Introduction

Goal: Propose a simple model for large firm’s pricing decision, based on the interplay between communication within the firm and the provision of incentives.

Theoretical Contributions:
- Derive a new Phillips curve where the misalignment of incentives and the number of divisions of a given firm drive the slope of the Phillips curve;
- Show that within-firm misalignment in the communication generates price stickiness and non-neutrality of money;

Empirical Contributions:
- Our intra-firm mechanism fits the small changes on prices and heterogeneity on price-setting;
- Our communication mechanism illustrates the gathering information-misalignment.

Within Firm Environment

Firm structure - Suppose a company with two sales departments, division A and division B, and a headquarters that decides the optimal price given the information provided by the departments a la Dessein et al (2009) as:

\[ Max E_t \left( \sum_{i=0}^{\infty} \beta^i \pi_t (P_{it}, P_i, Y_t, Z_t | M_i) \right) \]  

Optimal Price Equation - From that, price dynamic depends on:

\[ p_{it} = p_t + \frac{\pi_{13}}{\rho_{113}} (1 + t)(1 + h)^{t-1} + \frac{\pi_{14}}{\rho_{114}} (1 + t)(1 + k)^{t-1} \]  

- The Aggregate Misalignment \( \frac{\pi_{13}}{\rho_{113}} \) and the Aggregate Partition \( t \).
- The Idiosyncratic Misalignment \( \frac{\pi_{14}}{\rho_{114}} \) and the Idiosyncratic Partition \( t \).

Do Retailers Match our Optimal Prices?

- Estimating optimal price equation we fit the following facts:
  1. Small changes in prices
  2. (Changes) Reference Price
  3. Length of Price Spell
  4. Sales Behavior
  5. Temporal Stickiness

Main Take-Ways

- The endogenous communication mechanism, when empirically evaluated, matches the empirical prices and the gathering information-misalignment (both through the interplay partition-misalignment).
- Through the incentives provision of the firms we address the heterogeneity of price distribution; the reference/sales price behavior and the small changes on prices
- Through the Phillips curve, the within firm misalignment matters to fit the macro stylized facts as:
  - The inflation behavior;
  - The real effects of monetary policy;
  - Its interplay with both the number of sectors and the level of misalignment.

The Phillips Curve

The dynamics of the sectoral Phillips curve illustrates that how revelation of the information matters to the firms when taking their pricing decisions:

\[ \pi_{it} = \alpha_j \pi_t - (1 - \alpha_j) \varepsilon_{\pi_{t+1}} + \gamma_i \alpha_i \varepsilon_{y_{t+1}} + \chi_j \pi_{it} + E_{\pi} (\pi_{t+1} - \pi_{t+1}) \]  

Where: \( \alpha = \frac{\pi_{13}}{\rho_{113}}, \gamma = \frac{\pi_{14}}{\rho_{114}}, \chi = \frac{\pi_{14}}{\rho_{114}} \).

- Less informative communication (higher misalignment) induces higher inflation (through the distortions in the prices of the goods);
- Higher misalignment demands a hawkish Central Bank (in an environment with higher inflation cost);
- Misalignment enhances the persistence and size of monetary policy and disinflation output cost.

Misalignment x Partition

- The higher the number of partitions of a given good the lower is its misalignment, because:
  - ↓ Misalignment → ↓ noise in the communication → ↑ informative is the communication → ↓ intervals of each partition → ↓ stickiness.

Data-Set

- We collected daily data from 2018 onwards from the six major supermarket chains;
- Our dataset covers supermarkets goods as well as appliances and durable goods in Brazil;
- Average products per day in each retailer on the range of 6,000 to 28,000;
- We implement a textual supervised learning algorithm method that matches the names of the products with the CPI structure as a fuzzy string matching algorithm;
- We have an hierarchy of 19 categories and 4 sectors across the retailers.

References


Contact: victorecmonteiro@gmail.com / dguillen@gmail.com