BANK FOR INTERNATIONAL SETTLEMENTS

Cross-border banking and monetary policy spillovers: implications for Emerging Europe

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Motivation

- The world is interconnected through often unexpected channels
- Monetary policy spillovers are one of the key channels
  - Rey (2013), Miranda-Agrippino and Rey (2012), Forbes and Warnock (2012), Ongena et al (2015)
- Cross-border banking is a key transmitter
  - Almost US$30 trillion cross-border bank lending
  - Rey (2015): international risk-taking channel
  - Bruno & Shin (2015a, b): link bank leverage to USD exchange rate
  - Avdjiev and Takáts (2015): USD exposures matter in taper tantrum
- Most literature focuses on the United States
- While correct for most of the emerging world, Emerging Europe is an exception!

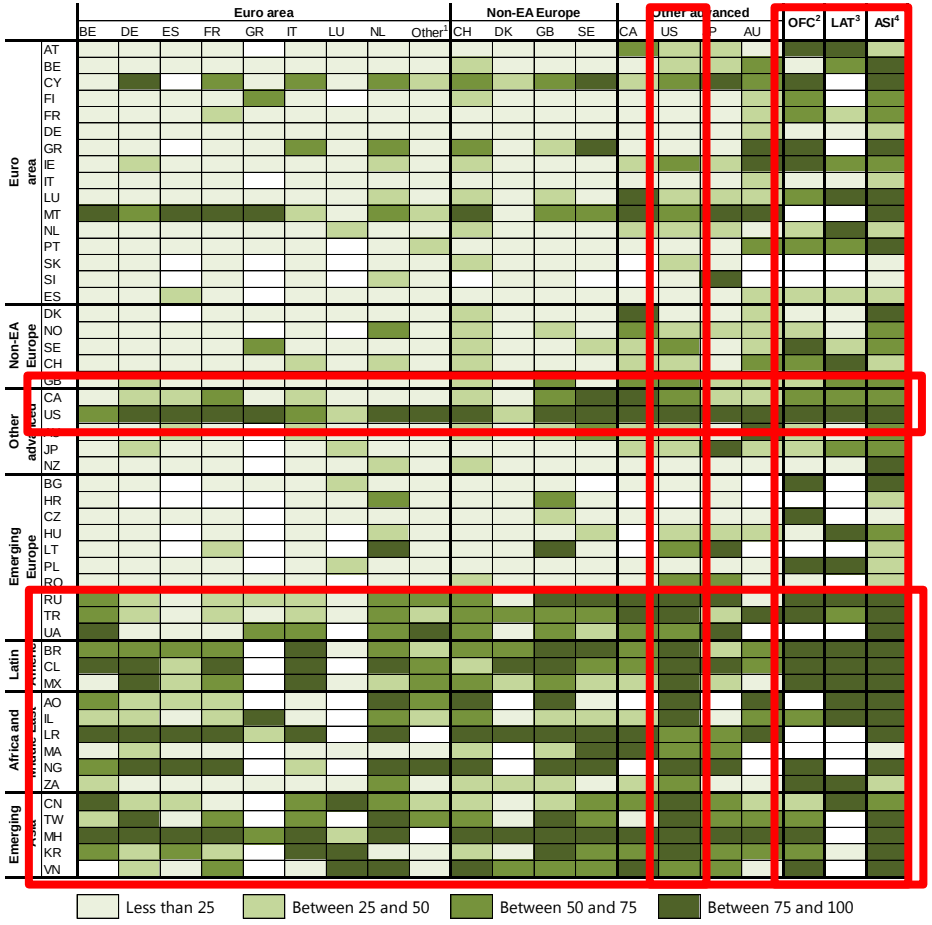
Why is Emerging Europe special?

- Most of cross-border bank claims are denominated in USD
  - 13 trillion USD of 28 USD trillion total
  - Euro only 5 trillion USD (plus intra euro area claims of around 4 trillion)

- However, for Emerging Europe EUR is more important than USD
  - even when including Russia and Turkey in the group

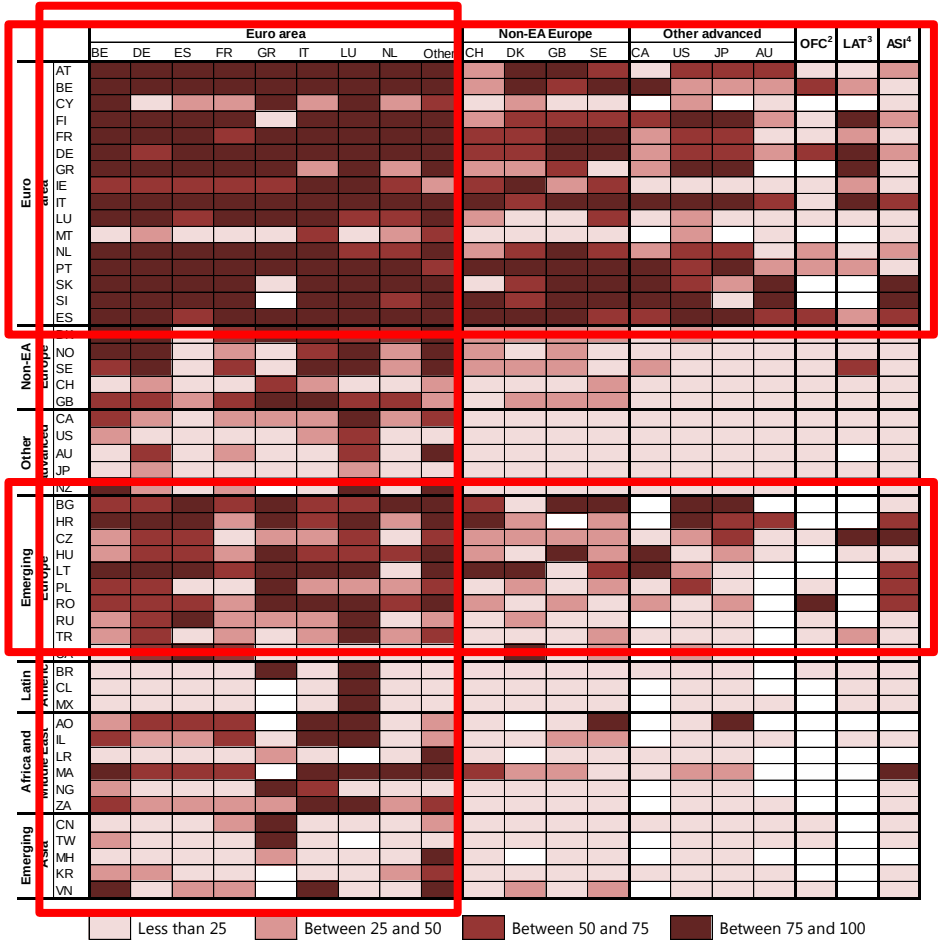
- Hence, for Emerging European policy makers it is critical how Federal Reserve and ECB monetary policy spills over
  - especially now when Fed and ECB monetary policy diverges sharply
  - as cross-border bank lending is relatively large in Emerging Europe
  - even though this is not the typical focus in the literature

US Dollar share (%)



Based on Avdjiev S and E Takats (2018) "Monetary Policy Spillovers and Currency Networks in Cross-border Bank Lending: Lessons From the 2013 Fed Taper Tantrum" Review of Finance, 10 October

Euro share (%)



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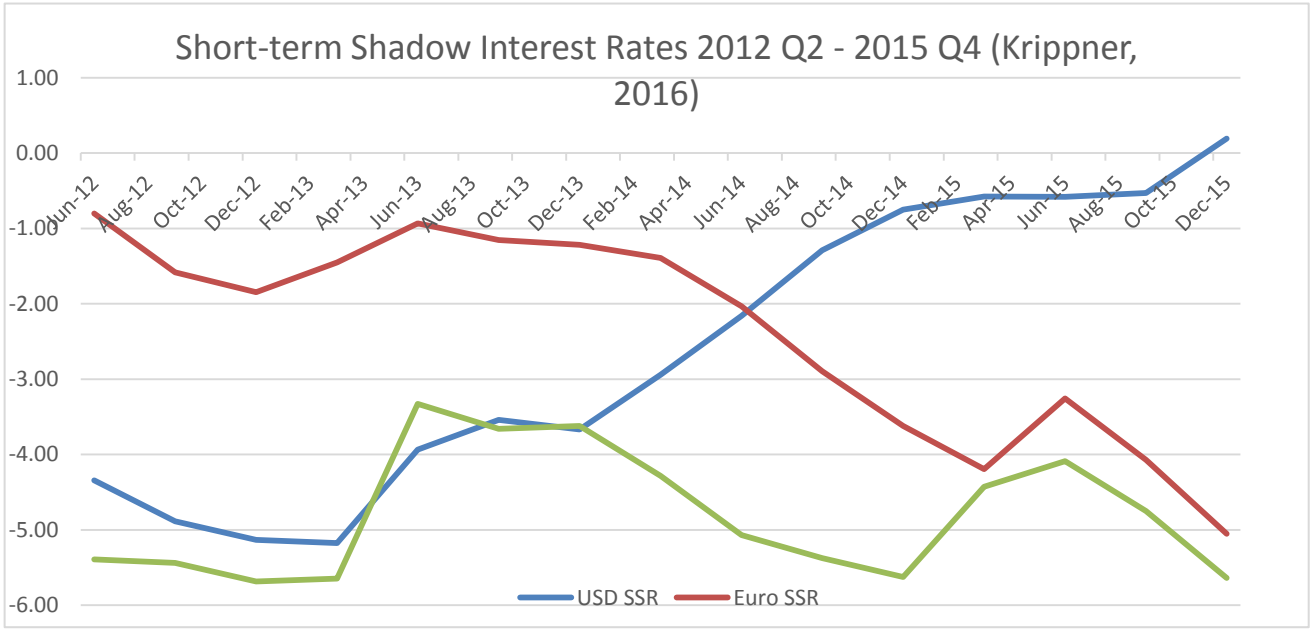
Key questions

- How do monetary conditions transmit through different currencies in cross-border lending?
- Do banks or non-banks transmit the shocks?
- Is the US dollar special?
- Based on Takats, E and J Temesvary (2016) “The currency dimension of the bank lending channel in international monetary transmission” BIS Working Paper 600, December

Analysis

- Use BIS International Banking Statistics (BIS IBS) Stage 1 data, available from Q2 2012
  - Provides the three "necessary" dimensions:
    - Lending banking systems
    - Borrowing countries
    - Currency denomination
- Focus on three main currencies used in international bank lending
  - US Dollar (USD), Euro (EUR) and Japanese Yen (JPY)
- Link the changes to shadow interest rates (Krippner, 2016)
  - Include bank liquidity controls (as in Kashyap and Stein (2000) and Cetorelli and Goldberg (2012))
  - Saturate the model with fixed effects (Ongena et al, 2015)

3. Shadow interest rates: divergence helps identification



Findings

- Lending in each of the three main currencies (USD, EUR and JPY) responds to changes in monetary conditions of that currency
  - Even when lending is linked to monetary policy only by currency denomination (e.g. UK bank lending in USD to Malaysia responds to Fed monetary policy)

- The transmission works (mainly) through non-bank lending
  - Impact through banks is not significant statistically

- US dollar, though large in size and exposure, is not a unique conduit
  - Bank lending channel of US monetary conditions is not statistically significantly different from that of EUR or JPY

Panel regression

$$\Delta \ln(Y)_{j,t}^{i,c} = \alpha + \sum_{k=1}^{4} \beta_k MP_{t-k}^{c} + \sum_{k=1}^{4} \gamma_k \; MP_{t-k}^{c} \times L_{j,t-k} + \sum_{k=1}^{4} \delta_k L_{j,t-k}$$

$$+ \sum_{k=1}^{4} \zeta_k \begin{pmatrix} Source \\ Controls \end{pmatrix}_{j,t-k} + \sum_{k=1}^{4} \eta_k \begin{pmatrix} Target \\ Controls \end{pmatrix}_{t-k}^{i} + \varepsilon_{j,t}^{i,c}$$

- $\Delta \ln(Y)_{j,t}^{i,c}$ is quarterly bilateral cross-border bank flows in currency *c*
- MP_t^c is quarterly change in the short-term shadow interest rate of currency *c*
- $L_{j,t}$ denotes country *j*'s banking system's *Short-term International Liquidity Ratio (*short-term FX claims over all FX claims*)*
  - which we instrument with short-term FX claims over long-term FX claims
- Arellano-Bond dynamic panel estimates
- Negative impact of monetary tightening on cross-border lending if $\sum_{k=1}^{4} \beta_k < 0$
- Currency dimension of bank lending channel if less liquid banking systems' cross-border lending responds stronger to monetary tightening: $\sum_{k=1}^{4} \gamma_k > 0$

Regression results: currency matters

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Type of Bilateral Flows	All Bilateral Flows	All Bilateral Flows	All Bilateral Flows	All Bilateral Flows	All Bilateral Flows	Excluding Return Flows	Excluding Return Flows
Independent Variables							
ΣΔ Shadow Interest Rate {t-1 to t-4}	–13.63 [4.023]***	–12.15 [4.054]***	–11.46 [4.021]***	–12.43 [4.122]***	–10.36 [4.149]**	–12.29 [4.15]***	–10.67 [4.25]**
ΣΔ Shadow Interest Rate*International Liquidity Ratio {t-1 to t-4}	0.276 [0.093]***	0.229 [0.093]**	0.22 [0.091]**	0.245 [0.094]***	0.208 [0.095]**	0.241 [0.095]**	0.217 [0.098]**
Σ International Liquidity Ratio {t-1 to t-4}	–0.146 [0.127]	–0.149 [0.13]	–0.149 [0.128]	–0.0994 [0.133]	–0.159 [0.14]	–0.136 [0.134]	–0.137 [0.145]
Source-Target Same Dummy*ΣΔ Shadow Interest Rate*International Liquidity Ratio {t-1 to t-4}				–0.675 [0.368]*			
Source-Target Same Dummy*ΣΔ Shadow Interest Rate {t-1 to t-4}				27.359 [16.764]			
Target Country's Currency Dummy*ΣΔ Shadow Interest Rate*International Liquidity Ratio {t-1 to t-4}					–0.0416 [0.298]		0.0543 [0.327]
Target Country's Currency Dummy*ΣΔ Shadow Interest Rate {t-1 to t-4}					–2.303 [14.19]		–6.634 [15.52]
Constant	7.547 [7.347]	10.75 [7.579]	8.205 [7.449]	9.307 [7.483]	10.31 [7.45]	7.471 [7.766]	5.639 [7.839]
Four lags of Dependent Variable	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Target-Source Same Pairs Included	Yes	Yes	Yes	Yes	Yes	No	No
Source Banking System Macro Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Target Country - Time Fixed Effects	No	No	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	No	Yes	--	--	--	--	--
Differential response of International Liquidity-abundant banking systems (at the 75th ptile) vs. international liquidity-constrained banking systems (at the 25th ptile) to a 100bps decline in the policy interest rate							
	5.428 [1.825]***	4.505 [1.825]**	4.338 [1.793]**	4.572 [1.821]**	4.047 [1.795]**	4.741 [1.863]**	4.318 [1.857]**

Regression: transmission not only through the US dollar

Pooled regression	[1] USD	[2] USD	[3] EUR	[4] EUR	[5] JPY	[6] JPY
Independent Variables						
ΣΔ Shadow Interest Rate {t-1 to t-4}	–32.44 [12.56]***	–9.15 [6.841]	–21.67 [7.751]***	–11.39 [7.53]	–17.48 [8.142]**	–11.44 [9.36]
ΣΔ Shadow Interest Rate*International Liquidity Ratio {t-1 to t-4}	0.579 [0.252]**	0.477 [0.258]*	0.369 [0.165]**	0.376 [0.178]**	0.324 [0.197]*	0.377 [0.213]*
Σ International Liquidity Ratio {t-1 to t-4}	–0.391 [0.238]	–0.307 [0.247]	0.0123 [0.234]	–0.0126 [0.244]	1.122 [0.719]	0.603 [0.674]
Target's Currency Dummy*ΣΔ Shadow Interest Rate*International Liquidity Ratio {t-1 to t-4}		0.97 [0.63]		–0.202 [0.574]		1.659 [0.643]***
Constant	8.681 [7.332]	3.264 [6.588]	0.193 [5.97]	–1.414 [6.101]	0.0307 [3.59]	0.71 [3.698]
Source Banking System Macro Controls	Yes	Yes	Yes	Yes	Yes	Yes
Four lags of Dependent Variable	Yes	Yes	Yes	Yes	Yes	Yes
Target Country-Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Differential response of International Liquidity-abundant banking systems (at the 75th ptile) vs. international liquidity-constrained banking systems (at the 25th ptile) to a 100bps decline in the policy interest rate						
	11.41 [4.968]**	10.33 [5.062]**	7.268 [3.254]**	7.215 [3.353]**	6.379 [3.875]*	9.026 [4.059]**

Robustness checks: Weighted regression

Type of Bilateral Flows / Type of Weights / Independent Variables	[1] All Bilateral Flows By Source Country	[2] All Bilateral Flows By Source Country	[3] All Bilateral Flows By Target Country	[4] All Bilateral Flows By Target Country	[5] All Bilateral Flows By Source-Target Country	[6] All Bilateral Flows By Source-Target Country
ΣΔ Shadow Interest Rate {t-1 to t-4}	**–4.039 [3.278]**	**–11.28 [3.15]*** **	**–15.28 [2.023]*** **	**–15.16 [2.015]*** **	**–10.3 [0.517]*** **	**–13.64 [0.359]*** **
ΣΔ Shadow Interest Rate*International Liquidity Ratio {t-1 to t-4}	**0.279 [0.058]*** **	**0.387 [0.057]*** **	**0.315 [0.05]*** **	**0.312 [0.050]*** **	**0.224 [0.012]*** **	**0.0408 [0.010]*** **
Σ International Liquidity Ratio {t-1 to t-4}	–0.827 [0.051]***	–0.58 [0.044]***	–0.537 [0.044]***	–0.546 [0.044]***	–0.651 [0.02]***	–1.047 [0.017]***
Target Country's Currency Dummy*ΣΔ Shadow Interest Rate*International Liquidity Ratio {t-1 to t-4}		0.034 [0.015]**		–0.005 [0.016]		0.001 [0.001]**
Target Country's Currency Dummy*ΣΔ Shadow Interest Rate {t-1 to t-4}		–1.516 [0.637]**		0.223 [0.687]		–0.042 [0.0104]***
Constant	–1.033 [0.117]***	–1.737 [0.163]***	–1.767 [0.146]***	–1.895 [0.157]***	–0.061 [0.003]***	–0.057 [0.002]***
Four lags of Dependent Variable	Yes	Yes	Yes	Yes	Yes	Yes
Target-Source Same Pairs Included	No	No	No	No	No	No
Source Banking System Macro Controls	Yes	Yes	Yes	Yes	Yes	Yes
Target Country - Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Conclusion

- Lending in each of the three main currencies (USD, EUR and JPY) responds to changes in monetary conditions of that currency
  - Even when lending is linked to monetary policy only by currency denomination (e.g. UK bank lending in USD to Malaysia responds to Fed monetary policy)

- US dollar, though large in size & exposure, is not a unique conduit
  - Bank lending channel of US monetary conditions is not statistically significantly different from that of EUR or JPY

- Particularly relevant for Emerging Europe
  - Large cross-border bank lending
  - Denominated mostly in EUR, with large USD share

Thank you!

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