The Implications of CIP Deviations for International Capital Flows

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Overview of paper and discussion

- The covered interest-rate parity (CIP) has not held since GFC.
    - Evidence of intermediary constraints → implications for (unconditional) expected returns across various asset classes (Du, Hébert, and Huber, 2022).
- This paper:
    - TWO security-level confidential data sets.
    - CIP deviations (CCB) affect investors' (conditional) portfolio allocation.
- Key results:
    - Dataset 1 (EMIR FX derivatives trading): $|CCB| \uparrow \Rightarrow$ hedge cost $\uparrow \Rightarrow$ investors choose less hedged USD exposure.
    - Dataset 2 (SHS securities holdings): Some investors achieve the lower hedged USD exposure by reducing USD bonds $\Rightarrow$ price impact on USD bonds.

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  - Dataset 2 (SHS securities holdings): Some investors achieve the lower hedged USD exposure by reducing USD bonds $\Rightarrow$ price impact on USD bonds.
- Foundational result: CCB's effect on hedged USD exposure.
- Discussion: focus on this result by considering an alternative model.
  - Underscore the importance of the finding.
  - Suggest possible directions for future research.

Why illustrate with a different model

- Current model is dynamic and general-equilibrium.
- To make it tractable, a few assumptions:
  - Two risky assets are uncorrelated.
    - FX: $dx_t = \mu^x dt + \sigma^x dZ_t^x$.
    - Risky USD (foreign) asset: $da_t = \zeta_t dt + \sigma^a dZ_t^a$.
    - $\text{cor}(da_t, dx_t) = 0$: (1) $\text{cor}(dZ_t^a, dZ_t^x) = 0$, (2) time-invariant μ^x.
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  - No EUR (domestic) risky asset.
  - UIP holds.
- In reality, FX hedging decision likely depends on:
  - Return correlation between FX and risky assets.
    - cor(FX, risky USD asset).
    - cor(FX, risky EUR asset).
  - Expected FX return from unhedged exposure.
    - Non-zero due to persistent violations of UIP.

Mean-variance and hedging (Du and Huber, 2024)

- n foreign countries each with own currency and risky asset.
- $\boldsymbol{\omega_t}$: portfolio weights in risky asset.
- $\boldsymbol{\psi_t}$: portfolio weights of unhedged currency exposure.
  - $\boldsymbol{\theta_t} = \boldsymbol{\omega_t} - \boldsymbol{\psi_t}$: portfolio weights of FX hedges.
- Conditional on $\boldsymbol{\omega_t}$, mean-variance investor solves for optimal $\boldsymbol{\psi_t}$:

$$\max_{\boldsymbol{\psi_t}} \mathbb{E}_t(r_{h,t+1} - i_t^1) - \frac{\gamma}{2}\mathbb{V}(r_{h,t+1} - i_t^1)$$

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  - $\boldsymbol{x_t}$: FX hedging cost from CIP deviations (this paper).
  - $\boldsymbol{\xi_t}$: expected FX return from UIP violations.

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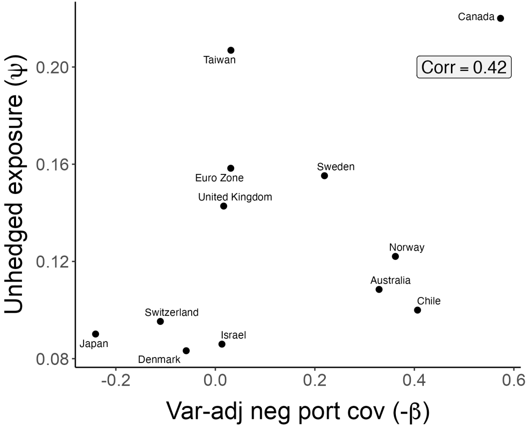
  - $\boldsymbol{\xi_t}$: expected FX return from UIP violations.
- Traditional focus of hedging: $\boldsymbol{\beta}$ (Campbell, de Medeiros, and Viceira, 2010).
- BUT FX returns also matter!

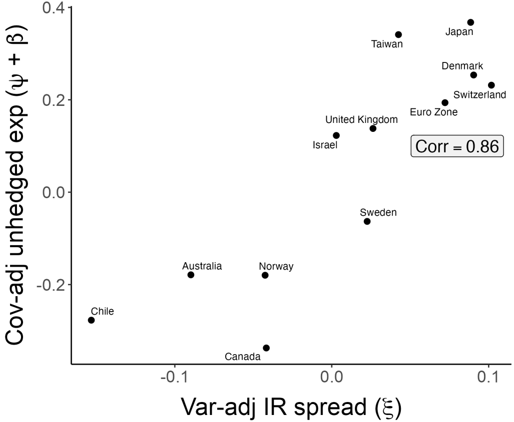
Hedging drivers in the data

Figure 1: **FX exposure vs. return covariance**

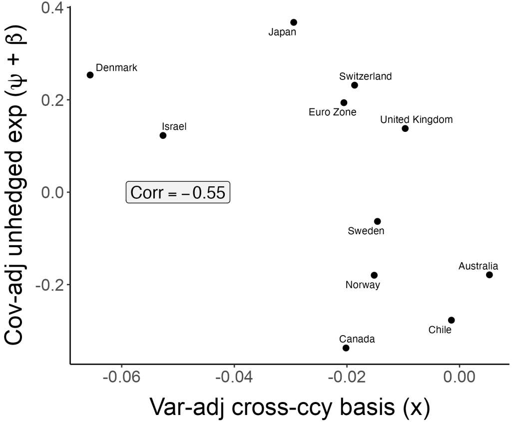


Hedging drivers in the data

Figure 2: **FX exposure (unexplained by covariance) vs. FX returns**



(A) **UIP violations**



(B) **CIP deviations**

Relative magnitude of hedging drivers

Table 1: **Post-GFC average of FX return components (% pt.)**

	CIP deviation	UIP violation	var(FX)
EUR/USD	(-)0.2	1.8	11.0

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  - Is "optimal" elasticity w.r.t. CCB even smaller than authors' estimate?
  - Not quite: $\boldsymbol{\psi}^*$ here is conditional on $\boldsymbol{\omega}$.
  - However: optimizing over both $\boldsymbol{\omega}$ and $\boldsymbol{\psi}$ still yields $\frac{\partial \psi^*}{\partial x} = f(\sigma_{FX,asset}, \sigma^2_{FX}) \neq 1.$
  - Q: Should we benchmark estimated elasticity to 1?

Risk and elasticity

- By definition: elasticity $< 1 \Leftrightarrow$ "inelastic".
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  - But asset pricing emphasizes "risk-return" trade-off.
- $\Rightarrow$ If two securities differ in their riskiness, shouldn't the same \$1 increase in price result in different responses in quantity?
- If yes, how to account for risks in elasticity estimation?
  1. Characterize risk directly at the security level.
     - Risk of a security = var(own return) + covariance with everything else.
     - Our model can help us focus on the covariance that matters.
  2. Characterize risk using (orthogonal) risk factors — non-diversifiable risks.
     - Every observed security-level trading implies some factor-level trading.
     - Risk of factor captured by variance alone.
     - An and Huber (2024) follow this approach to derive cross-currency elasticity.

Conclusion

- This paper provides excellent micro-level evidence that FX returns matter for investors' portfolio allocation.
  - Important: FX returns matter over and above considerations of return covariance.
- Potential avenues for future research:
  - Relative to other determinants of FX returns, how important are CIP deviations?
  - Relative to the risk-adjusted optimal response to CIP deviations, how does the estimated elasticity compare?
- An exciting agenda!

An, Y., and A. Huber. 2024. Intermediary elasticity and limited risk-bearing capacity. Working Paper.

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