Discussion of “Currency Choice and Exchange Rate Pass-Through”
by Gopinath, Itskhoki and Rigobon

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Contributions:

Evidence:

1. Correlation between pass-through and currency of invoicing
   - Dollar-priced: 25% vs. non-dollar priced: 95%
   - Explains a substantial amount of cross-country variation
   - Implies low overall pass-through for the U.S.

2. Long lags in response of prices to exchange rates
   - Medium run pass-through: 0.24 vs. Long-run: 0.5
   - Max occurs after more than 24 months
   - Respond to exchange rate changes before last price adjustment
   - Delays arise for dollar-priced goods
Data

Novel BLS micro-data on import prices (Gopinath+Rigobon, 2007)

- Distinguish between dollar and non-dollar priced goods
- Include only transaction prices, drop intra-firm prices
- Observe time since last price change

Challenges:

- Long-term relationships / bargaining
- Survey data
- Gaps in price series
Contributions:

Theory:

1. Currency invoicing model: Explains pass-through LCP vs. PCP

- Producer chooses between pricing an export good in own vs. buyer’s currency (Engel, 2006; Goldberg and Tille, 2007)
- Prices are sticky in currency of invoicing: adjust with prob. $1 - \alpha$
- Set currency of invoicing to minimize $|p - p^*|$
- Price in own currency if $\frac{\partial p^*}{\partial e}$ large; otherwise buyer’s currency
- Relationship between $e$ and $p^*$ depends on: local costs, “pricing to market”, imported inputs etc.
Contributions:

Theory:

2. Strategic complementarities: Explain long delays in pass-through

- Kimball demand: Firms do not want prices to deviate too much from competitors
- Conditional on adjusting, firms only adjust partially
- Prices continue to respond to exchange rate changes long after all prices have adjusted
- Delayed response > “contract length”
My Comments

1. Correlation between pass-through and currency of invoicing
   - Evidence: Measurement error
   - Theory: $\frac{\partial p^*}{\partial e} \rightarrow$ Invoicing or Invoicing $\rightarrow \frac{\partial p^*}{\partial e}$?

2. Long lags in response of prices to exchange rates
   - Evidence: Micro vs. Macro puzzle
   - Theory: Size of price changes
1. Pass-Through: Evidence

GIR present evidence of difference in pass-through for PCP vs. LCP conditional on adjustment

Pass-through Regression: \[ \Delta p = \alpha + \beta \Delta E + \epsilon \]

Many products not imported in every month \( \rightarrow \) Gaps in price series (also within months)

Other potential sources of error in timing of price changes: Survey data, long term contracts

Concern: Measurement error in \( \Delta E \) and \( \Delta p \)
Gaps in Price Series

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GIR    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
Alt?   | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

→ ΔP and ΔER are observed with error
1. Pass-Through: Evidence (cont’d)

Measurement error in timing of price changes implies:

- Underestimate pass-through for LCP goods (attenuation bias)
- Overestimate pass-through for PCP goods (attenuation bias in firm’s ability to stabilize prices)

My Simulation

- Actual exchange rate data
- Month of price change observed with error: Uniform on [-2,2]
- True Pass-Through: 0.5 for both LCP and PCP
- Estimated Pass-Through: 0.24 for LCP and 0.76 for PCP

Similar asymmetric effect if data include list prices with lower response to exchange rate (Stigler+Kindahl): LCP ↓ PCP ↑
1. Pass-Through: Theory

What explains correlation between pass-through and currency of invoicing?

GIR: Correlation reflects selection on desired pass-through

Desired pass-through → Currency of Invoicing

- Low desired pass-through → LCP
- High desired pass-through → PCP

Key result: Currency of invoicing has no effect on $p^*$
1. Pass-Through: Theory (cont’d)

Alternative view: Currency of Invoicing → Desired pass-through

Evidence

- $\frac{\partial p^*}{\partial e}$ likely to be more homogeneous within narrow product groups → Expect smaller diff LCP vs. PCP

- GIR (2007, earlier version): Diff. in pass-through between PCP and LCP firms does not decline even within 10 digit prod. categories

- Pass-Through drops dramatically for items that switch from PCP to LCP
1. Pass-Through: Theory (cont’d)

Suppose firms *choose* whether to set separate export price, or set same price to all customers

- GR (2007): Many exporters set same price for multiple markets
- Suppose prices set in US dollars are mostly unique to the US market, while prices set in foreign currency are mostly shared with consumers in country of origin
- LCP → Low desired pass-through
- US customers care about US$ price; domestic customers do not

Currency of Invoicing → Desired pass-through
Example: Amazon.com

Amazon.com (starts shipping 1994)


- Pre 2002: Amazon.com (PCP) prices respond primarily to US demand
- Post 2002: Amazon.ca (LCP) prices respond primarily to Canadian demand

Currency of Invoicing → Desired pass-through

Effect does not arise in currency invoicing model (all firms set separate export prices)
1. Pass-Through: Theory (cont’d)

GIR: Price rigidity is central to LCP vs. PCP pass-through

- Commodities: LCP for US, PCP for Europe
- No price rigidity
- Commodity price pass-through much lower in Europe than US (Goldberg and Campa, 2006)
- GR (2007) show flexible priced goods have lower pass-through than sticky price goods

Need other ways of thinking about currency choice with flexible prices

Preferences of buyers? Bargaining?
2. Lagged Response: Evidence

Micro vs. Macro Puzzle

- Macro evidence: GIR replicate standard finding that most pass-through occurs in first year; levels off soon after
- Micro evidence: Half of ER response occurs after first 11 months (dollar-priced goods)

Pass-Through Regressions for Dollar Priced goods

\[ \Delta p \text{ on } \Delta e_{t-1} \text{ (since last adj): } 0.25 \]

\[ \Delta p \text{ on } \Delta e_{t-1} \Delta e_{t-2}: 0.46 \]

\[ \Delta p \text{ on } \Delta e \text{ over obs. period: } 0.51 \]
Micro vs. Macro Evidence ($ Invoiced)

- Macro Pass-Through
- Micro Pass-Through
2. Lagged Response: Evidence (cont’d)

Micro regression: $\Delta p$ for identical items only

Macro regression: Index sets $\Delta p = 0$ during product substitutions $\rightarrow$ downward bias

Could substitutions explain micro vs. macro puzzle?

- Kimball model implies prices respond to lagged ER via sluggish response of aggregate index (also other models strat. comp.)
- Implies that even new products respond to old ER shocks
- e.g. New car introduced $t=15$ still responds to $t=1$ exchange rate shock (via aggregate index)

Treatment of substitutions doesn’t seem to resolve puzzle
2. Lagged Response: Theory

Kimball strategic complementarity

- Implies small price changes (Klenow and Willis, 2006)
- Firms do not want prices to deviate much from competitors
- Hard to reconcile with empirical evidence: Average size is 6-7% (GR, 2007)
- Monetary policy literature: “Aggregate” mechanisms for strategic complementarity more consistent with large price changes (Nakamura and Steinsson, 2007; Burstein and Hellwig, 2007)
Conclusion

Important new evidence on relationship between pass-through and currency of invoicing

Evidence

- Pass-Through: How important is measurement error?
- Delayed Response: How to reconcile micro and macro evidence?

Theory

- Pass-Through: Are there important effects of currency of invoicing on desired pass-through, e.g. due to price discrimination?
- Is price rigidity key to correlation between invoicing currency and pass-through?
- How to reconcile Kimball demand model with large price changes?