The Persistent Widening of Cross-Currency Basis: When Increased FX Swap Demand Meets Limits of Arbitrage

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  - Construct a profitable trading strategy.
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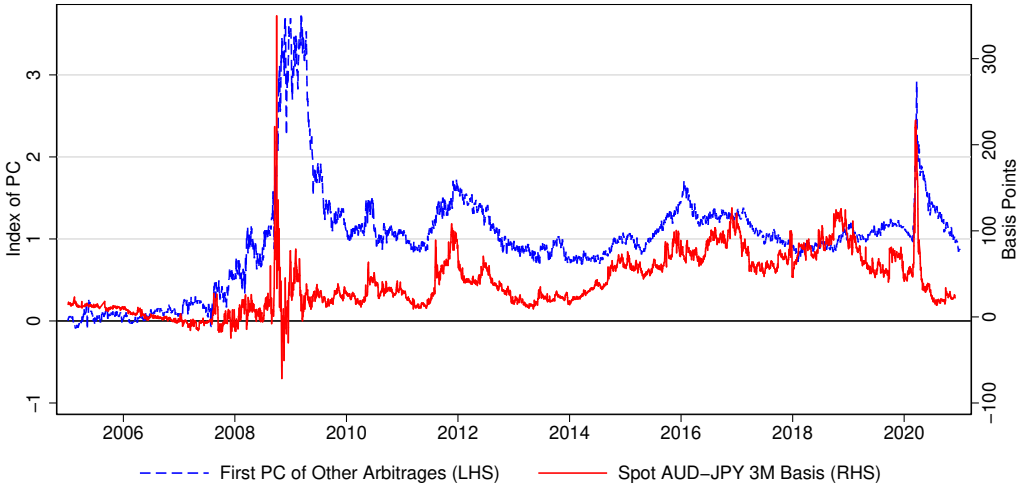
  - Demonstrate that this risk is priced across asset classes.
- Outstanding question: quantify supply vs. demand in driving CIP deviations.
  - If mostly driven by customer demand and not intermediary supply, then CIP deviations capture more FX-specific dynamics.

CIP deviations correlate with seven near-arbitrages



Other arbitrages: bond-CDS basis, CDS-CDX basis, USD libor tenor basis, 30Y swap spread, Refco-Treasury spread, KfW-Bund spread, asset-swapped TIPS/Treasury spread.

This paper

- Leverages FX transaction data from Israeli' Institutional Investors (II).
- Employs *Granular Instrumental Variable* (GIV) to isolate demand shocks.
- Traces the impact on USD-ILS CIP basis from IIs' demand shocks.
  - Demand shocks have significant impact when *intermediaries are constrained*.
- Discussion plan:
  - How is the effect estimated?
    - GIV
    - Constraint
  - What would we like to estimate?

Granular IV

Problem:

- Total demand: $D_{it} = \bar{Q} S_i (1 + y_{it})$; y_{it} is a demand shift term.
- But $y_{it} = \phi^d p_t + \lambda_i \eta_t + u_{it}$, and we only want u_{it}.

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Solution by Gabaix and Koijen (2023):

- Define instrument $z_t := y_{\Gamma t} = y_{St} - y_{Et} = u_{St} - u_{Et}$.
- Key: subtracting off equal-weighted individual demand from share-weighted individual demand removes the common shock, η_t.

Authors' approach

- Control for lagged individual II's demand and a host of common shocks, in the hope that the residual will be idiosyncratic (u_{it}).
- But this is not fool-proof:
  - Controlled for equity returns in US vs. Israel, but what about long term bonds?
  - Controlled for broad dollar index, but what about shekel's exchange rate?
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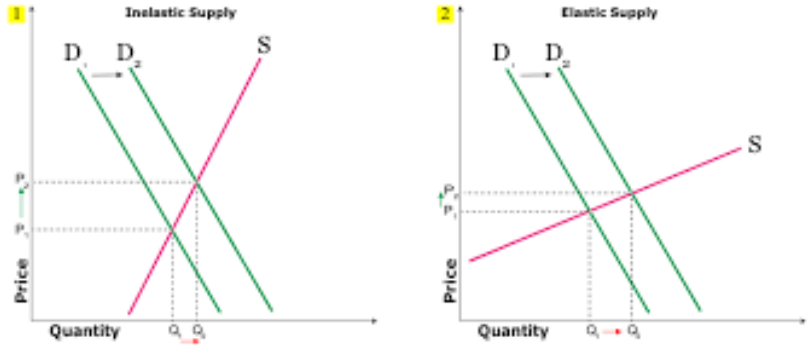
  - Controlled for VIX, but what about constitutional change in Israel?
- Suggestion: follow the original construction for GIV.
- N.B.: GIV is not valid if idiosyncratic shocks are correlated with II size, $\mathbf{E}[\epsilon_t u_{it} | i \in Small] \neq \mathbf{E}[\epsilon_t u_{it} | i \in Large] \neq 0$, where ϵ_t is the common shock to supply.
  - At the same time, if all the IIs are of the same size, then $u_{St} = u_{Et}$ and GIV has no power.
  - Need better justification for the application of GIV.

Intermediary's constraint matters



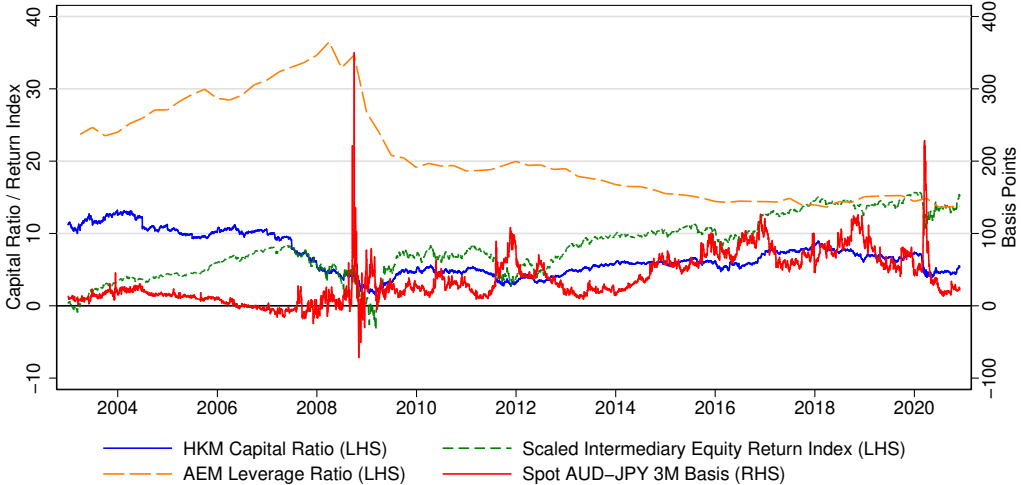
Classic message: the same shift in demand has a bigger price impact when supply is more inelastic.

Implicit assumption: when intermediaries are constrained, their supply becomes more inelastic.

Measure intermediary's limit of arbitrage

- Authors' choice: He, Kelly, and Manela (2017)'s capital ratio.
  - CapRatio = market cap / (market cap + book debt).
- What is HKM's CapRatio capturing?
  - Book debt tends to be very stable. CapRatio therefore captures mostly variations in market cap.
- Potential concerns:
  - Market cap reflects, in part, equity-specific dynamics not shared by other markets such as FX, CDS, options (HKM).
  - Market cap naturally reflects *intermediary wealth*, which is correlated with — but not the same as — the regulatory constraint that matters for CIP deviations / supply of dollar funding.

Wealth vs. regulatory constraint: negative correlation post-GFC



Wealth doesn't price the risk of constraint

Table 6
Pricing Fwd CIP returns with intermediary wealth

	One-month fwd 3-month classic pc forward CIP returns						
	Monthly returns				Quarterly returns		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Market		0.011*		0.009	0.006		0.020***
		(0.006)		(0.009)	(0.008)		(0.006)
Int. equity			0.007**	0.002			
			(0.003)	(0.004)			
HKM factor					0.004		
					(0.003)		
AEM factor							0.0001
							(0.0001)
Constant	0.050***	0.036***	0.045***	0.037***	0.041***	0.150***	0.079**
	(0.010)	(0.010)	(0.009)	(0.011)	(0.011)	(0.032)	(0.034)
Observations	126	126	126	126	126	42	42

In this table, we regress the returns of the "Top-six first PC" forward CIP trading portfolio on a constant and the intermediary wealth and constraint proxies described in the text: Market, Intermediary Equity, the HKM Factor, and the AEM factor. Regressions (1) through (4) use monthly returns. Regressions (5) and (6) use quarterly returns. Standard errors are computed using the Newey-West kernel with a 12-month (monthly) or four-quarter (quarterly) bandwidth. * p <.1; ** p <.05; *** p <.01.

What is measured and what would be good to measure?

- Using demand shocks isolated from *GIV*, the authors run impulse response of II demand shock on CIP deviations for two regimes of intermediary constraints, as measured by *HKM's CapRatio*.
  - Regime 1: constraint at average value.
  - Regime 2: constraint at 96+ perentile.
- What can we say about the relative force of supply vs. demand in creating CIP deviations?
- Suggestion: run estimations for more regimes.

Conclusion

- CIP deviation holds the key to understanding asset pricing dynamics post-GFC.
- An important question is to quantify the relative contribution of supply vs. demand in CIP deviation.
- Good luck!

Du, W., B. Hébert, and A. W. Huber. 2022. Are intermediary constraints priced? Review of Financial Studies .

Du, W., A. Tepper, and A. Verdelhan. 2018. Deviations from covered interest rate parity. Journal of Finance 73:915–57.

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He, Z., B. Kelly, and A. Manela. 2017. Intermediary asset pricing: New evidence from many asset classes. Journal of Financial Economics 126:1–35.