

Synthetic Dollar Funding



Large global banks heavily rely on off-balance sheet foreign exchange (FX) swaps to “synthetically” raise US dollars.¹

I study...

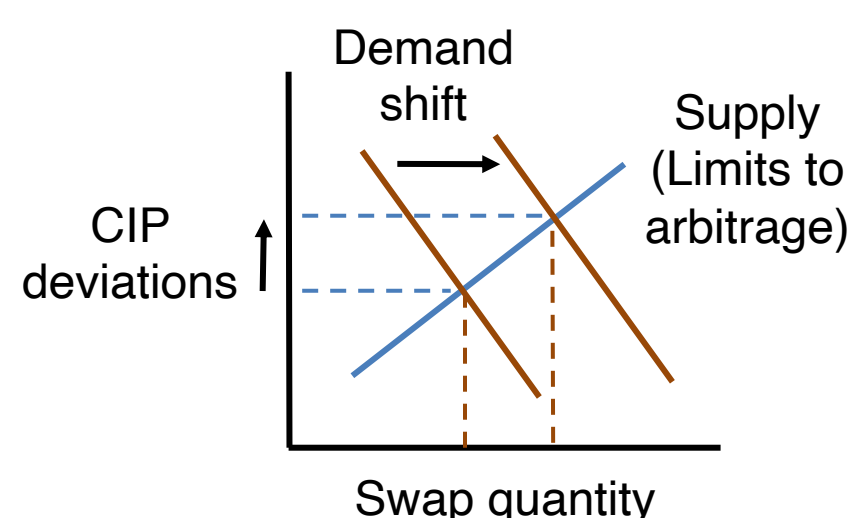
- the impact of banks’ synthetic dollar funding demand on asset prices (CIP deviations),²
- using transactions data to *jointly* analyze demand in FX swaps and wholesale funding markets.

I find that...

- Banks raise dollars via swaps when money market funds reduce investment in bank debt.
- This shift in demand *causes* CIP deviations to worsen,
- which raises the cost of FX hedges for nonbank investors.

My findings matter because they

- Provide a demand-based explanation for CIP deviations;
- Quantify international spillover of domestic liquidity regulations.



Global Banks’ US Dollar Balance Sheet

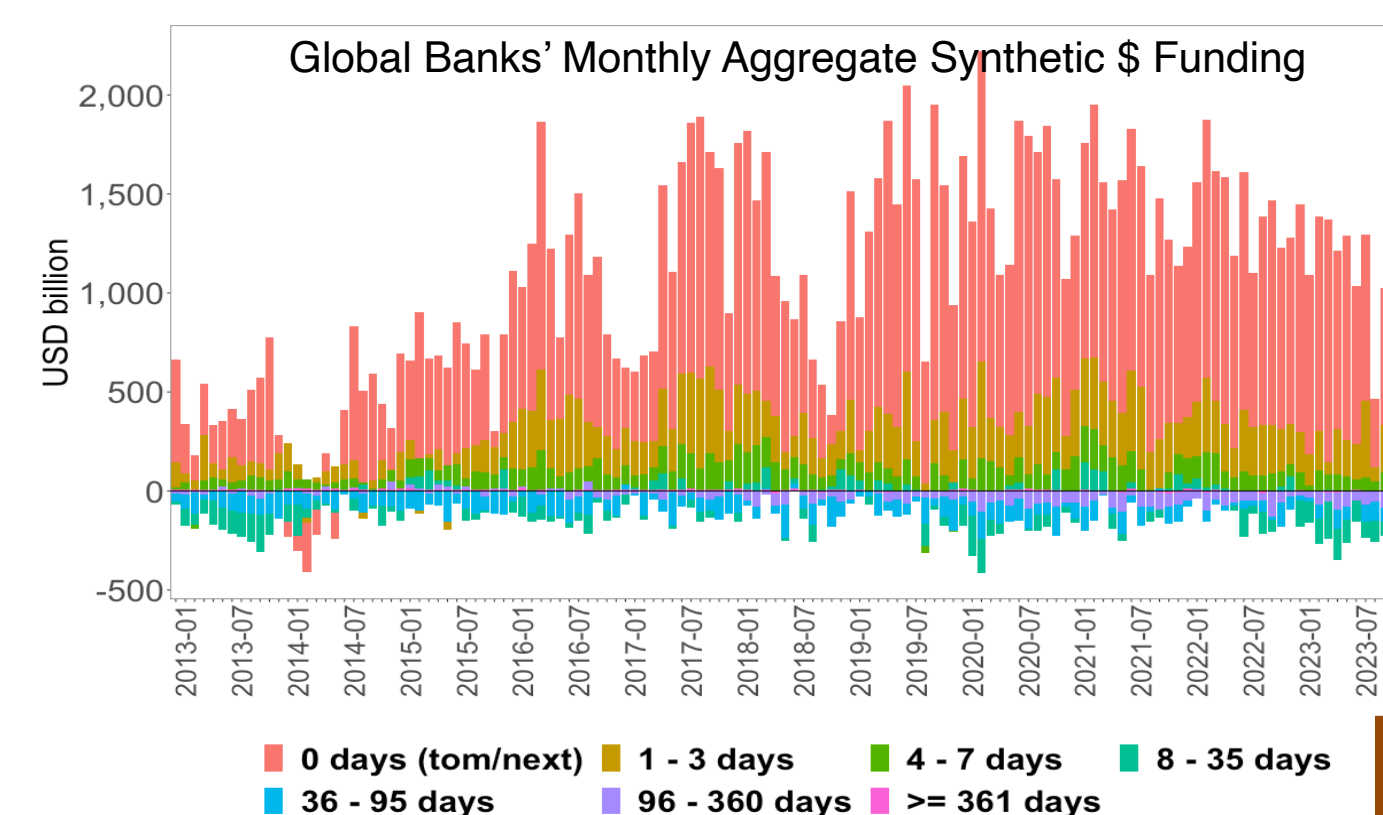
Assets	Liabilities
<p>1 <u>Short-term</u> trade credits and working capital loans; long term syndicated loans</p> <p><i>Non-US banks</i> (e.g, Deutsche, Barclays) hold > \$13 trillion in US dollar assets</p>	<p>2 <u>On-balance sheet</u> repos, commercial paper, certificates of deposit, bonds of \$10 trillion</p> <p>Primary investors: money market funds (e.g., Vanguard); constrained by concentration limits</p> <p>(1) – (2) = \$3 trillion of dollar funding gap!</p>

Off-Balance Sheet Synthetic Dollar Funding Market

- Spillover impact on non-bank investors and the pricing of banks’ dollar assets
- Off-balance sheet FX swaps bridge \$ funding gap. OTC market ⇒ lack of quantities data. I use *novel data* on daily signed order flow

NBFIs
Funds
Corporate } low elasticity of demand to CIP deviations; ⇒ absorb ↑ hedging cost

Contribution 3: quantification of spillover effects + learn about the profitability of banks’ dollar assets



- Price impact: increased swap demand turns cross-currency basis more negative
- Banks substitute from wholesale to synthetic \$ when money market fund holdings decline

First-stage	Net \$ Borrowing _{C,t}				
	(1)	(2)			
Excess wholesale funding _{C,t}	-0.330*** (0.091)	-0.327*** (0.095)			
N	528	524			
Instrument F-statistic	15.37	10.64			
Currency FE	Y	Y			
Controls	N	Y			
Second-stage	ΔCross-currency basis _{C,t}				
	PC1 (1W, 1M, 3M, 6M)	1W	1M		
	Net \$ Borrowing _{C,t}	-0.175*** (0.061)	-0.149*** (0.033)	-0.087*** (0.020)	-0.131*** (0.031)
	N	528	524	524	524
Currency FE	Y	Y	Y	Y	
Controls	N	Y	Y	Y	

Contribution 2: causally identified price impact; not restricted to quarter-ends

$$\text{Net \$ Borrowing}_{C,t} = \beta \Delta \text{MMF Holdings}_{C,t-1} + \text{Controls}_{C,t} + \alpha_C + \alpha_t + \epsilon_{C,t}$$

	Dollars borrowed by Global Banks			
	(1)	(2)	(3)	(4)
Δ MMF holdings (t-1)	-4.13** (1.53)	-3.72** (1.54)	-5.04** (1.74)	-4.97*** (1.24)
N	924	917	917	917
Controls	N	Y	Y	Y
Currency FE	N	N	Y	Y
Time FE	N	N	N	Y

Contribution 1: evidence of substitution due to quantitative constraints; economic channel distinct from cost optimization

1: Banks first raise a foreign currency, e.g. the euro, and then temporarily convert them into USD using an FX swap. Non-US banks are particularly reliant on this form of dollar funding (BIS, 2022).
2: Covered Interest Parity (CIP) deviations represent the breakdown of a fundamental no-arbitrage asset pricing condition that implies a wedge between wholesale and synthetic dollar funding costs.