

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

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Impact of swap line agreements at the firm level

- Existing literature shows that swap lines impacted national markets.
 - Method - country-level regressions using a cross country panel with a swap dummy plus controls on **interest rate** and **CDS spreads**.
 - Difficult to identify whether **liquidity** or **financial stability** concerns were important.
 - Assumption: all banks are impacted equally
- Recent studies look at the impact of unconventional policies on firms for a particular country.
 - Method - firm level regressions for country case study.
 - Alfaro et al. (2014) for Brazilian FX controls and exporters, Chodorow-Reich (2014) US QE and financial institutions.

Paper's objective

Show the impact of international swap lines on stock prices using bank data from emerging markets

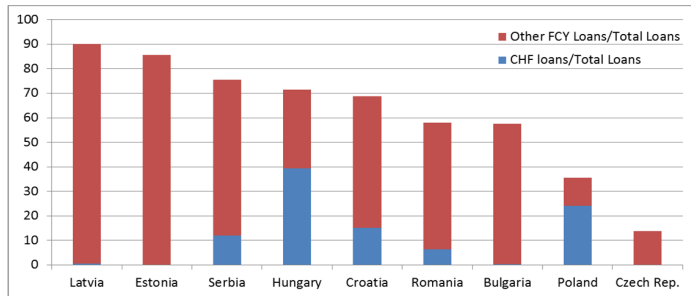
We use an event-study framework to examine the response of stock prices for 47 Central and Eastern European (CEE) banks to international swap lines between the Swiss National Bank (SNB) and other central banks.

Starting point

Figure 1

share of foreign currency loans as a percentage of total loans to the non-banking sector in Eastern Europe (2009:Q1)

Percentage of Total Loans



Note: CHF, Swiss francs; FCY, foreign currency.

Source: CHF Lending Monitor (SNB) and own calculations.

SNB swap line agreements in EUR/CHF

1 **SNB** and **ECB** from 16.10.2008 to 25.1.2010

2 **SNB** and **NBP** from 17.11.2008 to 25.1.2010

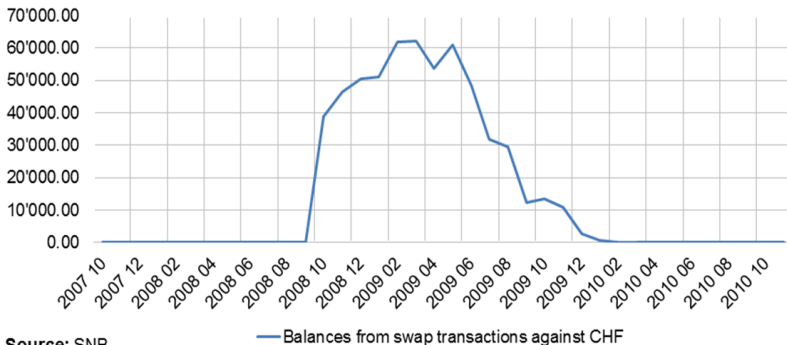
3 **SNB** and **MNB** from 28.1.2009 to 25.1.2010

country swap = Polish and Hungarian are together

Figure 2

BALANCES FROM SWAP TRANSACTIONS AGAINST CHF

in mio CHF



Country-level regression

$$\Delta p_{ijt} = \beta_1 SWAP_{jt}^{SNB|X} + other_t + \nu_j + \mu_t + \epsilon_{ijt}, \quad (1)$$

Δp_{ijt} = change in stock price of bank i in country j at time t

$SWAP_{jt}^{SNB|X}$ = swap line dummy for country j ; $\beta_1 > 0$

$other_t$ = controls (VIX, EUR/CHF, bank stock index)

country and quarterly effects

Balance sheet information

The dataset comprises balance sheet information for 47 commercial banks in 15 CEE countries from Jan 3, 2005 to Dec. 31, 2012.

- 2012 BankScope database - 462 active CEE banks
- 260 banks have detailed information at least 5 years
- 92 banks are publicly traded
- hand collect information on FX risk leaves 47 banks (18 local and 29 foreign)

Control variables to isolate swap line impact

- VIX index reflects aggregate financial market volatility
- EUR/CHF return - fluctuations in the FX constitute a risk for banks from emerging market economies
- STOXX index of 600 European banks

Baseline results for NBP and MNB swap lines

Dependent: Bank performance	Model 1	Model 2	Model 3	Model 4
Country swap	0.0023*** (0.00)			
ECB swap		-0.0009* (0.00)		
Hun swap			0.0029*** (0.00)	
Pol swap				0.0020*** (0.00)
VIX	-0.0002*** (0.00)	-0.0002*** (0.00)	-0.0002*** (0.00)	-0.0002*** (0.00)
Exchange rate (CHF/EUR) return	0.0722*** (0.01)	0.0725*** (0.01)	0.0724*** (0.01)	0.0722*** (0.01)
European banking systems performance	0.1793*** (0.06)	0.1791*** (0.06)	0.1792*** (0.06)	0.1792*** (0.06)

Robustness checks

NBP and MNB swap lines impact Polish and Hungarian bank stocks positively and significantly

control for

- sample breaks
- consider alternative swap lines with SNB and major central banks
- regress different swap lines together
- signalling effects and lags do not matter

Bank-level regression

$$\Delta p_{ijt} = \beta_1 SWAP_{jt}^{SNB|X} + \beta_2 BANK_{ijt}^{char} + \beta_3 BANK_{ijt}^{char} * SWAP_{jt}^{SNB|X} \quad (2)$$

$$+ other_t + \nu_j + \mu_t + \epsilon_{ijt}$$

added variables

$BANK_{ijt}^{char}$ = bank characteristics: (capital, ownership etc.)

$BANK_{ijt}^{char} * SWAP_{jt}^{SNB|X}$ = interaction term betw. swap and bank char

Bank characteristics and testable propositions

Proposition # 1: FX Exposure *Banks with high levels of foreign currency loans benefit more from swap lines than do banks with low levels of foreign currency loans.*

Proposition # 2: Funding Structure *Banks engaged in foreign currency loans with a high deposit base in local currency are reliant on swap lines.*

Proposition # 3: Ownership *Local (as opposed to foreign-owned) banks are reliant on swap lines.*

Proposition # 4: Capital Structure *Banks with a weak capital structure are reliant on swap lines.*

Categories of bank characteristics

- the level of foreign currency exposure
(CHF assets / total assets) (FX assets / total assets)
(net CHF assets) (net FX assets)
- the funding structure
(customer deposits / total assets)
- ownership type (i.e., foreign or domestic control)
(dummy 50% foreign ownership)
(member of foreign parent group)
- capital structure
(tier 1 + 2 capital / risk adjusted assets)
(tier 1 capital / risk adjusted assets)

FX exposure matters less

Dependent: Bank performance	Model 1	Model 2	Model 3	Model 4
Country swap	0.0031*** (0.00)	0.0018*** (0.00)	0.0029*** (0.00)	0.0023*** (0.00)
Share of assets in CHF	-0.0000 (0.00)			
Country swap* Share of assets in CHF	-0.0011 (0.00)			
Share of assets in foreign currencies		-0.0002 (0.00)		
Country swap* Share of assets in foreign currencies		0.0013*** (0.00)		
Net position in CHF			-0.0005 (0.00)	
Country swap* Net position in CHF			-0.0001 (0.00)	
Net position in foreign currencies				0.0006 (0.00)
Country swap* Net position in foreign currencies				-0.0003 (0.00)

Customer deposits matters weakly

Dependent: Bank performance	Model 1
Country swap	0.0021*** (0.00)
Customer deposits	-0.0000*** (0.00)
Country swap* Customer deposits	0.0001*** (0.00)

Ownership type matters for FX liquidity provision

Dependent: Bank performance	Model 1	Model 2
SNB-CEE	0.0030*** (0.00)	0.0022*** (0.00)
Foreign ownership	0.0003 (0.00)	
SNB-CEE * Foreign ownership	-0.0010* (0.00)	
Member of Banking group		0.0001 (0.00)
SNB-CEE * Member of Banking group		0.0004** (0.00)

Capital structure matters for financial stability

Dependent: Bank performance	Model 1	Model 2
SNB-CEE	0.0045*** (0.00)	0.0038*** (0.00)
CAP1	0.0000 (0.00)	
SNB-CEE * CAP1	-0.0002* (0.00)	
CAP2		0.0000 (0.00)
SNB-CEE * CAP2		-0.0001** (0.00)

Final remarks

Stock prices of CEE banks responded strongly to SNB swap lines. We show that a broader range of financial assets respond to the liquidity provisions of swap lines. More importantly, we show that **local** and **weakly capitalized** banks responded the strongest to SNB swap lines.

- #1 The response of local banks interpreted as a lack of interconnectedness to international financial markets. This supports the common view that swap lines had a liquidity provision function for a national jurisdiction.
- #2 The response of weakly capitalized banks suggests that swap lines also took on functions linked to financial stability.