"The impact of international swap lines on stock returns of banks in emerging markets"

by
Alin Andries, Andreas Fischer and Pinar Yesin

Discussion by
Andreas Schrimpf

Bank for International Settlements (BIS)

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Disclaimer: Any views presented here are strictly personal
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Outline of the discussion

1. Background
   - Funding strains of CEE banks
   - FX swap dislocations

2. Quick summary of the paper
   - What does the paper do?
   - Main findings and interpretation

3. Comments and suggestions

4. Summary

Background

What was the problem?

- Growth in CHF-denominated mortgages in CEE countries
  $\rightarrow$ CEE households as "carry traders"

- Funding structure exposes CEE banks to currency/maturity mismatches

Tensions during the crisis:

- Strong CHF appreciation $\rightarrow$ rising risk of NPLs
- CEE banks reliant on short-term wholesale funding in FC
- Funding stress as CEE banks shut out of FC interbank markets

$\rightarrow$ FX swap market dislocations and evaporating liquidity

Background

Issues akin to global USD shortage during the crisis

(McGuire/vonPeter 2009, Baba/Packer 2009, Mancini-Griffoli/Ranaldo 2010)

Breakdown of no-arbitrage relationships, in particular, CIP ...

$$\frac{F_t^k}{S_t}(1 + y_t^{k;FC}) = (1 + y_t^{k;US})$$

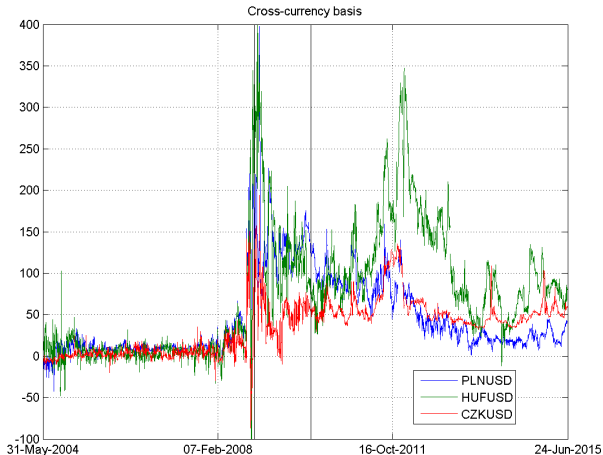$S\ (F^k)$: Spot (Forward) exchange rate (USD per one unit of FC)
$y_{US}^k\ (y_{FC}^k)$: US (foreign) interbank rate

$\Rightarrow$ Central bank swap lines providing USD liquidity as part of the international crisis response ...

e.g. Aizenman/Pasricha (2010), Baba/Shim (2010), Moessner/Allen (2013)
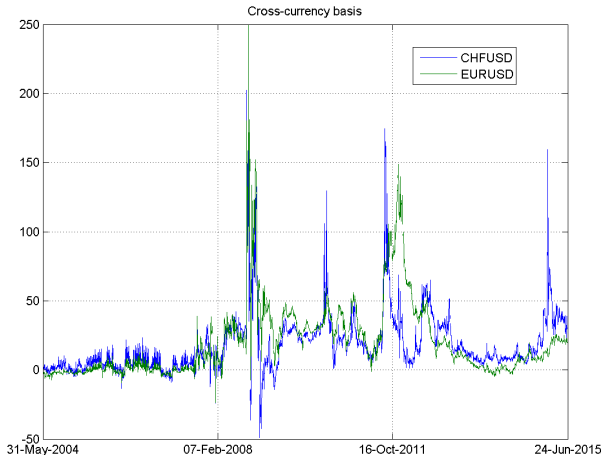
FX swap market dislocations
Cross-currency basis (3-mth): Selected CEE countries

Cross-currency basis

Legend:
- PLNUSD
- HUFUSD
- CZKUSD

Data taken from Datastream/MorganMarkets: 3-mth forward rates, spot
exchange rates, 3-mth local interbank rates.

FX swap market dislocations
Cross-currency basis (3-mth): EUR and CHF

Cross-currency basis

Data taken from Datastream/MorganMarkets: 3-mth forward rates, spot
exchange rates, 3-mth local interbank rates.

* ★ Study impact of CHF swap lines on *stock returns* of CEE *banks*
* ★ Rely on bank-level cross-sectional information

→ move beyond aggregates + consider heterogeneity

Study if swap lines had greater impact on banks with ...

1. larger FX risk exposure
2. more fragile funding structure
3. local ownership
4. higher leverage

Banking sector stock returns

$$r_{ijt} = \beta_1 \, CTRY_j * D_t^{SNB} + \beta_2 D_t^{SNB} + controls_t + \nu_j + \mu_t + \epsilon_{ijt}$$

D_t^{SNB}: $+1$ when swap line of SNB and foreign CB open
$CTRY_j$: $+1$ for countries with SNB swap arrangement

Focus on interaction term coefficient $\widehat{\beta_1}$
$\Rightarrow$ captures additional stock return of CEE banks, operating in jurisdictions where CBs had access to SNB swap lines

Also look at triple interaction term $BANK_{ijt}^{char} * CTRY_j * D_t^{SNB}$
$\Rightarrow$ Did banks with certain characteristics benefit more?

Interpreting the main results

Dependent: Bank performance	Model 1
SNB-CEE	0.2155***
	(0.0436)
CEE − Date	0.2794***
	(0.0924)

|		
SNB-MNB	0.2899***	
	(0.0623)	
MNB − Date	0.2864***	
	(0.0976)	
SNB-NBP		0.1761***
		(0.0354)
NBP − Date		0.2929***
		(0.0952)

Authors' interpretation of quantitative effects:

- Average daily stock return of PL/HU banks 22bp *higher than* CEE average in period when swap lines were open
- Pretty big when expressed in annual terms, but difficult to reconcile with aggregate figures ...

Banking sector equity returns: PL / HU vs Aggregate (EM-CEE, 58 banks)
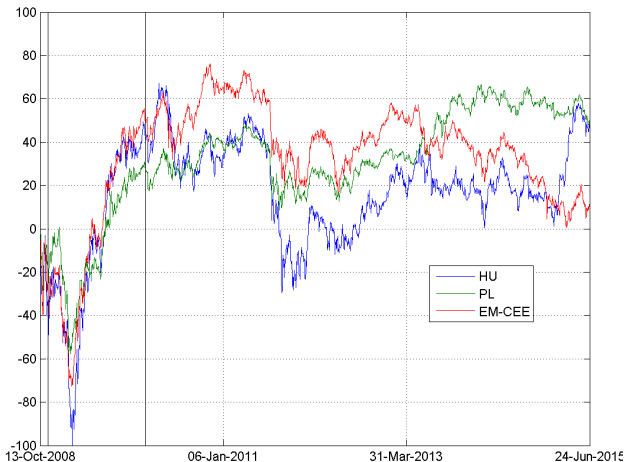
Cumulative return in the period between Nov 07 2008 and January 15, 2010:
Hungary: 78.6%, Poland: 45%, Aggregate EM-CEE: 82%

Interpreting the main results

The authors then run several robustness checks to account for ...

- slight variations in the sample period
- signalling effects
- major central bank swap lines

$\Rightarrow$ Then they look at the role of bank characteristics
(FX risk, funding fragility etc)

Weak evidence that banks with high CHF risk exposure exhibited a stronger equity price rebound ...

Dependent: Bank performance	Model 1	Model 2	Model 3	Model 4
SNB-CEE	0.2973***	0.1798***	0.3060***	0.2485***
	(0.0274)	(0.0265)	(0.0327)	(0.0375)
Share of assets in CHF	-0.0165			
	(0.0897)			
SNB-CEE * Share of assets in CHF	0.0063			
	(0.1146)			
Share of assets in foreign currencies		-0.0327*		
		(0.0178)		
SNB-CEE * Share of assets in foreign currencies		0.1631***		
		(0.0225)		
Net position in CHF			-0.0328	
			(0.1015)	
SNB-CEE * Net position in CHF			-0.0953	
			(0.1023)	
Net position in foreign currencies				0.0622
				(0.0690)
SNB-CEE * Net position in foreign currencies				-0.0769
				(0.0603)

Instead, banks with greater share of short-term funding showed a larger equity market rebound in the CHF swap line episode ...

Dependent: Bank performance	Model 2
SNB-CEE	0.1338***
	(0.0322)
Funding fragility	-0.1569***
	(0.0539)
SNB-CEE * Funding fragility	0.2877***
	(0.0919)

Other characteristics:

- Weaker capitalized banks saw a greater equity price rebound
- Results for ownership / interconnectedness mixed

Direct vs indirect effects:

- Would be important to get a better idea of direct impact of CHF swap lines before turning to effects on bank stocks
- What impact did they have on the actual funding constraints?
- Also consider banks' sensitivity to funding illiquidity shock ("beta"), when explaining the stock price response?

Transmission to bank stock prices:

- Stock returns driven by expected future cash flows and/or discount rates (Campbell/Shiller, 1991)
- Which is the dominant channel accounting for stock price response?

Panel regression setup:

(+) helps gauging persistence of the effects

(−) difficulty to account for confounding influence

→ Is the equity price response really only due to the swap lines?

- Swap line dummy switched on over +300 day period, covering the rebound from early 2009 onwards (return of risk appetite)

- At the same time, monetary easing by the Fed (LSAP-1)

- Case of Poland: Flexible credit line arrangement with the IMF ($22 billion), allegedly helped alleviate stress significantly

- How about the role of domestic monetary policy?

Use alternative research design (classical event study) to avoid impact of confounding factors?

- Estimate *abnormal* return ($AR_{it} = R_{it} - E_t R_{it}$), based on a narrow event window
- Could look at announcement effects and dates of the actual CHF auctions by NBP and MNB
- CARs can be used for cross-sectional analysis
- Such an analysis is difficult for e.g. CDS / CIP deviations, but pretty straightforward when looking at stock returns
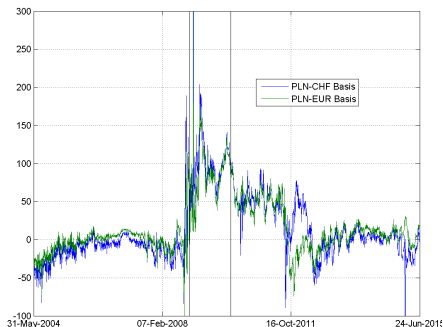
Paper suggests that SNB swap line was crucial in driving banks' rebound in equity prices in HU /PL ...

How about ECB's provision of EUR liquidity to NBP / MNP?

e.g. Allen and Moessner (2011, *World Economics*, Vol. 12)

It would be interesting to get more background on ...

- Why did PL / HU receive access to swap lines, while other CBs in CEE countries did not?
    - Trade linkages
    - Quality of institutions
    - Linkages of Swiss banks
- What were the benefits to the SNB from providing the CHF liquidity?
- Were the swap operations of the SNB deemed successful in meeting their goal?

Bottomline

Interesting research question with high practical relevance ...

Cross-sectional approach with focus on banks to study heterogeneity in the response to swap lines is novel ...

But, need to dig deeper to make case for SNB swap lines as sole driver of the effects

- Role of liquidity arrangements with ECB, impact of domestic monetary policy, IMF loans etc?
- Minimize potential influence of confounding factors in empirical research design

Need to enhance understanding of transmission channel to bank stock prices (alleviation of funding frictions - bank stock returns)

Minor comments

- Take-up of CHF funds not known for individual banks, but could rely on aggregate swap volumes when looking at country-level perspective (Tab. 2-5)

- Bank characteristics (annual data) very slow moving vs high frequency stock returns

- Interpretation of quantitative effects in the regressions: More care needed to convey the economic magnitude of the effects

- List of controls: Bank size, bank risk, market beta (account for expected return), CIP deviation?

- Sample selection: Sample dominated by small banks? Hungary just two banks.