Discussion of "Inventories, Lumpy Trade, and Large Devaluations"

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Large Devaluations in Developing Countries

• (1) Large decline in import volumes and number of import transactions.

• (2) Large increase in ‘dock’ price of imports.

• (3) Small increase in retail (CPI) price of imports (and other goods and services).

• Key challenge to understand low CPI inflation of traded goods:
  – Decline in retail price relative to ‘dock’ price of traded goods.
Large Devaluations: Seff (−*), IEPI (:o), and PT (-) , % cumulative change

Argentina

Brazil

Korea

Mexico

Thailand
• Decline in retail price relative to ‘dock’ price of traded goods.

• One answer:
  
  – Retail sector intensive in land and labor, other nontraded factors.

  – Economic contraction, decline in price of domestic factors of production, markups, relative to traded good.

• This paper: Inventory management by importers disconnects price from replacement cost.

  – Can jointly account for prices and quantities.
Simplified, analytically tractable version of model

- \[
\max \sum_{t=0}^{\infty} \frac{1}{R^t} \left[ p(q_t) q_t - \omega i_t \right], \quad p(q) = q^{-1/\theta}
\]

- \[s_{t+1} \leq (1 - \delta) (s_t - q_t + i_t)\]

- \[q_t \leq s_t\]

- \[i_t \geq 0\]

- Unanticipated permanent increase in \(\omega\) from \(\omega_{old}\) to \(\omega_{new}\).
Simplified, analytically tractable version of model

- \( \max \sum_{t=0}^{\infty} \frac{1}{R^t} [p(q_t) q_t - \omega_i t] \), \( p(q) = q^{-1/\theta} \)

- \( s_{t+1} \leq (1 - \delta) (s_t - q_t + i_t) \), Lagrange multiplier = \( \lambda_t \)

- \( q_t \leq s_t \), Lagrange multiplier = \( \mu_{q_t} \)

- \( i_t \geq 0 \), Lagrange multiplier = \( \mu_{i_t} \).
First order conditions

- $q_t : p_t = \frac{\theta}{\theta - 1} \left[ (1 - \delta) \lambda_t + \mu_{qt} \right]

- $i_t : \omega = (1 - \delta) \lambda_t + \mu_{it}$

- $\lambda_t = \frac{1}{R_t} \left[ (1 - \delta) \lambda_{t+1} + \mu_{qt+1} \right]$
Implication 1

- \[ p_{t+1} = \frac{\theta}{\theta - 1} R \lambda_t = \left( \frac{\theta}{\theta - 1} \right) \left( \frac{1}{1 - \delta} \right) R (\omega - \mu_{it}) \]

- If \( i_t > 0, \mu_{it} = 0, \) and \( p_{t+1} = \left( \frac{\theta}{\theta - 1} \right) \left( \frac{1}{1 - \delta} \right) R \omega_{new} \)
  
  - Price moves one-to-one with \( \omega \) once good is imported.
Implication 2

\[ p_{t+1} = \left( \frac{\theta}{\theta - 1} \right) \left( \frac{1}{1 - \delta} \right) R (\omega - \mu_{it}) \]

- If \( i_t \geq 0 \) binding, \( q_t < s_t \), price increases on impact (\( p = q^{-1/\theta} > p_0 \)), but less than \( \omega \) because \( \mu_i > 0 \).

- Then, \( \mu_{qt+1} = 0 \), \( \frac{p_{t+1}}{p_t} = \frac{\lambda_{t+1}}{\lambda_t} = \frac{R}{1 - \delta} \).
  
  - Price rises smoothly when depleting inventories.
  
  - Increase faster the higher is \( R \).
Implication 3

• If $\omega$ falls, then $i_t > 0$, and complete pass-through.

  – Asymmetry in price and quantity adjustment between increase and decrease in $\omega$. 
Stockouts and price movements

- Survey of prices in Buenos Aires, March 2002 - December 2002

- 58 goods, in 8 supermarkets, daily frequency

- Record if good is out-of-stock.

- Fraction of observations with price changes across all goods = 10%

- Fraction of price changes conditional on good previously out-of-stock = 33%
• Average price change for all observations with price changes = 1%

• Average price change conditional on good previously out-of-stock = 4%.

• Suggests price dynamics different conditional on product replacement.