Wage and Price Setting: New Evidence from Uruguayan Firms

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Outline

- Introduction - motivation
- The survey
- Price setting behavior
- Factors affecting pricing
- Prices and wages
- Firms reaction to unexpected shocks
- Final comments and future research
Introduction

- In recent years there has been a large increase in the empirical literature on price behavior

- Understanding the microstructure of price setting is key to fight price rigidity and conduct a more efficient monetary and macroeconomic policy

- Few studies that analyze price setting from surveys that directly ask companies regarding price formation (New Zeland, US, Brazil,....)

- Different results from firm’s surveys (Coibion, Gorodnichenko and Kumar 2015)
In Uruguay despite recent progress for the retail sector there is no direct evidence on the price formation strategies by firms.

In this study we use a novel data set of a survey to +300 large Uruguayan firms on price setting.
The survey

- Stratified random sample

- Firms with 50 or more employees

- Strata:
  - firm’s size: 50 to 99, 100 to 199 and 200+ employees
  - sector: all less agriculture. Industry (50%), Trade (15%), Trans. (12%), Other business (9%)

- Sample size: 630. Response rate: 58% (363)
Price Setting Behavior I

Figure 2a. Pricing of the Firm's Main Product (in %)
Price Setting Behavior II – by Sector

Figure 2b. Pricing of Firm's Main Product by Sector (in %)
Price Setting Behavior III – Industry

Figure 2c. Price Setting in the Manufacturing Industry by Subsector (in %)
Price Setting Behavior IV – Frequency of Price Changes
Price Setting Behavior V – Frequency of Price Changes

Figure 5. Price Changes by Month (in %)
Price Setting Behavior – Summary

- The majority of firms, regardless of sector, set their price with a mark-up over costs.

- The lower response to competition in the food sector shows compared to wood is puzzling. Might be related to market segmentation in some strategically important food components (and/or government intervention).

- Prices are more rigid than in previous studies.
Factors Affecting Pricing

Figure 6. Factors Affecting Price Increases (median response) 1=Not Relevant, 5=Very Relevant
Factors Affecting Pricing II

Table 3. Correlation of True Cost Structure and the Importance Declared by Employers of each Cost Factor

<table>
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<th>Wages Share</th>
<th>Inputs</th>
<th>Inputs Share</th>
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*** p<0.01
Factors Affecting Pricing III

- Temporal orientation of firm $i$ in factor $z$ in sector $j$:

$$ t_{z,i,j} = z_{i,j}^f - z_{i,j}^p \quad (1) \quad (f=\text{future}, \; p=\text{past}) $$

- $t_{z,i,j} > 0 \Rightarrow$ the firm is forward looking in factor $z$

- $t_{z,i,j} < 0 \Rightarrow$ the firm is backward looking in factor $z$

- $t_{z,i,j} = 0 \Rightarrow$ the firm is neutral in factor $z$
Factors Affecting Pricing IV

- Temporal orientation of firms:

\[ to_{i,j} = \sum_{z=1}^{7} to_{z,i,j} \quad (2) \]

- Sectoral aggregates:

\[ to_{z,j} = \sum_{i=1}^{N} to_{z,i,j} \quad (3) \]

\[ to_{j} = \sum_{z=1}^{7} to_{z,j} \quad (4) \]

- Total aggregate:

\[ to = \sum_{j=1}^{N_j} to_{j} \quad (5) \]
Factors Affecting Pricing V

Temporal orientation of firms in the price setting process

- Backward looking: 27%
- Neutral: 63%
- Forward looking: 10%

Source: Price setting survey (INE).
Factors Affecting Pricing VI

Bar chart showing aggregated temporal orientation by variable:
- Dollar: -51
- Demand: -5
- Country inflation: -58
- Prices of competitors: -44
- Raw materials: -80
- Cost of credit: 13
- Wages: 56

Source: Price setting survey (INE).
Factors Affecting Pricing VII

**Temporal orientation of firms in the price setting process by sector (ISIC Rev. 3.1)**

- **Manufacturing**: 11% Backward looking, 61% Neutral, 28% Forward looking
- **Trade and repairs**: 13% Backward looking, 58% Neutral, 27% Forward looking
- **Trans., storage and com.**: 5% Backward looking, 62% Neutral, 30% Forward looking
- **Real estate, renting and business activities**: 12% Backward looking, 64% Neutral, 24% Forward looking
- **Others business**: 6% Backward looking, 76% Neutral, 18% Forward looking

Total: 10% Backward looking, 63% Neutral, 27% Forward looking

Source: Price setting survey (INE).
Factors Affecting Pricing VIII

Relative temporal orientation of firms in the price setting process by sector
(ISIC Rev. 3.1)

-0.85 Total
-0.55 Real estate, renting and business activities
-1.76 Trans., storage and com.
-0.90 Manufacturing
-0.73 Trade and reparis

Source: Price setting survey (INE).
Factors Affecting Pricing IX

Temporal orientation of firms in the Manufacturing sector by variable

- Dollar: -27
- Demand: -5
- Country inflation: -19
- Prices of competitors: -24
- Raw materials: -35
- Cost of credit: -9
- Wages: -38

Source: Price setting survey (INE).
Figure 10. Months to Adjust Prices when Wages Change (In %)
Firms Reaction to Unexpected Shocks

1=Not Relevant, 5=Very Relevant

- Raise Prices
- Cut Prices
- Reduce Margins
- Reduce Production
- Reduce Costs

Graph showing the reaction of firms to unexpected shocks.
## Firms Reaction to Unexpected Shocks

### Table 4. Correlation of Firms Strategies under a Sales Negative Shock

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<th>Reduce Margins</th>
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*** p<0.01
Final Comments and Future Research

- The results indicate that prices are more rigid than previously thought and indicate a relative low degree of competition in the markets.

- 10% of the firms at the aggregate level are forward looking.

- Some of the results cast doubt on the responses of the firms. Some answers turned on an alert signal on the analysis of firm’s surveys. The design of the surveys should capture these contradictions in the answers.

- Factors causing price stickiness?