Discussion of:

The unequal gains from product innovations: evidence from the US retail sector

by Xavier Jaravel

and

Price selection

by Carlos Carvalho and Oleksiy Kryvtsov

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ECB conference on "Understanding inflation: lessons from the past, lessons for the future?

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Introduction

- I have the great pleasure to discuss two papers that provide very interesting new insights into the dynamics of inflation.

  $\Longrightarrow$ It was a very enriching and enjoyable exercise to study the papers and prepare this discussion!

- Apart from being very well done, the two papers have in common that they make diligent use of disaggregate micro price data to address their respective questions of interest.

  $\Longrightarrow$ In my discussion, I will primarily look at the papers taking a "data perspective".

Overview

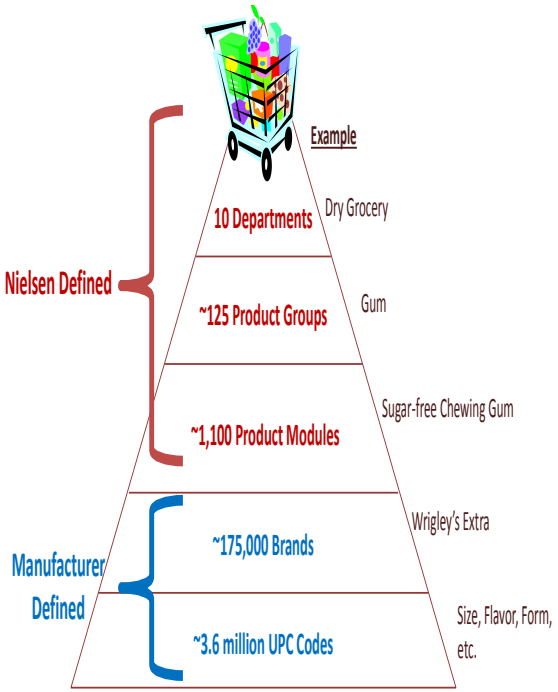
1. Micro price data sets employed: major features
2. Inflation inequality
3. Price selection and inflation dynamics

Table of contents

Micro price data sets: major features

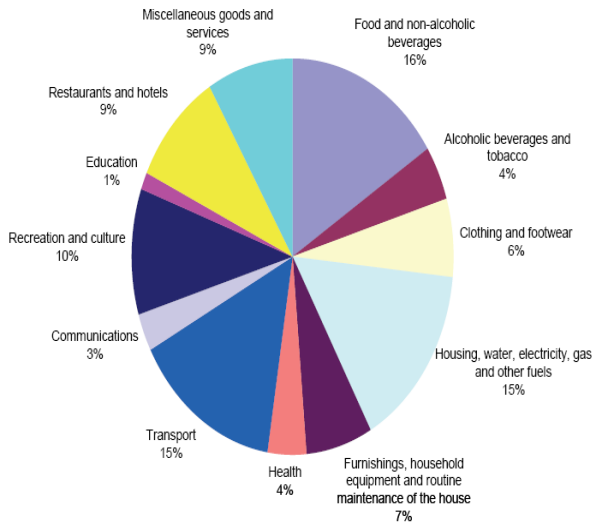
Desirable features of micro price data to be used for the analysis of price setting

High level of disaggregation



Source: Kilts data center presentatoin

Broad coverage



Source: Eurostat

Det. inf. on consumers

Demographic data (such as income, education, household size, age, ...)
Geographic data
Quantities bought
...

$\Longrightarrow$ "Trilemma" of micro price data set choice: No existing price data set satisfies all three features.

Micro price data sets: major features

Micro price data sets: a crude characterization

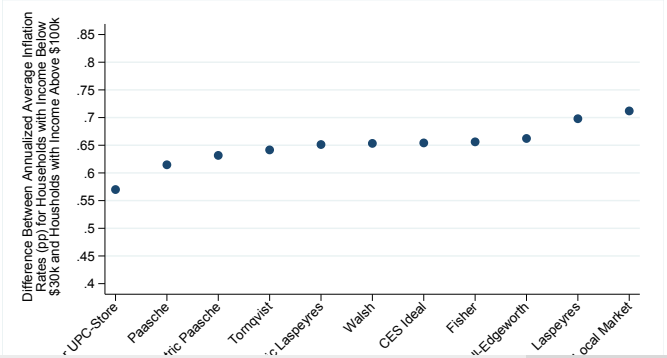
	Disaggr. CPI data	Retailer scanner data	Consumer panel data
Level of disaggr.	Up to "item level"	UPC	UPC
Inf. on goods?	Crude	Comprehensive inf.	Comprehensive inf.
Geogr. disaggr.	Sel. areas	ZIP code	ZIP code
Inf. on seller	-	Yes	Yes
Inf. on buyer	-	-	Yes
Coverage	Comprehensive	FMCG, partly electronic goods	FMCG
Length/frequ.	Long, monthly	Last two decades, weekly	Last two decades, undated
Further issues		Not all retailers are willing to share their data	Reporting errors (see Einav et al., 2010)

Table of contents

Inflation inequality

- The paper examines the implications of economic growth and rising income inequality on innovation in product markets and its consequences for inflation rates experienced by households with different incomes.
- Major steps of the analysis and their findings:
  - First, heterogeneities in inflation and varieties consumed across household income groups are documented at several levels of aggregation.
  - Example result (inflation of continued goods): Figure 1B:

Panel B: Stability of Inflation Difference across Price Indices



Inflation inequality

- Major steps and findings (... continued):
  - Decomposing observed inflation differences shows that they are mostly due to the purchase of different **UPC-level goods within a module** rather than different expenditures pattern across modules/categories.

    $\Longrightarrow$ Existing studies such as Hobijn und Lagakos (2005) fail to find these effects since they employ category-level prices (and expenditure shares that differ across household income groups).
  - Employing national trends in age-income group dynamics the author moreover shows that the changes in demand related to economic growth and rising inequality cause the supply changes in goods markets documented above.
  - Finally, a theoretical model is presented that is capable to replicate the empirical findings is presented.

Inflation inequality

- An aspect that the author might want to consider is how his empirical findings are related to the role that the purchasing behavior of different income groups and relative price developments with respect to national brands and private-label goods play.
- For a variety of reasons, national brands are generally more expensive than private-label goods, i.e., belong to the class of premium goods.
- One of the reasons for the price gap is attributed to the phenomenon of “double marginalization".
- To illustrate this point we refer to Hong und Li (2017).

Inflation inequality

- Hong und Li (2017) develop a model of the vertical (and horizontal) market structure of the retail sector.
- In the vertically non-integrated setup (national brand supply), both manufacturing and retailing firms act as monopolistic price setters, the equilibrium retail price is given by:

$$p_i = \frac{\varepsilon_i}{\varepsilon_i - 1}\left(\theta_i^r + \frac{\mu_i}{\mu_i - 1}\left[c + \theta_i^m\right]\right). \tag{1}$$

- In the vertically integrated setup (private-label goods supply), the equilibrium price is on the other hand given by:

$$p_i = \frac{\varepsilon_{VI}}{\varepsilon_{VI} - 1}\left(\theta_i^r + c + \theta_i^m\right). \tag{2}$$

Inflation inequality

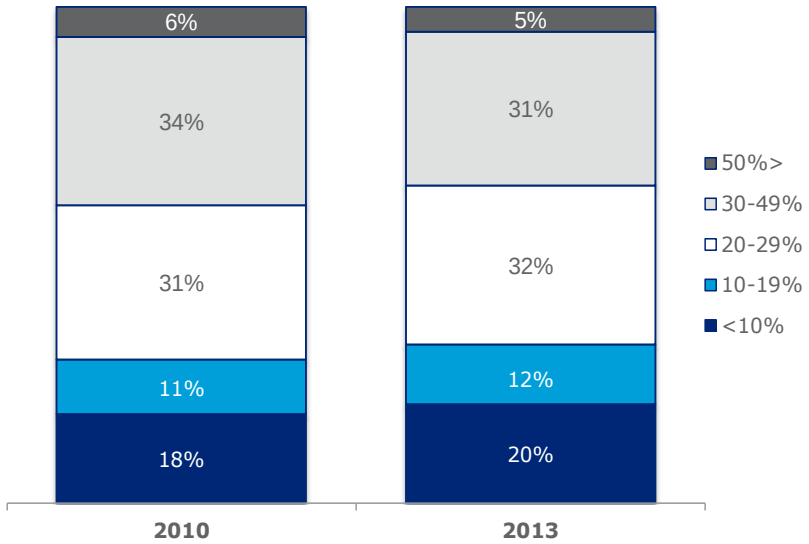
- To fit into the story outlined in the current paper we must have that
  - higher-income households tend to spend relatively more on national brands and
  - inflation rates must have been lower for national brands than for private label goods?
- Is this the case?

Inflation inequality: national brand/private label price gaps

Exhibit 9

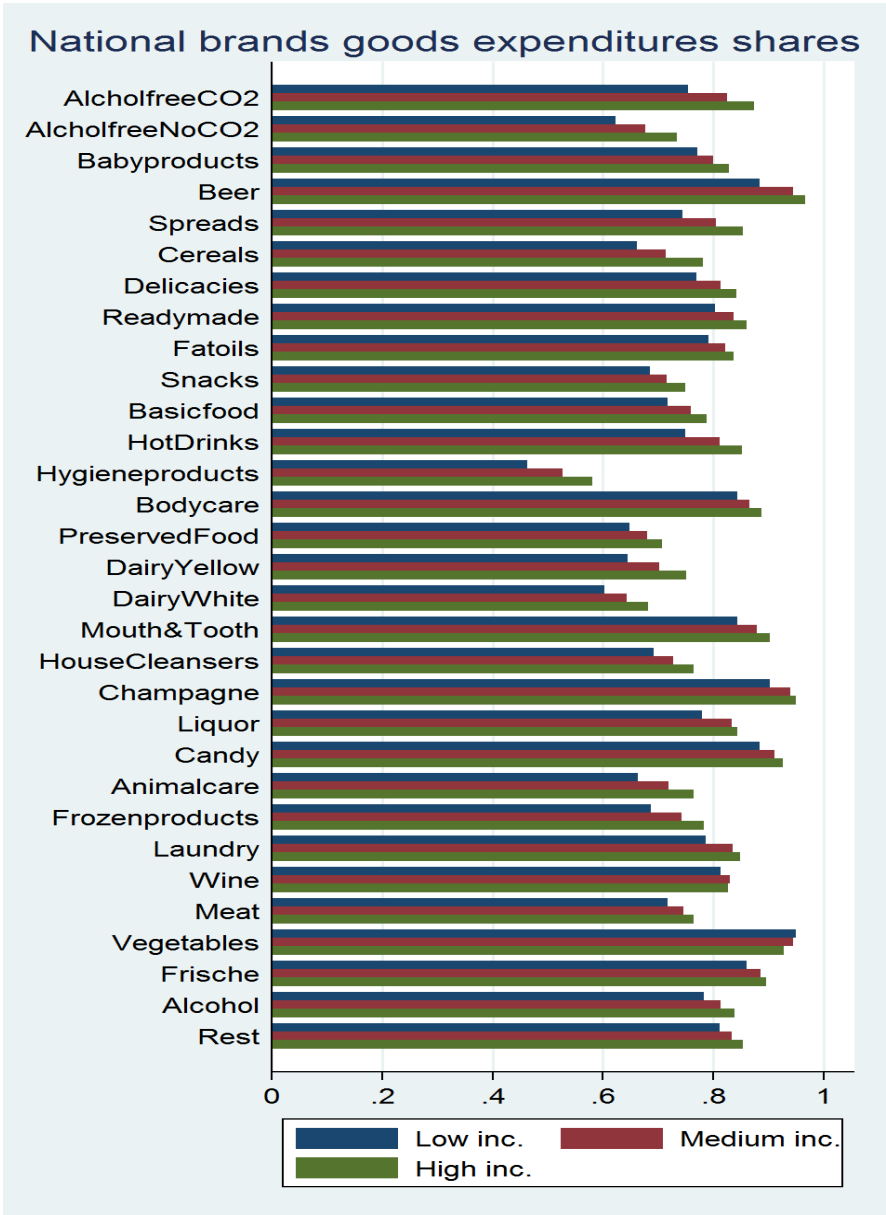
The price gap between private label and national brand solutions is diminishing; today nearly one-third of private label products offer savings of less than 20% versus their national brand counterpart.

PRIVATE LABEL AVERAGE PRICE DISCOUNT
VS. BRANDED
TOTAL U.S.*- MULTI-OUTLET + CONVENIENCE



Source: IRI Market Advantage™; 52 weeks ending 9/8/2013 and same period 2010; among the top 100 categories, based on private label dollar sales MULOC

Inflation inequality



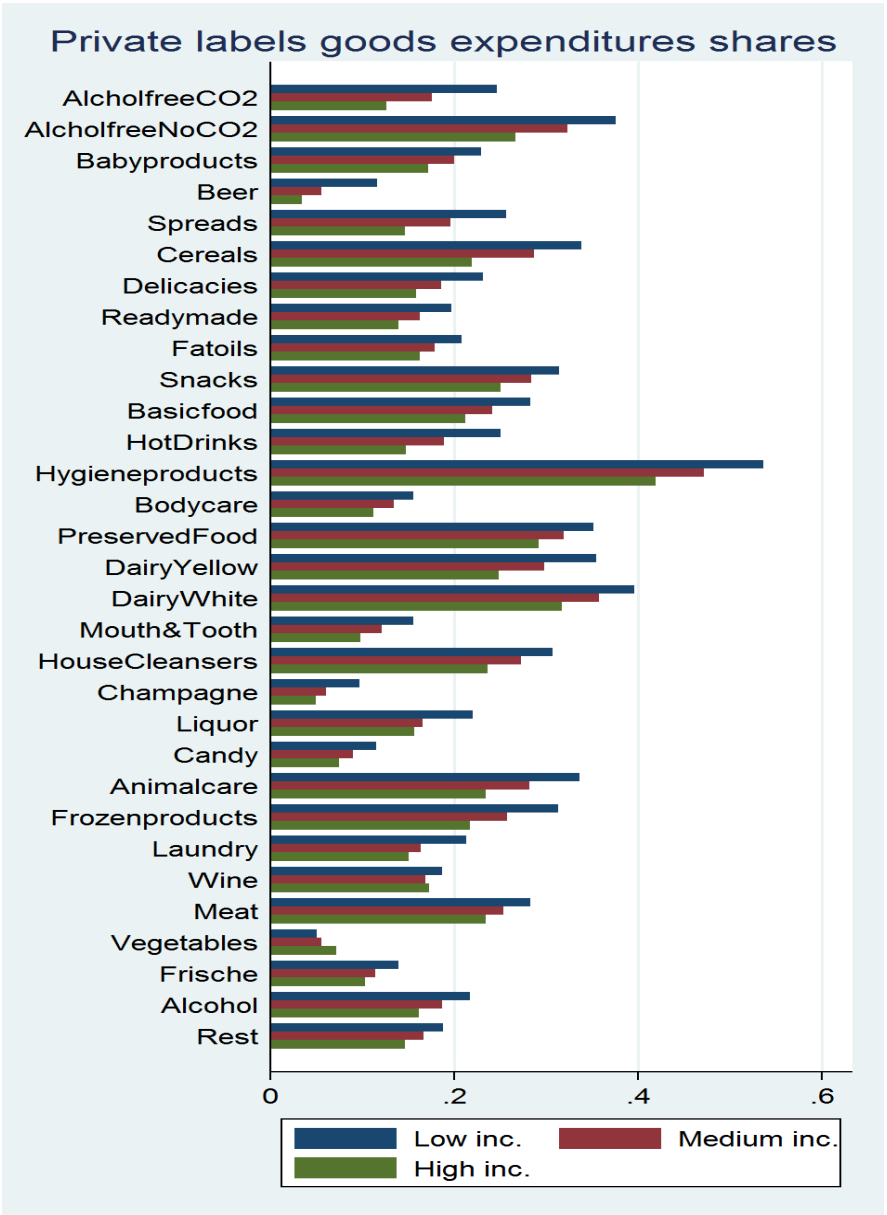


Table of contents

Price selection

- The paper quantifies the contribution of price selection to the variation in inflation.
- Price selection occurs when after an aggregate shock those firms adjust their prices whose current (preset) prices are furthest away from the (not observable) optimal price, p_t^*.
- Implications: The stronger the extent of price selection, the quicker the aggregate price level responds to an aggregate nominal shock and the smaller are the real effects of such a shock, see Caplin und Spulber (1987) and Golosov und Lucas (2007).
- Knowing the extent of price selection present in the data can help to discriminate between price-setting models.

Price selection

- Major idea underlying the - model-free - measure of price selection: When price selection is present, prices that are adjusted are not representative of the population of prices
- To examine the contribution of price selection to variation in inflation rates, regressions of the following form a run:

$$P_{ct}^{pre} = \beta DP_{ct} + controls + error \tag{3}$$

- This is done for different levels of aggregation.

Price selection

Selected results					
U.K.	Canada	U.S.	U.K.	Canada	U.S.
Category level					
Regular prices			Prices incl. sales		
-0.385^{***}	-0.172^{***}	-0.259^{***}	-0.359^{***}	-0.255^{***}	-0.217^{***}
Aggregate level					
Regular prices			Prices incl. sales		
-0.198^{***}	-0.011	0.060^{*}	-0.394^{***}	-0.041	-0.140^{***}

$\Longrightarrow$ The degree of price selection is sizeable at the category level and declines with aggregation.

$\Longrightarrow$ Price selection is more pronounced in categories where price changes are less frequent, larger in absolute magnitude, or in months with larger inflation deviations.

$\Longrightarrow$ There exist pronounced differences across countries.

$\Longrightarrow$ Are these differences structural or can they be traced to differences in the data used?

Price selection

- One aspect that could matter is that the geographical sampling process that statistical offices use might influence results (see, e.g., the study by Handbury und Weinstein, 2015).

  $\Longrightarrow$ FitzGerald und Shoemaker (2013) show that, for the U.S. biases between official price indices and price indices computed using Nielsen scanner data at the city level are large but are not sizeable at the national level.

- The level of aggregation at the "goods level" might matter: Do the 705 categories employed by the Statistical Office of Canada correspond to a higher level of aggregation?

Price selection

- The authors exclude private label goods from the IRI data sample.
- Hong und Li (2017) have shown that the pass-through of a marginal cost shocks tend to be larger for private-label goods than for national brands.
- The reasons are that the absence of double marginalization in this case reduces markups.
- Thus, in response to a cost shock, the desired price changes less for national brand goods than for private-label goods.
- Given identical price change costs the degree of self-selection should thus be higher for private label goods.

$\Longrightarrow$ Including private-label goods and conducting the exercise at the goods-level might increase the extent of price selection.

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