Shocks vs Menu Costs: Patterns of Price Rigidity in an Estimated Multi-Sector Menu-Cost Model" by Erwan Gautier and Hervé Le Bihan

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What this paper does

- This paper empirically documents and reaffirms stylised facts about prices in France:
  - Prices change infrequently and sizeably
  - **Large heterogeneity** of price change frequency across products
- **Structural decomposition** into different sectoral sources
  - Menu costs
  - Calvo parameter
  - Productivity differences
- Analysis of price frequency dispersion and its consequences for **monetary non-neutrality**
- Concludes that:
  - Calvo component is crucial
  - Heterogeneity very important for non-neutrality

In detail - main finding

- Provide a measure of **relative** importance to price rigidity from the data
  1. Time-dependent friction (λ_k)
  2. State-dependent friction (μ_k)
  3. Productivity (ρ_k, σ_k)
- Nested sector specific time- and state-dependent pricing frictions à la **Calvo Plus**:

$$c_{k,t} = \begin{cases} 0 & \text{with Prob} = \lambda_k \\ \mu_k & \text{with Prob} = (1 - \lambda_k) \end{cases}$$

- $\lambda_k = 0$: only Menu Costs
- $\mu_k \to \infty$: only Calvo Fairy
- These parameters, together with ρ_k and σ_k, are estimated with SMM from more than 25 million prices.

Comment #1: What exactly drives the Calvo importance?

- The time-dependent element (Calvo fairy) is **crucial** to fit data patterns
- But what exactly constitutes this reduced form parameter?
  - Strategic complementarity?
  - Networks?
  - Informational frictions?
  - Financial frictions?
- Thus, a **more granular decomposition** of time-dependent elements would be a very interesting next step
- May show that menu cost is largest contributor of the above

Comment #2: Why heterogeneity matters

- Real effects increasing in heterogeneity of price change frequency (sectors)
- Pricing decisions virtually independent w/o intermediate inputs:
  - constant elasticity of demand $\rightarrow$ constant markup
  - $W_t/P_t = \omega C_t^{\gamma} \rightarrow MC_{i,t,k} = \omega C_t^{-\gamma}/A_{i,k,t}$. Marginal costs exogenous and independent of other firms' prices.
- Aggregate non-neutrality is an approximate weighted average of sector-specific non-neutralities

Nakamura and Steinsson (2010)

Heterogeneity of price change frequency increases aggregate non-neutrality if **sector-specific non-neutrality is a convex** function of its frequency of price changes.

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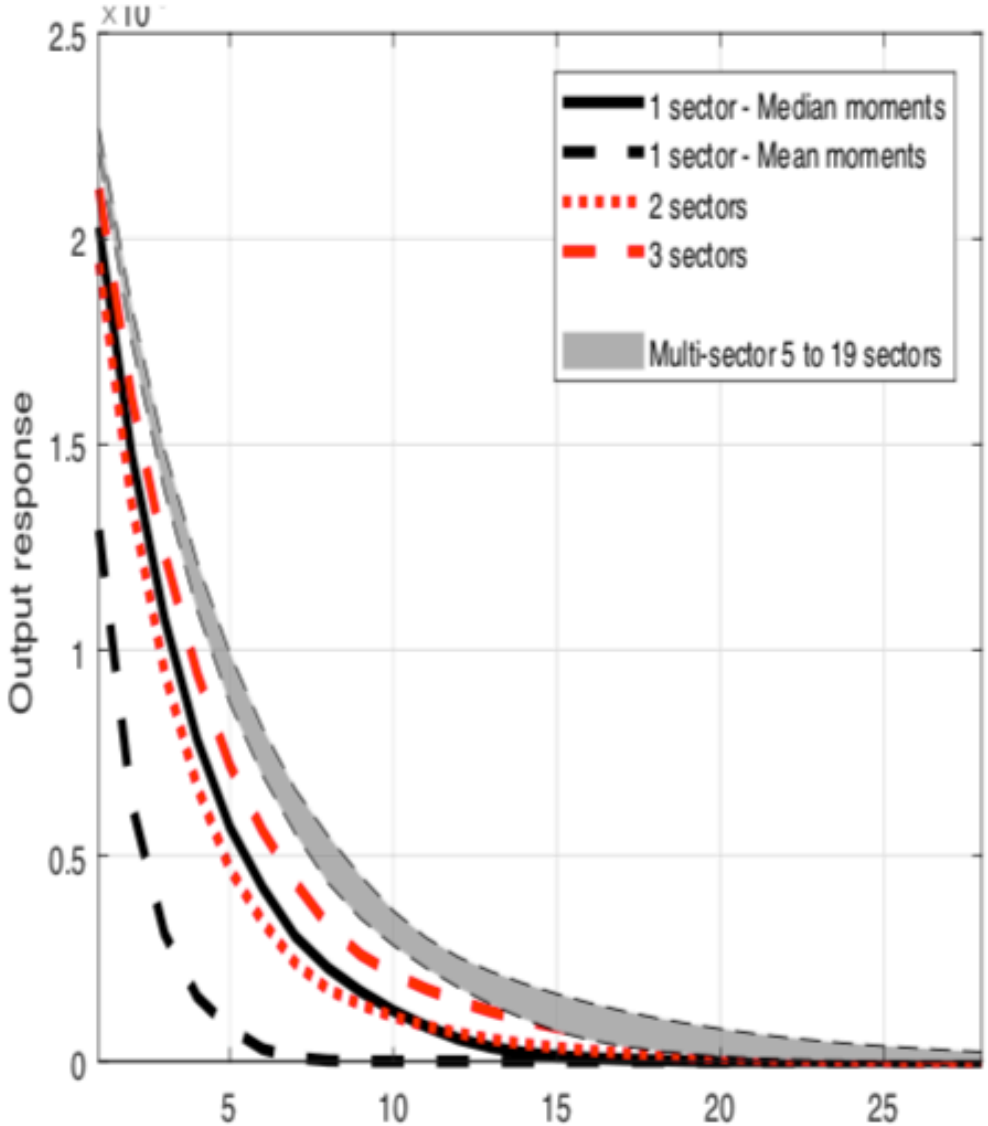

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This is always satisfied in economies with a Calvo component:

$$\frac{\delta Y_t}{\delta \epsilon_{t-s}} \propto \frac{1}{F_{t,s}} \text{ where } F_{t,s} = \frac{\sum_{k=1}^{K} \omega_k \int_0^1 \mathbf{1}(p_{i,k,t} \neq p_{i,k,t-s}) di}{\sum_{k=1}^{K} \omega_k}$$

- Non-neutrality decreasing in $Cov(\lambda_k, \omega_k)$
- Non-neutrality increasing in $Var(\lambda_k)$

Important driver of results in this paper since Calvo adjustments make up **60%** of total adjustments.

Comment #3: Sectoral differences, asymmetry and size-dependency of monetary non-neutrality

- The estimates $(\lambda_k, \mu_k, \sigma_k, \rho_k)$ are sufficient to capture the stylised micro-facts about prices
- But can we also say something about **sector-specific reactions to monetary policy** based on these?
- Assess sectoral IRF to monetary policy shock and compare to purely empirical estimations
- Furthermore, model can be tested for **asymmetry and size-dependency of shocks** as both
  - Share of Price Increases
  - Median Size of Price Changes

  are non-linear functions of estimated parameters

Summary

- Really **interesting** paper!
- **Important** topic: What's are the main drivers of price stickiness according to our structural understanding
- **Motivates further research** that should aim to decompose the microfoundations of time-dependency with the wealth of data