

***The dollar, bank leverage and the deviation from covered  
interest parity***

Stefan Avdjiev, Wenxin Du, Cathérine Koch, and Hyun Song Shin

Discussion by

Richard M. Levich  
NYU Stern

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# The Roadmap

- What's become of Covered Interest Parity?
  - » Once a benchmark in market pricing, a corner stone of international finance models, supported by decades of empirical evidence, almost a truism
  - » Since the Global Financial Crisis (2007-8), large, variable, and persistent violations
- What explains CIP deviations, post GFC?
  - » Is it the usual suspects – transaction costs, counterparty risks, limits to arbitrage?
  - » A more nuanced explanation linking leverage and the USD
- What are the implications?
  - » For borrowers, investors, hedging, and *globalization*

# Covered Interest Parity – In Ascension <sup>1/2</sup>

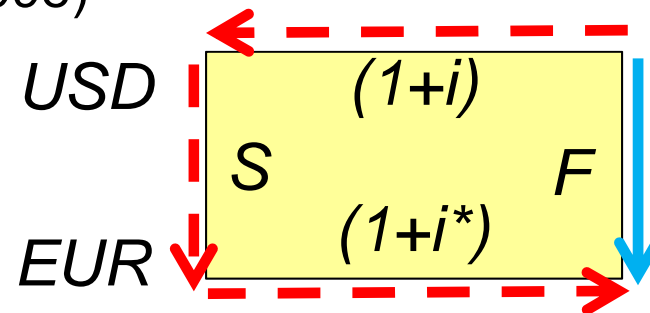
- A long history going back to Keynes (1923)
  - » CIP true in theory, not very precise in practice
  - » CIP deviations due to: Transaction costs, capital controls, counterparty risks, execution risks, unwillingness to risk large sums for small profit (limits to arbitrage)
- CIP deviation needed to induce arbitrage
  - » Keynes: 0.50%;                      Holmes: 0.25%;
  - » Branson: 0.18%;                      Einzig: 0.06%
- Rise of offshore, euro markets in 1960s
  - » Banks lend to each other, unsecured, in size at LIBOR
  - » CIP deviations pushed toward zero

## Covered Interest Parity – In Ascension 2/2

- CIP could be true by construction

- » Kubarych (1978), Cross (1998)

$$F = S \frac{(1 + i)}{(1 + i^*)}$$

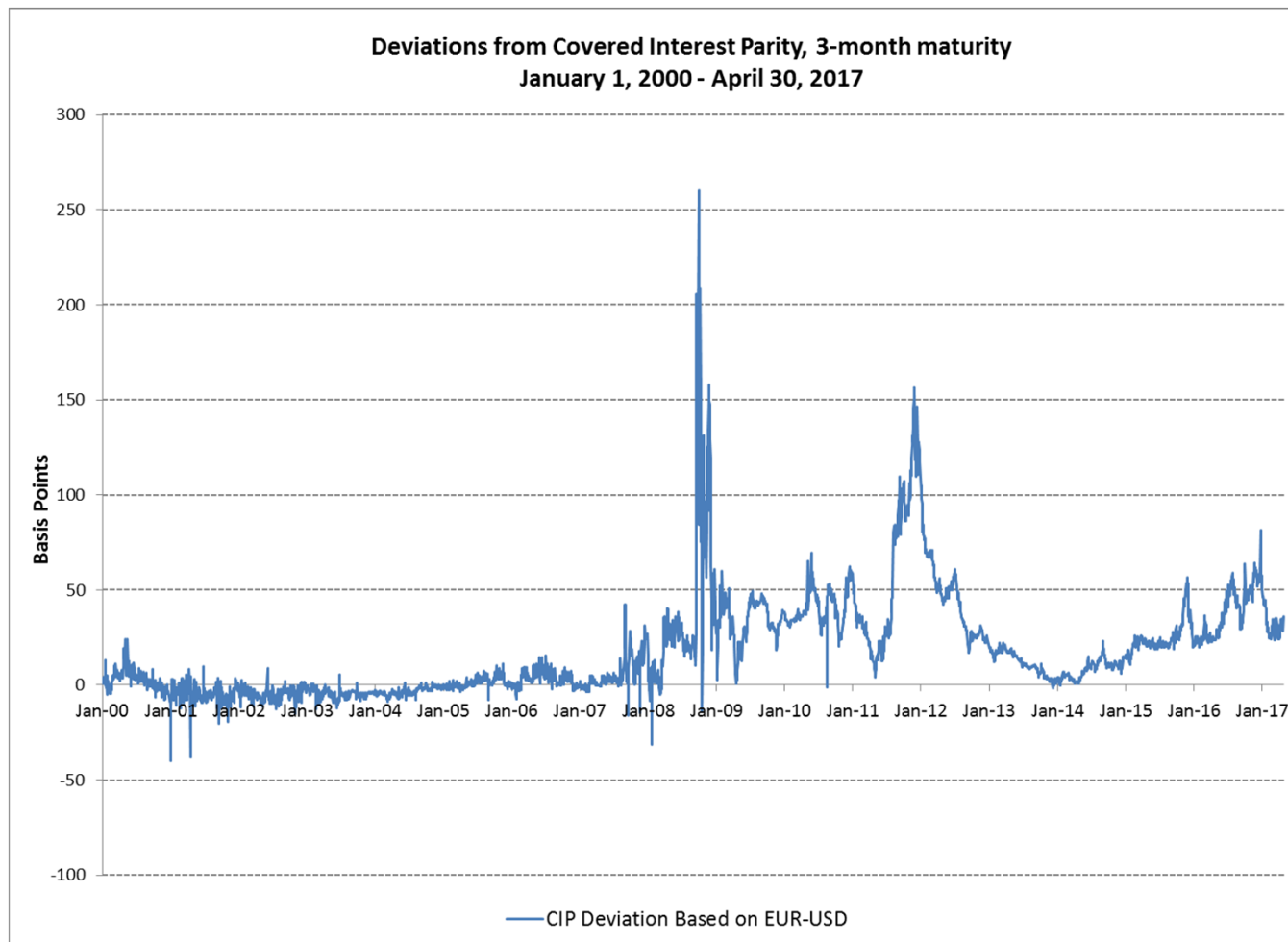


- Better data – high frequency, time-synched, real prices – document CIP deviations very small and short lived.

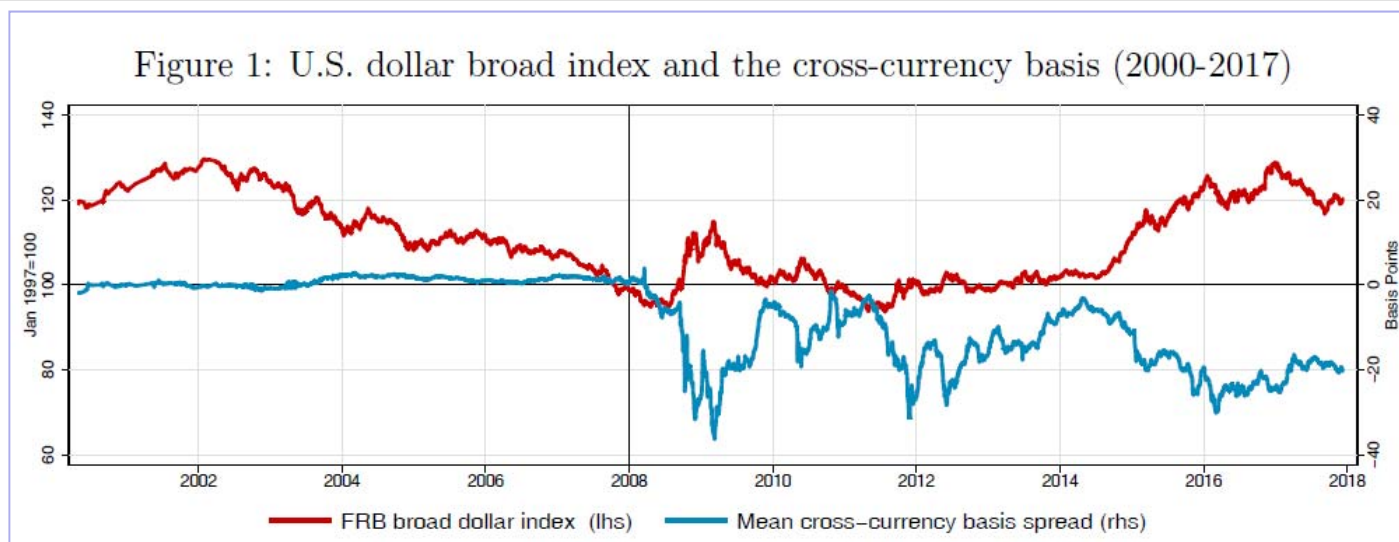
- One-way arbitrage [Deardorff (1979)]

- » Yet another factor minimizing deviations

# CIP Before and After the Global Financial Crisis



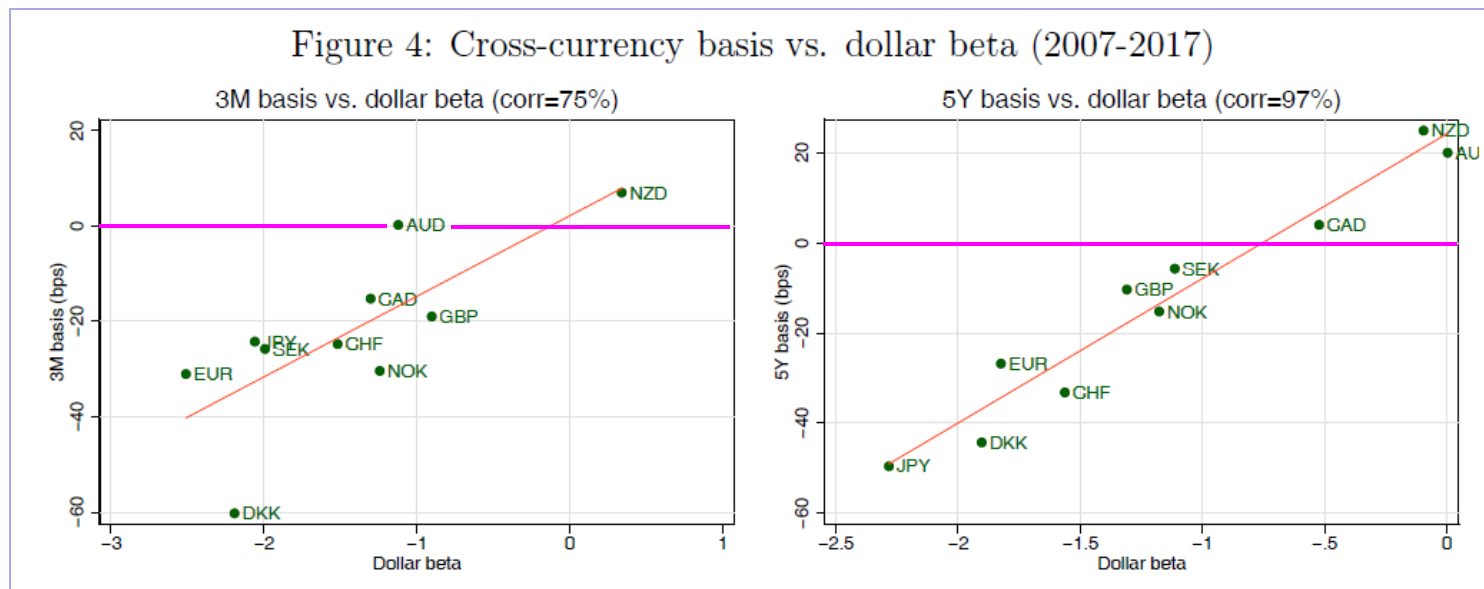
# Explaining the Patterns of CIP Deviations



- Stronger broad USD index  $\Leftrightarrow$  Wider CIP deviations
- Strong USD, cross-border USD loans more risky, bank B/S less secure, bank lending capacity down, marginal cost of funds up, CIP deviations increase
- “Limits to Arbitrage” story

# Comments & Questions

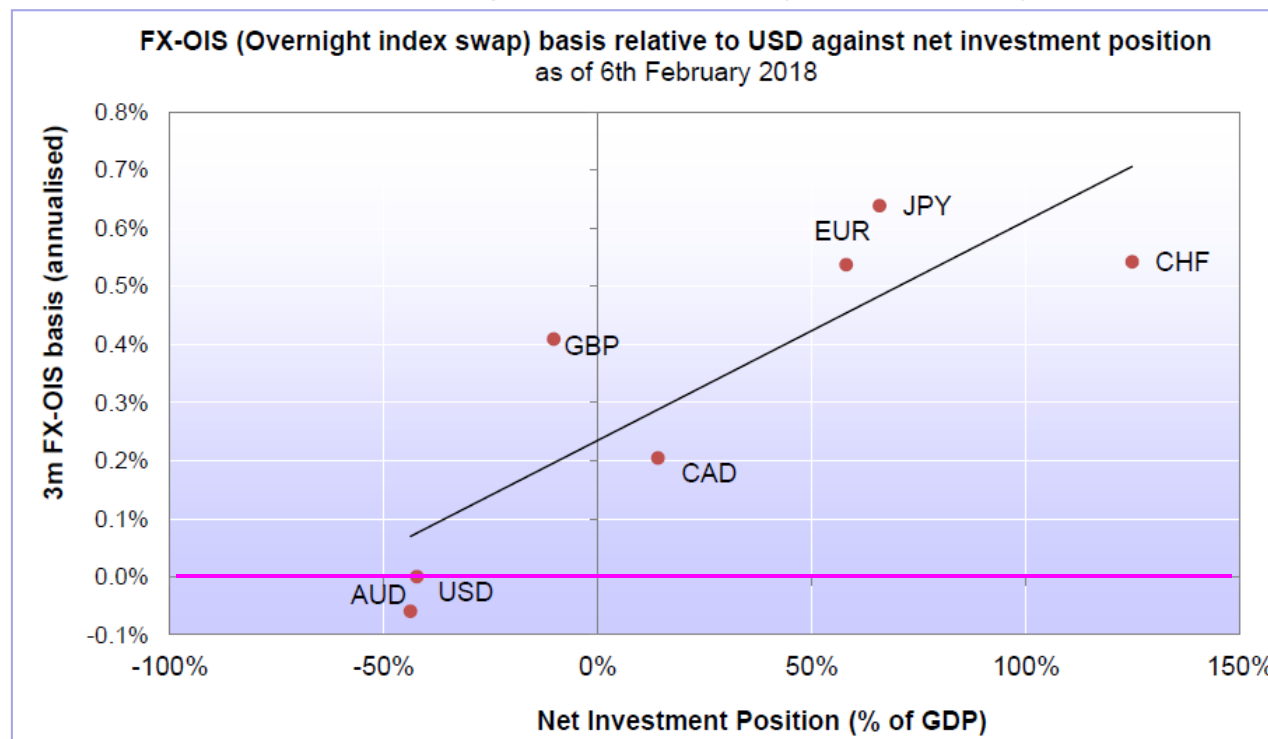
- Cross sectional variation in USD cross currency basis
  - » Related positively and significantly to a “dollar beta”
  - » Stronger link in the 5-yr than in the 3-mo



# Net Investment Position & Hedging Pressure

## An Alternative, Complementary Story

- Hedging pressure from corporate repatriation of cross-border earnings; formerly filled by banks



Source: Record Currency Management, "Opportunities in the FX markets," Feb. 2018



# Comments & Questions

- Consider splitting sample, 3 periods (Baran & Witzany, 2017)
  - » 01/08-12/09 (financial crisis); 01/10-12/13 (European debt crisis); 01/14-06/17 (diverging EU-US monetary policy)
  - » Other drivers: Credit risk of financial sector (CDS), monetary policy indicator (Fed & ECB b/s)
  - » Still a role for  $\Delta\text{Spot}$ , but variable across periods, larger  $R^2$
- What explains deviations for non-USD cross rates?
  - » Is basis transitive?

	<u>3-mo</u>	<u>5-yr</u>
◆ USD basis vs. EUR	-31.0	-25.9
◆ USD basis vs. NZD	<u>+7.0</u>	<u>+24.3</u>
(?) $\Rightarrow$ EUR basis vs. NZD	-38.0	-50.2
- Tests for other base currencies, e.g. EUR
  - » Structural break in the series? Concluding sentence.

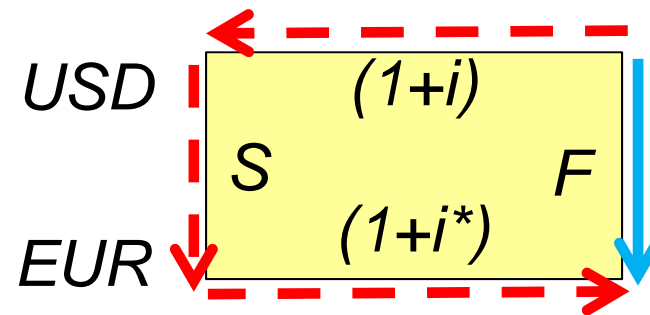
## Implications of non-zero CIP basis

- CIP:  $F = S [(1+i)/(1+i^*)]$   $\Rightarrow$  perfect capital mobility
  - » Equivalence of forward and money market hedging
  - » Equivalence of yields ( $i$  and  $i^*$ ) on a covered basis
  - » Financial market choice and portability *on a global basis*
  
- $F \neq S [(1+i)/(1+i^*)]$   $\Rightarrow$  PCM breaks down, impacts
  - » Hedging strategies, borrowing/investment strategies
  - » Ability and/or appetite to take and/or hedge risks
  - » Portfolio composition by currency or issuers

# Implications for Hedging

When cross-currency basis against EUR < 0

$$F > S \frac{(1 + i)}{(1 + i^*)}$$

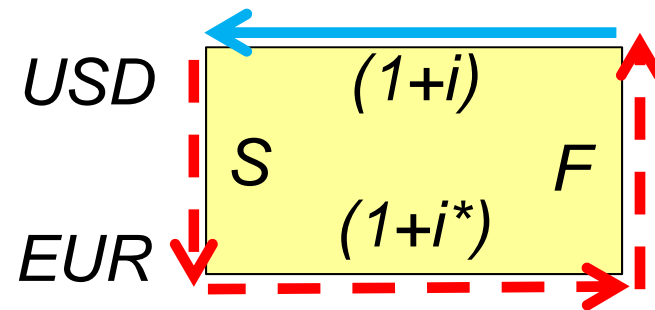


- EUR forward sellers pick LHS (forward hedge)
- EUR forward buyers pick RHS (MM hedge)
  - » Hedgers' debt capacity and credit rating may push them into more expensive forward rate hedge

# Implications for USD-based Agents

When cross-currency basis against EUR < 0

$$\frac{F(1 + i^*)}{S} > (1 + i)$$



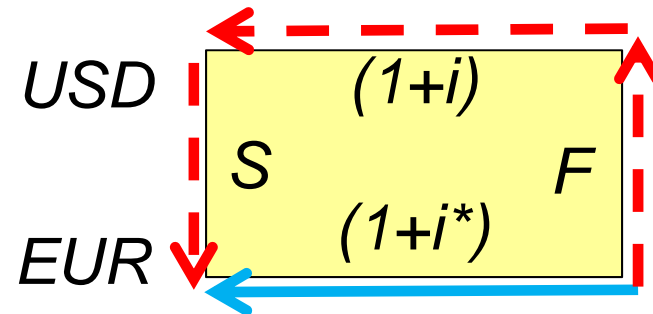
## ■ USD borrowers pick RHS (plain vanilla)

- » An arbitrage opportunity for USD issuers (or “real money” investors) to swap into EUR on a covered basis
- » Doing the arbitrage tends to narrow the basis
- » However, synthetic is less liquid and has exposure to counterparty risk

# Implications for EUR-based Agents

When cross-currency basis against EUR < 0

$$(1 + i^*) > \frac{S(1 + i)}{F}$$



## ■ EUR borrowers pick RHS (synthetic EUR)

- » Arbitrage opportunity for EUR borrowers able to raise USD funds and swap into EUR
- » Synthetic is more costly to unwind early and has exposure to counterparty risk
- » Greater borrowing in USD tends to narrow the basis

# Impact on Currency Composition of Global Bond Portfolios

		Currency Risk		
		<i>USD</i>	<i>EUR</i>	<i>JPY</i>
Interest Rate Risk	<i>United States</i>	<b>U.S. Treasury Bond</b>	U.S. T-Bond: Currency hedged to €	U.S. T-Bond: Currency hedged to ¥
	<i>EMU</i>	German Bund: Currency hedged to \$	<b>German Government Bond (Bund)</b>	German Bund: Currency hedged to ¥
	<i>Japan</i>	JGB: Currency hedged to \$	JGB: Currency hedged to €	<b>Japanese Government Bond (JGB)</b>

- Diversify investment risks; diversify funding sources
- Uncertainty the CIP basis raises cost and uncertainty rolling short-term FX hedge (10-year bond, 1-month forward hedge)

## Summing Up

- CIP fosters globalization through “perfect capital mobility”
- CIP deviations are persistent, vary by currency pair, by tenor, across time – a new normal
- Empirical evidence strongly suggests a link between USD  $\uparrow$ , bank leverage & cost of funds  $\uparrow$ ,  $\Rightarrow$  CIP  $\neq$  0
- Operational efficiency vs. Informational efficiency
  - » More difficult and costly to do the arbitrage
  - » Banks leaving money on the table, for *others* to pick
- Trade-Off
  - » Greater bank safety + soundness / Lower int'l capital mobility

# Examples of trades



Example USD deposit traded by Record			Example GBP T-bill		
USD synthetic deposit yield analysis		Deposit 11/07/2017	GBP synthetic T-bill yield analysis		T-bill 10/10/2017
Near Leg (Converting USD to EUR via spot)	Initial USD Amount	10,000,000.00	Near Leg (Converting GBP to JPY via spot)	Initial GBP Amount	10,000,000.00
	Near Date	13/07/2017		Near Date	12/10/2017
	Near Rate	1.1393		Near Rate	148.130
Generating Yield in EUR	Initial EUR Amount	8,777,319.41	Generating Yield in JPY	Initial JPY Amount	1,481,300,000
	EUR deposit Yield (annualised)	-0.64%		JPY T-bill Yield (annualised)	-0.174%
	Final EUR Amount	8,772,326.09		Final JPY Amount	1,480,629,154
Far Leg (Converting EUR to USD via a forward)	Far Date	14/08/2017	Far Leg (Converting JPY to GBP via a forward)	Far Date	15/10/2018
	Far Rate	1.14122		Far Rate	147.84888
	Final USD Amount	10,011,153.99		Final GBP Amount	10,014,477.63
	USD Yield (annualised)	1.26%		GBP Yield (annualised)	0.556%
	Comparable 'Direct' USD Yield	1.15%		Comparable 'Direct' GBP Yield	0.263%
	Value Added	0.11%		Value Added	0.293 %

Source: Record, Bloomberg. Data correct to 10<sup>th</sup> October 2017; The example USD trade was traded by Record on 11<sup>th</sup> July 2017 with an 'A' rated bank and compares the yield achieved to the best USD yield quoted to Record's trading team by an equivalent or higher rated bank. The example GBP trade was based on achievable quotes given by Record's trading counterparties.

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