80%	0.76%
Skim	0.00%	0.00%	100.00%

Source: Our own computation

Brands A and B hold most of the market share within each segment, therefore they are the leader and co-leader. The rest of the market is usually detained by PLs and other medium/small brands. The leader, brand A, holds a 70% market share in high quality and semi-skim segments and the largest market share in all major segments. The follower, brand B, has the strongest presence in the micro-filtered (25%) segment (see Table 1).

During the sample period, PLs are manly present in three out of the six segments: micro-filtered, semi-skim, and high quality. Thus, PLs are not present in skim and enriched milk segments. PLs are less priced than the counterpart NB products, which exhibit a price premium from 20% to 60% (see Table 2).

TABLE 2. PL an NB prices, average 2006-2007

Milk market	PL	Brand A	Brand B
High Quality	1.17	23.80%	23.3%
Whole	1.11	26.20%	25.6%
Micro-filtered	1.03	61.40%	40.0%
Semi-Skim	1.07	30.10%	29.0%
Skim	-	-	1.47
Enriched	-	1.61	1.11

Source: Our own computation

[1] A seventh segment, high-digestible milk, has been excluded from the analysis as it is very small and differs considerably from the other segments considered.

PLs enter the refrigerated milk market in 2002 when the introduction of the micro-filtered milk was allowed by the Decree of June 16th 2002. In three out of the five geographical areas (Cesena-Forlì, Rimini, and Ravenna) we observe the introduction of PL in the semi-skimmed and high quality milk segments in January 2007, while in Ferrara and Bologna the PLs are not introduced in these two segments along all the time period observed.

Given this event, our data set can be divided in two parts: a pre-introduction period which covers 12 time observations, from January to December 2006, and a post introduction period which covers other 12 time observations, from January 2007 to December 2007. In our dataset we observe NBs' prices and shares in three regions (Cesena-Forlì, Rimini, and Ravenna) before and after the PL introduction in two market segments (high quality and semi-skimmed). Moreover, we observe NBs' prices and shares in other two geographic areas (Bologna and Ferrara) where the PL is not introduced in the same market segments during our data period.

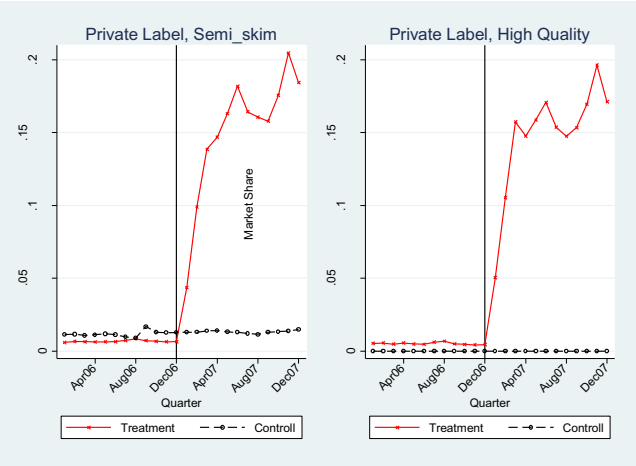
3. Econometric Specification and Estimation

We use difference-in-differences (DID) model to identify the effect of a PL introduction on two major NBs' shares and on their market prices. The idea is to measure the effect of a PL introduction in the treated provinces (Cesena-Forlì, Rimini, and Ravenna) using as control nearby geographical area where the PL introduction does not take place (Bologna and Ferrara).

Figure 1 shows the change of PL shares in the high quality and semi-skim milk for the treated and control areas during our data period.

We select these five areas mainly for two reasons. First of all, in the middle of our data period the PL introduction occurred in three out of five provinces. Moreover, these provinces are geographically close, which might be translated on the possibility of having more similar unobservable characteristics among markets. Furthermore, our analysis explores the effect of the PL introduction in other segments of the same market (whole and micro-filtered milk segments), where there is not variation on the PL penetration strategy during the time period considered.

FIGURE 1. Shares of PL in the semi-skim and whole segments, January 2006-December 2007



The identification assumption for the DID model is that the unobservables in the treatment and control groups follow on average the same trend before and after the shock. We compare the trend of the variable of interest in the treated and control areas using a mean comparison test, as follows:

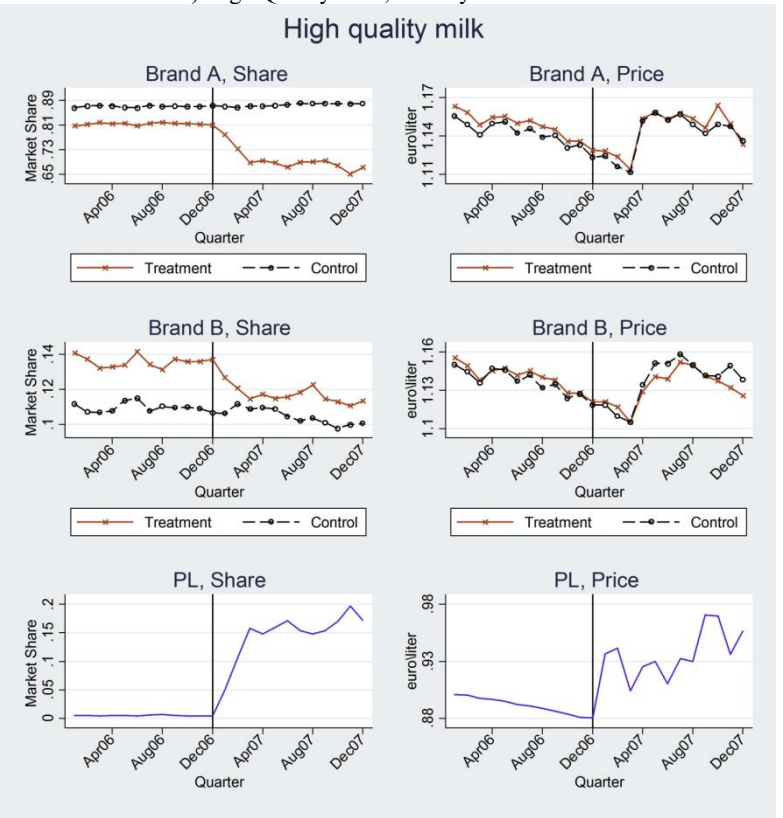
$$y = \alpha + \beta_1 \cdot T + \beta_2 \cdot (T \cdot trend) + \beta_3 \cdot trend + \varepsilon \qquad (1)$$

where y is the treatment and control variables (Price, Share Cat, and Share Tot) for the time period before the shock (from January to December 2006), and T is a dummy variable for the treatment group. The variable $trend$ is the trend of the treatment and control variables.

If β_2, the coefficient on the interaction among T and $trend$, is not significant, then we expect the two groups follow, on average, the same trend before and after the shock. We repeat the analysis for each segment, each variable, and for the two brands jointly and separately. The results, displayed in Tables A1 and A2 in the Appendix, show that, on average, there is not significant evidence of a difference in the unobservables between the treatment and control groups.

The graphical analysis of the share and price paths of the two major NBs and PLs in different segments of the market are plotted in Figures 2.a-c.

FIGURE 2.A) High Quality Milk, January 2006- December 2007



Top panels: plots of NB shares and NB prices in treatment and in control separately; Lower panels: PL share and PL prices

Whereas we observe the PL introduction in the semi-skim and high quality segments (plotted in Figures 2.a and 2.b), we do not observe a PL introduction in the whole and the micro-filtered segments (plotted in Figure 2.c). Therefore, we are going to use them in the DID analysis to check for a possible cross effect in close segments.

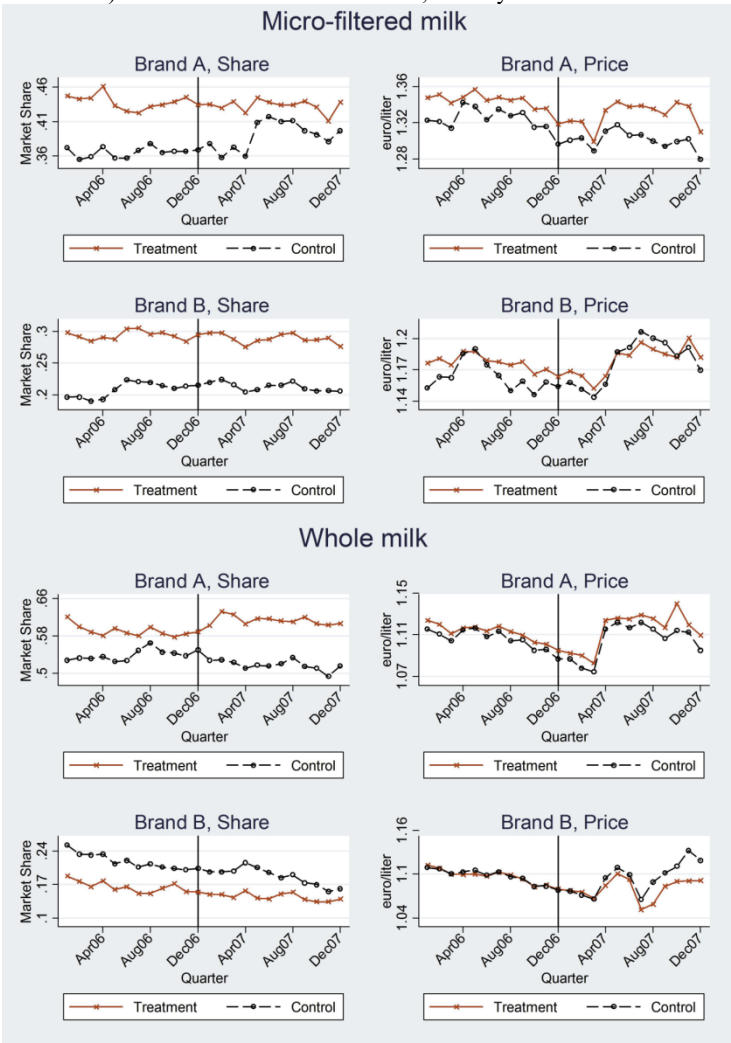
During the pre-introduction period we notice that prices and shares, on average, are following the same trend in the treatment and control provinces, suggesting the unobservable characteristics are similar in treatment and control geographical areas. This similarity on trends is in line with the econometric mean difference comparison, as shown in Tables A1 and A2 of the Appendix.

FIGURE 2.B) Semi-skim Milk, January 2006- December 2007

Top panels: plots of NB shares and NB prices in treatment and in control separately; Lower panels: PL share and PL prices

After the introduction of PL in the high quality and semi-skim segment in January 2007, we observe a drop in the shares of NBs. The drop on NBs' shares seems to affect more strongly brand A than brand B, and the high quality and semi-skim segments, where the introduction takes place, rather than the other two segments (whole and micro-filtered). The difference intensity by segment on the effect of the PL introduction suggests that a context effect might exist. We observe a post-introduction change on the brand B price within the semi-skim and whole milk segments of the treated provinces.

FIGURE 2.C) Whole and Micro-filtered Milk, January 2006- December 2007



Plots of NB shares and NB prices in treatment and in control separately

Our analysis considers two major NBs (i), A and B separately and jointly, in five different provinces (j) during the time period (t) from January 2006 to December 2007. To test the effect of the PL introduction on NB prices and shares we specify DID equations (2) and (3):

$$S_{ijt} = \beta_o + \beta_1 \cdot P_{ijt} + \beta_2 \cdot \tau_t + \beta_3 \cdot Treat_j + \beta_4 \cdot (Treat_j \cdot \tau_t) + u_{ijt} \quad (2)$$

$$P_{ijt} = \beta_o + \beta_2 \cdot \tau_t + \beta_3 \cdot Treat_j + \beta_4 \cdot (Treat_j \cdot \tau_t) + u_{ijt} \quad (3)$$

where S_{ijt} is the share of the product i, in province j at time t. We use two different computations of the share. A first one is the share in the total refrigerated milk market, $Share\ Total$. The other one is the share respect to the segment proper of product i, $Share\ Segment$.

Moreover, P_{ijt} is the price of product i, in the region j at time t, deflected by the consumer price index (CPI), τ_t denotes a post introduction indicator, which is one from January to December 2007 and zero otherwise, $Treat_j$ is a dummy which is one in the province j where the introduction takes place, zero otherwise. Hence, this dummy is equal to one if $j = Cesena - Forlì, Rimini, Ravenna$ and zero if $j = Bologna, Ferrara$.

The coefficient β_4 is the DID estimate of the effect of the PL introduction on NB shares in equation (2) and NB prices in equation (3). We repeat the DID estimation for four different segments of the market. Two of them, high quality and semi-skim, are directly interested by the PL introduction. We explore the effect also in other two segments, micro-filtered and whole milk, considering the possibility of a context effect.

On estimating the effect of the PL introduction on NB share in equation (2), we introduce the price as dependent variable. This can lead to identification issues due to the correlation of prices with unobservables characteristics. To control for endogeneity on prices we use an Instrumental Variable (IV) approach using lag variable on prices and merchandising, cost shifter or prices on other provinces as excluded instruments. We test the strength of the over-identifying restrictions using a Sargan test and we assess the power of the instruments using an F-test on the joint significance of their coefficients in each of the first stage regressions. We estimate equations (2) and (3) using a fix effect estimator on provinces. We repeat the estimation for both brands A and B together and separately, for each of the four segments of the market.

4. RESULTS

4.1 Effects of PL Introduction on NB Market Shares

Tables 3 and 4 display the results from the DID analysis for the four segments: high quality, semi-skim, whole, and micro-filtered.

TABLE 3. DID results for high quality and semi-skim segments for each brand and pooling them together ($y = \text{Share Total}$)

	High Quality			Semi-skim		
	A+B	**A**	**B**	**A+B**	**A**	**B**
Price	-0.318***	-0.512***	-0.096***	-0.469***	-0.445***	-0.156***
	(0.083)	(0.140)	(0.023)	(0.092)	(0.144)	(0.042)
PL Introduction	-0.017***	-0.029***	-0.003***	-0.019***	-0.028***	-0.008***
	(0.003)	(0.004)	(0.001)	(0.003)	(0.004)	(0.001)
Sargan Stat (P-val)	0.7823	0.5166	0.4009	0.7472	0.1741	0.4106
1st stage F-stat	49.005	18.907	30.293	29.621	16.065	14.567
IV	a	a	a	a	a	a
Observations	230	115	115	230	115	115
R-squared	0.448	0.674	0.565	0.439	0.635	0.537

IV: a) Lag Prices and/or Lag of value on merchandising; b) Prices of the same product in other provinces; c) Cost shifter
Fixed effect estimator: control for Brand and Provinces
Standard errors in brackets; ***, **, and * indicate significance at the 1%, 5%, and 10% levels

For each segment, we regress the share out of the refrigerated milk market of both brand A and brand B combined, brand A alone, and brand B alone. PL introduction results in a decrease of 1.7% and 1.9% in the combined share in the high quality and semi-skim segments, in which the PLs were introduced. The PL introduction in these two segments also lead to a smaller decrease (7%) in the whole segment, but it does not have any significant effect on the NBs' shares in the micro-filtered segment.

TABLE 4. DID results in whole and micro-filtered segments for each brand separately and pooling them together ($y = Share\ Total$)

	Whole			Micro-filtered		
	A+B	**A**	**B**	**A+B**	**A**	**B**
Price	-0.148***	-0.132**	-0.089***	-0.060***	-0.135***	0.102***
	(0.031)	(0.052)	(0.030)	(0.022)	(0.038)	(0.031)
PL introduction	-0.007***	-0.010***	-0.004***	-0.000	0.001	-0.001
	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)
Sargan Stat (P-value)	0.3471	0.3065	0.1336	0.5233	0.9566	0.2224
1st stage F-stat	49.54	23.844	26.083	111.637	30.986	19.306
IV	a	a	a	a	a	a
Observations	230	115	115	230	115	115
R-squared	0.548	0.667	0.502	0.456	0.508	0.480

IV: a) Lag Prices and/or Lag of value on merchandising; b) Prices of the same product in other provinces; c) Cost shifter
Fixed effect estimator: control for Brand and Provinces
Standard errors in brackets; ***, **, and * indicate significance at the 1%, 5%, and 10% levels

These results are not surprising because high quality or semi-skim PLs could be viewed as a substitutes with whole NBs, but with lower prices, but not with the micro-filtered NBs. If we examine the shares of the two NBs separately, we see similar patterns: each of the brands experiences a larger decrease in share in the segments where the PLs were introduced, but a smaller one in the whole segment.

Noticeably, the effect of the PL introduction is much larger on the share of brand A than on that of brand B. The difference on the magnitude effect can have two different reasons. First, a different degree of substitutability of the NBs with respect to the PL can drive the difference on magnitude. Secondly, brands can differ on strategies in response to a PL introduction, leading to the variation on results.

Our analysis does not allow to identify the motivation which lead to the specific magnitude of the coefficients estimated. However, we expect the two brands, brand A and brand B, not being identical substitute to PL. Furthermore, as Table 7 will show afterwards, the pricing strategy due to a PL introduction results to be brand and category specific.

4.2 Effects of PL Introduction on NB Market Shares within Segment

Tables 5 and 6 display the DID regression results with similar specifications as Tables 3 and 4. The only difference is that the dependent variables are NB shares in the segment $y = Share\ Segment$, where the $Share\ Segment$ is calculated as the share of the product X_{ij} of brand i within segment j.

TABLE 5. DID results in high quality and semi-skim segments for each brand separately and pooling them together ($y = Share\ Segment$)

	High Quality			Semi-skim		
	A+B	**A**	**B**	**A+B**	**A**	**B**
Price	-0.716***	-1.087***	-0.217***	-1.085***	-1.199***	-0.480***
	(0.236)	(0.363)	(0.063)	(0.216)	(0.350)	(0.128)
PL Introduction	-0.072***	-0.125***	-0.016***	-0.071***	-0.107***	-0.029***
	(0.007)	(0.010)	(0.002)	(0.007)	(0.011)	(0.004)
Sargan Stat						
(P-value)	0.687	0.1104	0.1378	0.2216	0.5757	0.3239
1st stage F-stat	49.005	18.967	30.293	25.925	24.169	14.567
IV	a	a	a	a	a	a
Observations	230	115	115	230	115	115
R-squared	0.495	0.753	0.629	0.523	0.701	0.494

IV: a) Lag Prices and/or Lag of value on merchandising; b) Prices of the same product in other provinces; c) Cost shifter
Fixed effect estimator: control for Brand and Provinces
Standard errors in brackets; ***, **, and * indicate significance at the 1%, 5%, and 10% levels

In Table 5, we find again that PL introduction in the high quality and semi-skim segments results in a significant decrease of the share of the NBs, combined or separately, within the segment.

The magnitudes of the decrease are, respectively, eight or three times larger for brand A than for brand B in the high quality or semi-skim segments. These results are consistent with Figure 2.a and Figure 2.b.

Interestingly, in Table 6, the shares of whole milk NBs combined and of brand A alone increase as a result of the PL introductions in the high quality and semi-skim segments, and this is consistent with Figure 2.c.

TABLE 6. DID results in whole and micro-filtered segments for each brand separately and pooling them together ($y = Share\ Segment$)

	Whole			Micro-filtered		
	A+B	**A**	**B**	**A+B**	**A**	**B**
Price	-0.221*	-0.341*	-0.629***	-0.223***	-0.523***	-0.146
	(0.122)	(0.175)	(0.176)	(0.086)	(0.145)	(0.099)
PL introduction	0.026***	0.046***	0.001	-0.006	-0.003	-0.012***
	(0.006)	(0.008)	(0.007)	(0.004)	(0.007)	(0.004)
Sargan Stat						
(P-value)	0.1241	0.2816	0.5089	0.6457	0.4157	0.5314
1st stage F-stat	165.749	55.993	34.446	61.986	25.605	18.196
IV	a	a	a	a+c	a+c	b+c
Observations	230	115	115	230	115	115
R-squared	0.103	0.215	0.242	0.089	0.190	0.012

IV: a) Lag Prices and/or Lag of value on merchandising; b) Prices of the same product in other provinces; c) Cost shifter
Fixed effect estimator: control for Brand and Provinces
Standard errors in brackets; ***, **, and * indicate significance at the 1%, 5%, and 10% levels

How do we reconcile this positive effect of PL introductions on the share of whole milk NBs in the whole milk segment, with the negative effect of PL introductions on the share of whole milk NBs in the refrigerated milk market? The key aspect is that the high quality and semi-skim PLs are closer substitutes to whole milk PLs than to whole milk NBs, therefore whole milk PLs lose more sales than whole milk NBs after the high quality and semi-skim PLs become available. Therefore, within the whole milk segment, the share of NBs increases. Moreover, we notice this positive cross effect on within whole milk segment shares affects brand A but not brand B. Lastly, brand A has a higher lost in the two segments affected by the PL introduction. The Sargan test and the first stage F test show the validity of the IV used.

4.3 Effects of PL Introduction on NB Prices

Lastly, Table 7 contains the results relative to the price effect.

TABLE 7. DID results in all four segments for each brand separately and pooling them together ($y = Price$)

	Price		
	A+B	**A**	**B**
High Quality	-0.005	-0.002	-0.007
	(0.004)	(0.005)	(0.005)
Semi-Skim	-0.005	-0.000	-0.011**
	(0.004)	(0.005)	(0.005)
Whole	-0.005	0.004	-0.013**
	(0.004)	(0.005)	(0.006)
Micro-Filtered	-0.003	-0.007	0.002
	(0.005)	(0.007)	(0.006)

Control for year dummies
Fixed effect estimator: control for Brand and Provinces
Standard errors in brackets; ***, **, and * indicate significance at the 1%, 5%, and 10% levels

We notice that when we pool together the two NBs we cannot notice any price change on any segment. However if we consider the two brands separately, we found a negative price effect for brand B in the semi-skim, but not in the high quality segment where the PL was introduced.

Moreover, the results show a negative price effect in the whole milk segment, which is closer substitute to the high quality milk with respect to the micro-filtered where no effect is noticed. The decrease of brand B prices in the semi-skim and whole segment is observable also in the graph analysis (Figure 2b and 2c) where we notice a slightly decrease of prices in the second half of the 2008. On the other side, the brand A price seems to not change after the PL introduction. This results show how a pooled estimation will possibly cover any price effect and how the price adjustment may be affected by events which are brand and segment specific. This is an important founding because it suggests that a brand and category specific analysis is required to deeply understand the effect on prices of a PL introduction.

5. CONCLUSIONS

The analysis suggests three major insights. First, conducting the analysis at the category level, we were able to identify a context effect. Introducing a PL in a specific segment will cannibalizes the market shares of products in the segment of the market most similar in characteristics. Moreover, the drop on share in a close segment of the market affects more the brand most similar to the one introduced (in our case PL). Further, in our analysis, brand A seems to have, with respect to brand B, a larger drop in share within the segments where the introduction do not take place, whereas it seems to mitigate better the drop in shares within the segments where PL entered.

Secondly, our results suggest that changes of prices due to a PL introduction are brand and category specific. Whereas brand A seems to not react at all to the PL introduction, brand B reacts decreasing prices in the semi-skim and whole segments.

Finally, an analysis conducted at the category level data tends to mask the brand specific response to the PL introduction, failing to identify the response which takes place in the market.

Nevertheless, the analysis is troubled by limitations, mostly driven by the structure of the IRI dataset. There are two major data characteristics which cause limitations. First we are not able to observe the PL from different retailers, but we observe only an aggregate value. This aspect does not allow us to identify differences on the introduction of PL from different retailer. Secondly, the dataset is aggregated at the market level, and, as before, we assume the depth of the PL introduction is homogenous across provinces.

In our analysis we use a fix effect estimator by provinces which captures the unobservable heterogeneity among different geographical areas. More disaggregate data could allow us to explore the effect of a PL introduction specifically for retailer insignia and dependently to the depth of the introduction. Testing if the effect of a PL introduction on NBs' prices varies among different retailer insignia could be of particular interest to verify if the response to a PL introduction differs among different retailers and different channel formats, and it is not just brand specific.

APPENDIX

TABLE A1. Mean Comparison for High Quality and Semi-skim segments

			T	$T \cdot trend$	$trend$	constant	R-squared	Num Obs
High Quality	Price	A+B	0.008	0.000	-0.002***	1.182***	0.653	120
		A	0.012*	0.000	-0.002***	1.183***	0.789	60
		B	0.004	0.000	-0.002***	1.181***	0.688	60
	Share Cat	A+B	-0.015	0.000	0.000	0.489*	0.000	120
		A	-0.056	0.000	0.000	0.868***	0.463	60
		B	0.026	0.000	0.000	0.111***	0.275	60
	Share Tot	A+B	-0.037	0.000	-0.001	0.199*	0.011	120
		A	-0.075	0.001	-0.001	0.353***	0.409	60
		B	0.001	0.000	-0.000	0.046***	0.037	60
Semi-Skim	Price	A+B	0.002	-0.000	-0.002***	1.136***	0.436	120
		A	0.011	-0.000	-0.002***	1.136***	0.691	60
		B	-0.007	0.000	-0.002***	1.135***	0.617	60
	Share Cat	A+B	-0.025	-0.000	-0.000	0.480*	0.002	120
		A	-0.032	-0.002	0.001	0.781***	0.163	60
		B	-0.018	0.001	-0.001	0.180***	0.008	60
	Share Tot	A+B	0.037	-0.000	-0.000	0.118*	0.024	120
		A	0.064	-0.001	-0.000	0.193***	0.291	60
		B	0.010	0.000	-0.000	0.044***	0.398	60

T = treatment group dummy
***, **, and * indicate significance at the 1%, 5%, and 10% levels

TABLE A2. Mean Comparison for Whole and Micro-filtered segments

			T	$T \cdot trend$	$trend$	constant	R-squared	Num Obs
Whole	Price	A+B	0.003	0.000	-0.002***	1.144***	0.476	120
		A	0.006	-0.000	-0.002***	1.144***	0.632	60
		B	-0.001	0.000	-0.003***	1.144***	0.774	60
	Share Cat	A+B	0.017	-0.001	-0.001	0.399**	0.001	120
		A	0.123	-0.004	0.002	0.503***	0.043	60
		B	-0.088	0.002	-0.004	0.294***	0.193	60
	Share Tot	A+B	0.011	-0.000	-0.000	0.057**	0.014	120
		A	0.029	-0.001	-0.000	0.075***	0.212	60
		B	-0.006	0.000	-0.001	0.040***	0.106	60
Micro-filtered	Price	A+B	0.020	-0.000	-0.001	1.270***	0.013	120
		A	0.028	-0.000	-0.001	1.350***	0.255	60
		B	0.011	0.000	-0.001	1.190***	0.229	60
	Share Cat	A+B	0.114	-0.002	0.001	0.261***	0.169	120
		A	0.103***	-0.002	0.001	0.355***	0.669	60
		B	0.125	-0.002	0.002	0.168**	0.365	60
	Share Tot	A+B	0.004	-0.000	0.001	0.048***	0.025	120
		A	-0.003	-0.000	0.001	0.066***	0.100	60
		B	0.011	-0.000	0.001	0.030**	0.101	60

T = treatment group dummy
***, **, and * indicate significance at the 1%, 5%, and 10% levels

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