FX Debt and Optimal Exchange Rate Hedging

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Discussion

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Context

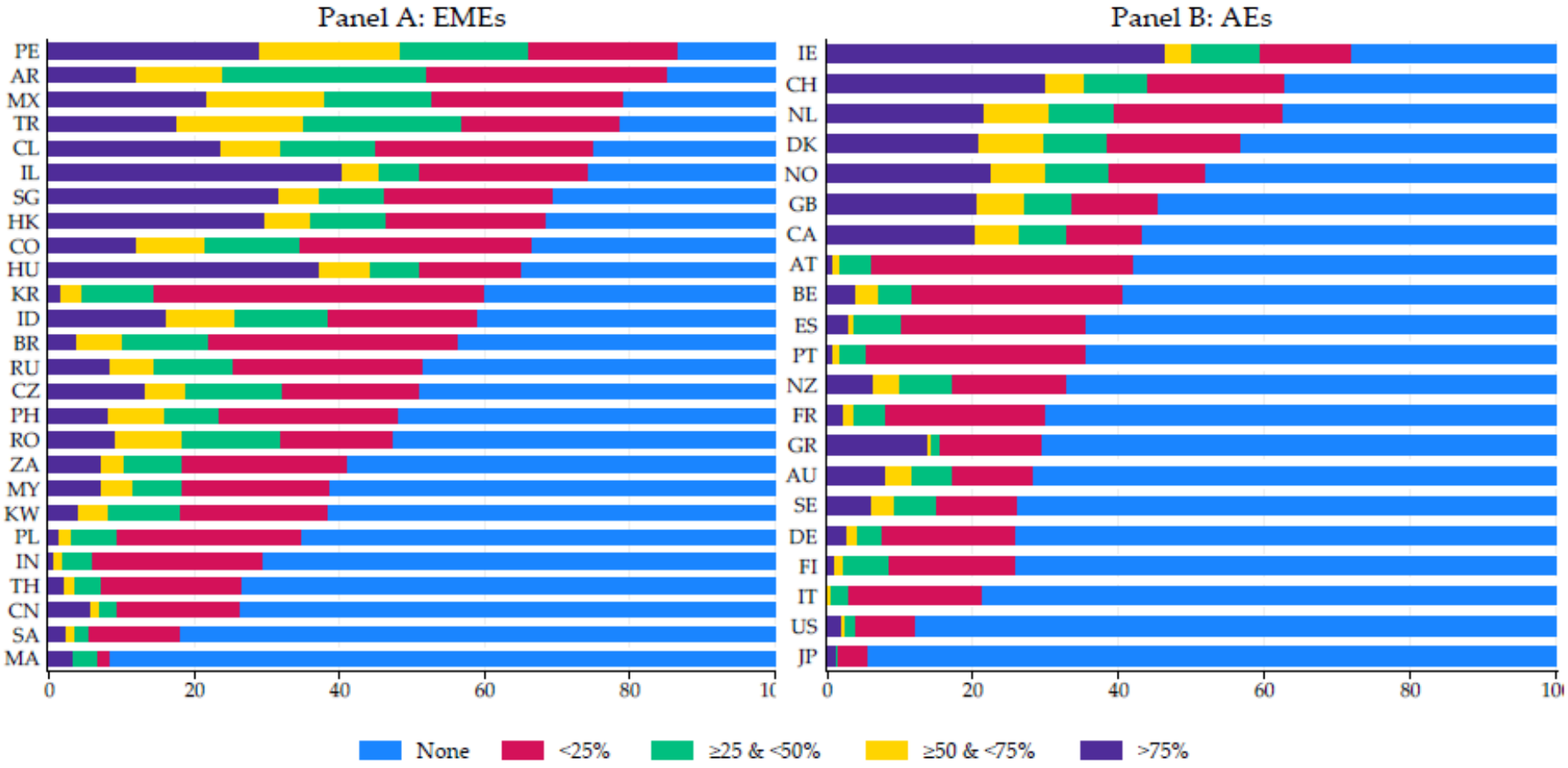
- **Previous literature**: FX borrowing mostly in EM; very limited usage of derivatives for hedging by firms (Bartram 2019) and sub-optimal usage by institutional investors (Bräuer and Hau 2024)
- **New**: non-financial firms with potentially natural hedging in EME & AE
- **Why interesting?** Because firms' FX debt and hedging behavior determine how exchange rate movements feed through to real economic outcomes and to financial stability

This Paper

- **Research Question:** 1) How much of non-financial firms' debt is denominated in foreign currency? 2) Do firms hedge FX risk optimally?
- **Findings:**
  - FX borrowing prevalent for large firms in AE and EMEs
  - most firms optimally hedge exchange rate risk in AE and EMEs, for EME natural hedging (with FX assets) while AEs rely more on financial hedging
- **Data:** 66,420 firms in 47 countries from 2005-2023 (8,256 firms for hedging sample)

FX debt is prevalent in both AEs and EMEs firms

Figure 1: Share of firms reporting foreign-currency debt at some point (2005-2023)



Note, top 3 AE are "transit" economies: IE, CH, NL

Model and Econometric Strategy

Model predicts if optimally hedged, marginal value of internal funds, w, for firm value, P, should be uncorrelated with exchange rate shocks:
$Cov(P_w, \epsilon) = 0 \Rightarrow \alpha_2 = 0$

$$P_{i,t} = c + \alpha_1 w_{i,t} + \alpha_2 w_{i,t}\epsilon_{i,t} + \alpha_3 \epsilon_{i,t} + u_{i,t}$$

Translated into empirical strategy

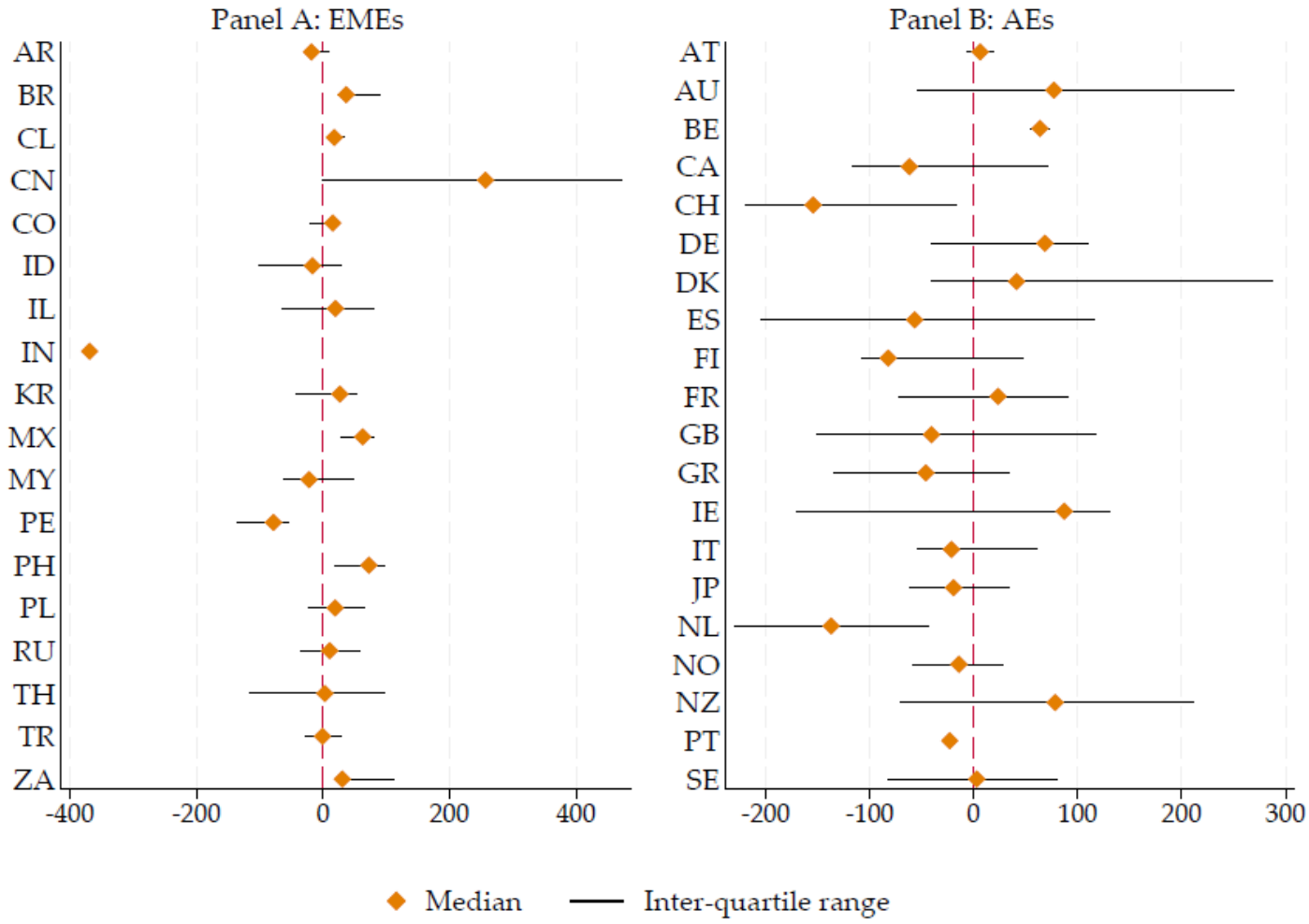
$$\underbrace{FV_{i,t}}_{=P} = c + \alpha_1 \underbrace{CO}_{=w} + \alpha_2 \overline{CO}_{i,t}\overline{\Delta E}_{i,t} + \alpha_3 \underbrace{\Delta E_{i,t}}_{=\epsilon} + u_{i,t}$$

where

- FV is enterprise value of firm divided by assets
- CO is cash flow from operations divided by assets
- ΔE exchange rate change against USD

Most firms are optimally hedged

Figure 5: Country-level distributions of statistically significant $\hat{\alpha}_2$



Comment #1: Statistical Test

- If you find $\hat{\alpha}_2 \approx 0$, does this really prove the theory of optimal hedging?

$$H_0 : \alpha_2 = 0 \text{ (firms optimally hedged)}$$
$$H_1 : \alpha_2 \neq 0 \text{ (firms **not** optimally hedged).}$$

If you do not reject H_0, the data just do not provide enough evidence that $\alpha_2 \neq 0$; this does **not** mean α_2 is truly zero.

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  If you do not reject H_0, the data just do not provide enough evidence that $\alpha_2 \neq 0$; this does **not** mean α_2 is truly zero.

- To show that α_2 is **essentially zero in practice**, use an **equivalence test**:

$$H_0 : |\alpha_2| \geq \delta \quad \text{vs} \quad H_1 : |\alpha_2| < \delta,$$

  where $\delta > 0$ is a tolerance for a negligible effect.

- TOST idea: test separately that $H_{1,1} : \alpha_2 > -\delta$ and $H_{1,2} : \alpha_2 < \delta$. If both nulls are rejected at level x, then $\alpha_2 \in (-\delta, \delta)$, i.e. α_2 is statistically **equivalent to zero within margin** δ.

Comment #2: Is there really a currency mismatch on the balance sheet?

- **Definition of Exchange rate shock:** E = HQ currency/USD

  But why is local currency defined by the firm's headquarter? Large firms in small open economies often report in USD or EUR (e.g. Novartis, Swiss Re, Sandoz, Richemont).

  But why is the exchange rate shock always defined in terms of USD? For a Swiss firm, a shock to EUR/CHF or a trade-weighted FX basket may be more relevant.

- **Currency of revenues.** Currency of firms' revenues and assets is proxied by their geographical market. But a firm exporting to EMEs is likely invoicing in USD rather than in local EME currencies.

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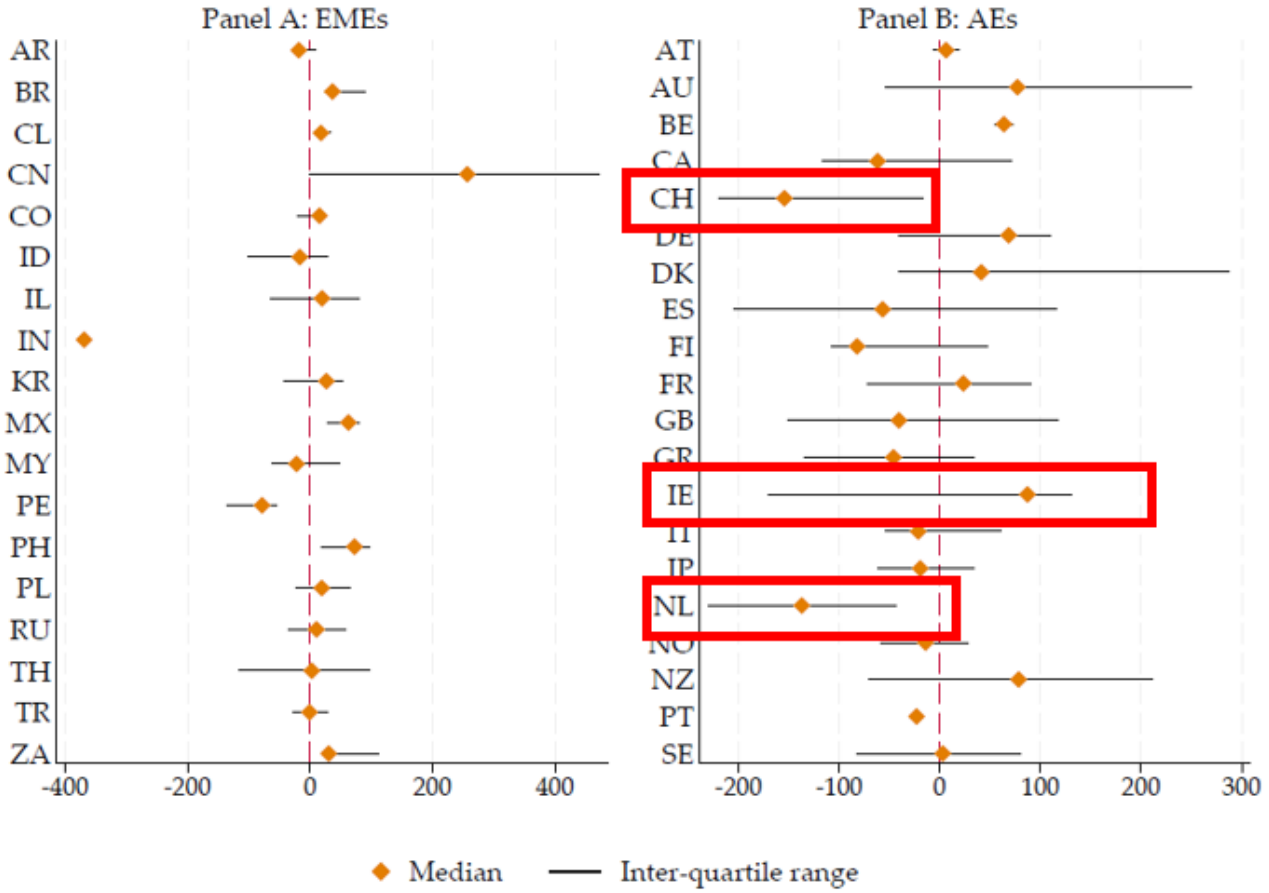

Comment #3: Can we see aggregate implications of hedging?

Given your finding that most firms are (almost) optimally hedged, we would expect:

1. For **optimally hedged firms/countries**: lower volatility of cash flows and firm values to exchange rate shocks, e.g., difference in difference between similar firms but different hedging
2. At the **aggregate level**: countries with a higher share of "optimally hedged" firms should show weaker responses of investment, employment, and credit to large exchange rate shocks

Maybe run a panel regression and link distribution of $\hat{\alpha}_2$ by country to macro outcomes around big FX moves

Conclusion

- Nice study that established new facts about FX borrowing and hedging around the world using a **large cross-section and time-series**
- I think study would benefit from showing implications of optimal hedging or FX borrowing

References I

Bartram, Söhnke M (2019). "Corporate hedging and speculation with derivatives". In: *Journal of Corporate Finance* 57, pp. 9–34.

Bräuer, Leonie and Harald Hau (2024). "Do Funds Engage in Optimal FX Hedging?" In: *Swiss Finance Institute Research Paper No. 24-103*.