# Foreign Currency Borrowing and Exporter Dynamics in Emerging Markets
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# Context

- Foreign currency borrowing by firms in emerging markets expose them to exchange rate risk
- Especially true for firms which do not export

- Why do they borrow in foreign currency?
    - Lower cost (UIP deviations?)
- Implications for aggregate responses to exchange rates?
    - Salomao & Varela (2022): response depends on selection
    - Who borrows in foreign currency, what do they do with it?

- Should policy try to regulate this type of borrowing?

# Summary

1. Stylized facts about export participation & domestic, foreign currency borrowing for Indian firms
2. Calibrated heterogeneous firms model with fixed cost of exporting, credit constraints
3. Counterfactual: implications of access to foreign currency borrowing for aggregate responses to exchange rate movements

# Data comment 1

- ▶ Nice data, would be good to know more!
  - ▶ Share of firms / exports covered
  - ▶ Do sample aggregates match aggregates from other sources?
- ▶ Tell us more about cross-sectional distribution, e.g.

Table: Cross-sectional moments: Share of firms

|                      | All  | Nonex | Ex   |
|----------------------|------|-------|------|
| All                  | 1.00 | 0.68  | 0.32 |
| No borrowing         | ??   | ??    | ??   |
| Borrow domestic only | ??   | ??    | ??   |
| Foreign borrowing    | 0.06 | ??    | 0.04 |

- ▶ Also: intensive margin; characteristics of firms in each bin

# Data comment 2

- We know there is likely selection into exporting
- Also likely selection into foreign borrowing

Causality:

- Do firms borrow foreign to finance export expansion?
- Or does exporting reduce cost of foreign borrowing?
- Or is a common characteristic (productivity) driving both?
- Ideal: tariff changes / fin mkt deregulation as instruments
- Instead: local projections (timing)

Two suggestions for local projections:

1. Are there pre-trends? (And what's going on in year 2?)
2. Flip LHS and RHS: how does exporting evolve after starting to borrow in foreign currency?

# Model

Builds on Kohn et al (2020):

- Risk averse monopolistically competitive entrepreneurs
- Face CES home and foreign demand:

$$y_{it} = (e_t p_{it})^{-\sigma}$$

$$y_{it}^* = p_{it}^{*-\sigma}$$

- Entrepreneurs need capital to produce:

$$y_{it} + \tau y_{it}^* = z_{it} k_{it}^{\alpha}$$

- Productivity $z_{it}$ & exchange rate $e_t$ follow AR(1)
  - Only source of dynamics: no firm birth & death
- Capital accumulates subject to adjustment costs:

$$k_{it+1} = (1 - \delta) k_{it} + i_{it} - \Theta(k_{it}, k_{it+1})$$

# Model

- Can borrow using two 1-period risk free bonds: denominated in (a) home and (b) foreign final goods

- Face cash flow collateral constraints:

$$b_{it+1} \leq \theta \left( p_{it} y_{it} + x_{it} e_t p_{it}^* y_{it}^* \right)$$

$$e_t b_{it+1}^* \leq \theta^* \left( p_{it} y_{it} + x_{it} e_t p_{it}^* y_{it}^* \right)$$

- Note: form of collateral constraints in these models is key

- Fixed gap between interest rates: $r - r^* > 0$

- Fixed cost of issuing foreign currency debt (depends also on export participation)

- $\rightarrow$ selection into foreign currency debt

# Model

- ► Iceberg variable cost of exporting $\tau$
- ► Sunk and fixed costs of exporting
  - ► Selection into exporting
  - ► Export decision is dynamic
- ► Cost complementarity betw exporting & foreign currency debt

$$F\left(x_{it-1}, x_{it}, b_{it+1}^*\right) = \begin{cases} 0 & x_{it} = 0, b_{it+1}^* = 0 \\ x_{it-1}f_1^x + (1-x_{it-1})f_0^x & x_{it} = 1, b_{it+1}^* = 0 \\ f^* & x_{it} = 0, b_{it+1}^* > 0 \\ \zeta\left[f^* + x_{it-1}f_1^x + (1-x_{it-1})f_0^x\right] & x_{it} = 1, b_{it+1}^* > 0 \end{cases}$$

- ► Complementarity: exporting is cheaper if you borrow foreign, borrowing foreign is cheaper if you export

## Model

- Budget constraint of firm

$$
\begin{aligned}
c_{it} + i_{it} + b_{it} + e_t b_{it}^* = \quad & p_{it} y_{it} + x_{it} e_t p_{it}^* y_{it}^* \\
& + \frac{b_{it+1}}{1+r} + \frac{e_t b_{it+1}^*}{1+r^*} - F\left(x_{it-1}, x_{it}, b_{it+1}^*\right)
\end{aligned}
$$

- Can firms save? (impatience, risk aversion)

# Model comments

- There is a lot going on here: some redundancy?

Suggestions
- Drop sunk cost of exporting
- Drop fixed cost complementarity
- Experiment with form of collateral constraints to focus purely on hedging & collateral
- Role of risk aversion (entrepreneurs)

# Counterfactual

- Aggregate impact: simulate response to shock to $e_t$
- Remember: interest rate differential $r - r^*$ is fixed

Claim

- Access to foreign currency borrowing magnifies output loss due to depreciation

Comments

- At odds with Salomao & Varela (2022): foreign currency borrowing may make large productive firms bigger & more resilient esp to small shocks
- Would be good to explain why result is different

- Eventually: policy counterfactual would be nice

# Conclusion

- Ambitious paper on an interesting topic
- Data & model contributions
- Main suggestion: simplify!
- Looking forward to next version