# Discussion of

# 'Accounting for Incomplete Pass-Through'

## by Emi Nakamura

**Goal of the Paper:** Estimate a structural model of incomplete pass-through of foreign cost shocks.

Long-run incomplete pass-through is decomposed into three channels:

- Local costs.

- Desired markup adjustment

- Price adjustment costs (undesired markup adjustment)

$$p = (mc^L + mc^F)(1 + \mu)$$

- This paper and that of Goldberg and Hellerstein (2007) are the first to incorporate price adjustment costs as a third determinant of incomplete pass-through in structural estimation.

- The paper combines industry-specific data, econometrics, IO theory, and computational methods.

**Long-Run Pass Through in the Data**

Estimate

$$\Delta \ln p_t = \alpha + \sum_{j=0}^{\infty} \beta_j \Delta \ln mc_{t-j}^{F}$$

**Finding**

$$\sum_{j=0}^{\infty} \beta_j = 0.26$$

$\Rightarrow$ Long-Run Incomplete Pass Through $= 74\%$.

**Long-Run Pass-Through Decomposition**

- Local Costs: 78%

- Desired Markup Adjustment: 20%

- Price Adjustment Costs: 2%

- Local costs is the only block of the model that is nonstructural: $m^L$ is assumed to be time invariant and estimated outside of the dynamic model (up to a constant).

- Yet, local costs turn out to explain the bulk of long-run incomplete pass through (78%).

- Recommendation: Add structure to the supply side of the model. Specifically, estimate a production function for the coffee industry. One possible outcome:

$$p = (mc^L(q) + mc^F)(1 + \mu)$$

**Why Do Desired Markup Adjustment Explain a Significant Fraction of Long-Rune Incomplete Pass Through?**

The demand function:

$$\ln q = a - bp$$

$$\Rightarrow \frac{\mathrm{d}\ln q}{\mathrm{d}p} = -b$$

$$\Rightarrow \frac{\mathrm{d}\ln q}{\mathrm{d}\ln p} = -bp$$

$\Rightarrow$ The price elasticity is increasing in the price.

$\Rightarrow$ The markup is decreasing in the price.

$\Rightarrow$ The markup is decreasing in $mc^F$.

**Real Progress:** A Dynamic Model of Price Adjustment Costs

$$p_t \text{ solves} \begin{cases} D(p_t) + (p_t - mc_t)D'(p_t) + \beta E_t v_p(p_t, mc_{t+1}) = 0 \\ \text{or} \\ p_t - p_{t-1} = 0 \end{cases}$$

**Result:** Price adjustment costs explain a negligible fraction of long-run incomplete pass-through (2%), but are important for explaining delayed pass-through.

**Observation:** Price adjustment costs are the only endogenous source of dynamics in the model; $\Rightarrow$ They must explain all of the delayed pass-through predicted by the model.