



BANK FOR INTERNATIONAL SETTLEMENTS

Exchange rates and the transmission of global liquidity

Stefan Avdjiev, Catherine Koch and Hyun Song Shin

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The views expressed in this presentation are those of the authors and not necessarily those of the Bank for International Settlements.



FX fluctuation and the real economy

- **Exchange rate fluctuations** can influence the real economy through two main channels that operate in opposite directions:
 - **Real channel**
 - operates through the net exports
 - well-established and standard in open economy macro models.
 - domestic currency depreciation => pick-up in economic activity
 - **Financial channel**
 - operates through balance sheet adjustments and risk-taking
 - less standard compared to the real (net exports) channel,
 - has become more important with the greater integration of the global financial system in recent years.
 - domestic currency depreciation => slow-down in economic activity



Components of the financial channel

● Demand component:

- A borrower with **USD liabilities** used to finance **domestic assets** would see a strengthening of the balance sheet as a result of USD depreciation.
- An exporting firm with **USD receivables** or an asset manager with **USD** denominated **assets** but with **domestic currency obligations** would **hedge** currency risk more aggressively when USD is expected to depreciate further.
- Captured by the **bilateral exchange rate** (BER)

● Supply component:

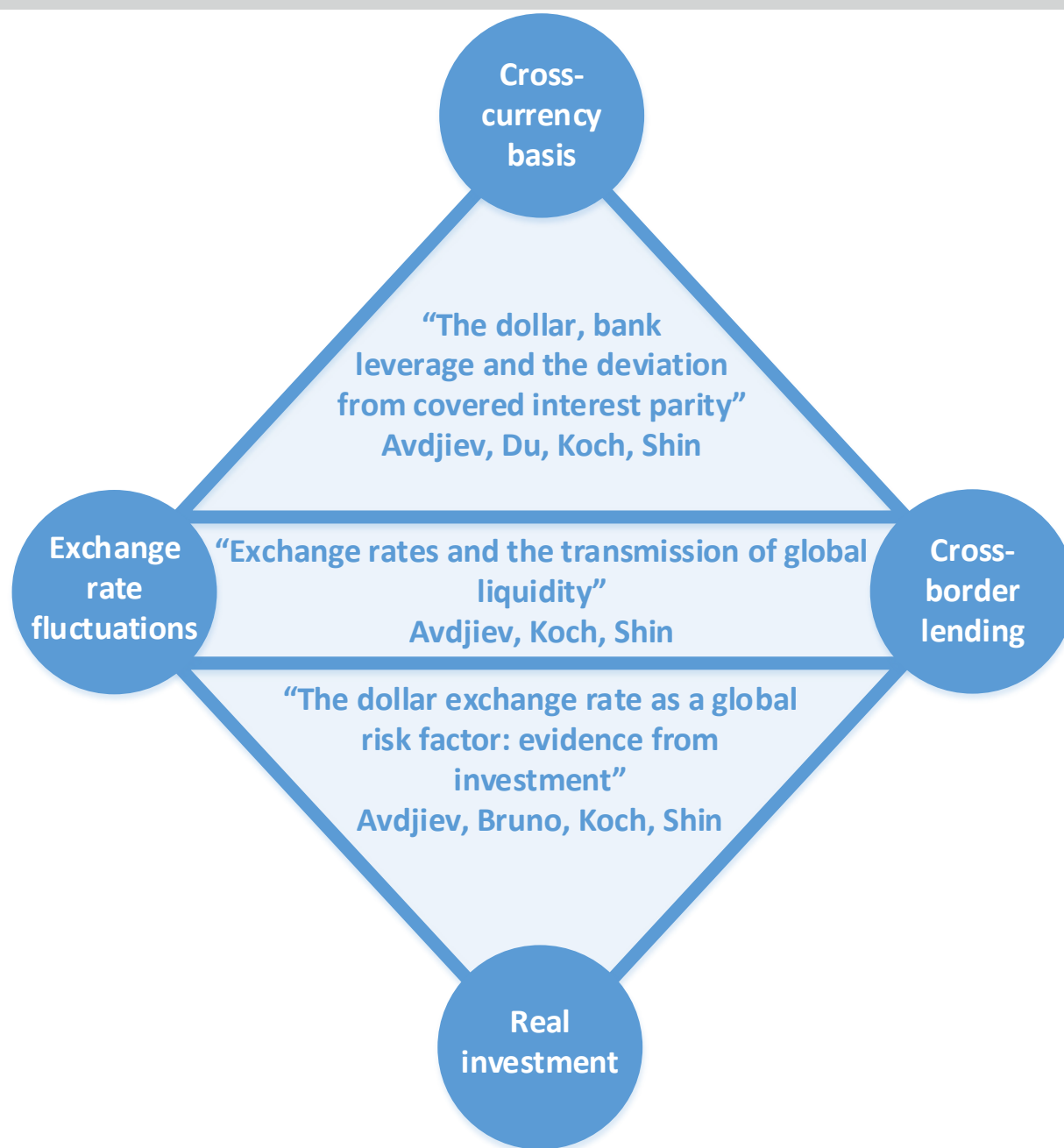
- The “risk-taking channel” of Bruno and Shin (*RES*, 2015).
- In the presence of **currency mismatches** on borrowers’ balance sheets
 - A weaker dollar flatters the balance sheet of dollar borrowers, whose liabilities fall relative to assets.
 - Improved creditworthiness of borrowers **reduces tail risk** in banks’ credit portfolio, creating **spare capacity** for additional credit extension by relaxing value-at-risk (VaR) constraint or economic capital (EC) constraint.
- Captured by the **nominal effective exchange rate (NEER) index**



Price and quantity dimensions of the financial channel

- The financial channel of currency appreciation has two dimensions:
 - **Price dimension**
 - Hofmann, Shim and Shin (2016)
 - Avdjiev, McCauley and Shin (2016)
 - **Quantity dimension**
 - Avdjiev, Du, Koch and Shin (2016)
 - Avdjiev, Bruno, Koch and Shin (2017)
 - The main focus of this paper: a targeted empirical investigation of the impact on cross-border bank lending of fluctuations in:
 - US dollar,
 - euro
 - Japanese yen.





Additional related literature

- **Financial channel of exchange rate fluctuations.**

- *Bebczuk et al. (2010), Kohn et al. (2015), Bruno and Shin (2015), Kim, Tesar and Zhang (2015), Eichengreen and Tong (2015), Claessens, Tong and Zuccardi (2015), Du and Schreger (2016), Niepmann and Schmidt-Eisenlohr (2017), Druck, Magud, and Mariscal (2017), Goldberg and Krogstrup (2017)*

- **Drivers of cross-border bank lending**

- Global studies: *De Haas and Van Lelyveld (2011), Rose and Wieladek (2011), Cetorelli and Goldberg (2012), Giannetti and Laeven (2012), De Haas and Van Horen (2012), Buch et al. (2014), Cerutti et al (2014), Cerutti et al (2015), McCauley et al (2016), Avdjiev et al (2017), Avdjiev and Hale (2017)*
- EMEs-specific studies: *McGuire and Tarashev (2008), Takáts (2010), Cetorelli and Goldberg (2011), Schnabl (2012), Avdjiev et al (2012), Beck (2014).*



Preview of main results

- Our empirical findings suggest that the **financial channel** of exchange rate fluctuations is key to understanding the ebb and flow of **global liquidity**.
 - The **US dollar** has been and remains the preeminent global funding currency.
 - The **Japanese yen** also exhibits key characteristics of an international funding currency, albeit not as much as the US dollar.
 - The **euro** has started to emerge as an international funding currency since the GFC
- The **supply** component of the financial channel tends to be more impactful than its **demand** component.



Empirical methodology and data

- **Econometric exercises:**

- Time-series regressions (global and country-specific)
- Panel regressions (with borrowing country FEs)
 - NEER
 - BER
 - NEER and orthogonalized BER
- Structural panel vector autoregressions (SPVARs).
 - Benchmark variable ordering
 1. Policy rate
 2. Cross-border (XB) bank lending
 3. VIX
 4. Exchange rate (BER or NEER)

- **Data**

- XB bank lending – from BIS Locational Banking Statistics (LBS)
- Policy rates – shadow rates from Krippner (2015).



The BIS International Banking Statistics (IBS)

- Locational Banking Statistics
 - Data on banks' non-consolidated international positions (assets and liabilities)
 - Banks classified according to their residence (as in the balance of payments statistics)
 - Bank offices located in 46 jurisdictions
- Consolidated Banking Statistics
 - Data on banks' consolidated foreign assets
 - Banks classified according to their nationality (i.e. according to the location of their headquarters)
 - Banks headquartered in 31 countries



Table A1

Simplified overview of the BIS international banking statistics

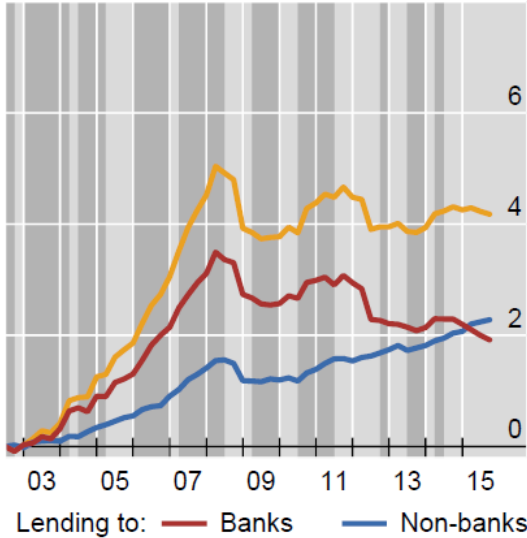
Data reported from Q2 2012 are shown in blue (Stage 1) and from Q4 2013 in red (Stage 2)

	Locational banking statistics		Consolidated banking statistics	
	By residence (LBS/R)	By nationality (LBS/N)	Immediate risk basis (CBS/IR)	Ultimate risk basis (CBS/UR)
Reporting countries	44	43	31	24
Business reported	Financial assets and liabilities (incl derivatives)		Financial assets (excl derivatives), total assets and liabilities (incl derivatives), capital, risk transfers	Financial assets (excl derivatives), other potential exposures (incl derivatives)
Breakdowns reported				
Bank type	All reporting banks, domestic banks, foreign subsidiaries, foreign branches, consortium banks	not available	All reporting banks, domestic banks, inside-area foreign banks ¹ , outside-area foreign banks ²	Domestic banks
Bank nationality	not available	≥43	≥31	≥24
Type of position	Cross-border, local		Total, international (cross-border plus local in FX), local in LC	Total, cross-border, local in all currencies
Currency	Local, USD, EUR, JPY, GBP, CHF, others (optional)		For local in LC positions: >160	not available
Maturity	For liabilities: debt securities (of which: ≤1 year)		For international claims: ≤1 year, 1–2 years, >2 years	not available
Instrument	Loans and deposits, debt securities, other instruments	For liabilities: debt securities	For assets: claims, total assets, risk-weighted assets For liabilities: deposits, debt securities (of which: ≤1 year), derivatives, other liabilities For capital: total equity, Tier 1 capital	For other potential exposures: derivatives, credit commitments, guarantees extended
Counterparty country	>200 (incl reporting country)	≥76 (incl reporting country)	>200 (incl reporting country)	
Counterparty sector	Banks ³ (of which: related offices, central banks), non-banks ⁴ , non-bank financial institutions, non-financial sector (general government, non-financial corporations, households)		Official sector (incl central banks), banks (excl central banks), non-bank private sector, non-bank financial institutions, non-financial private sector (non-financial corporations, households)	

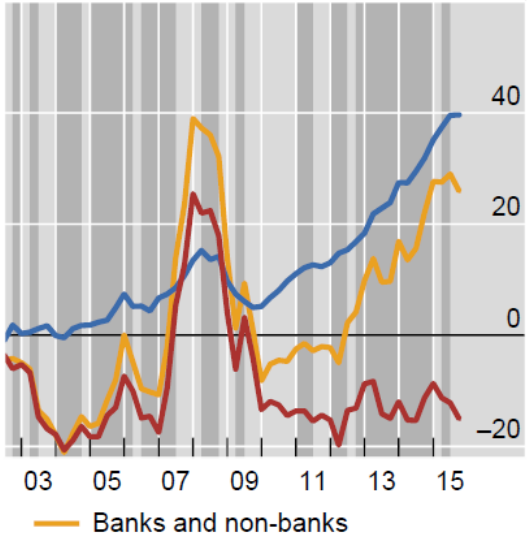
¹ Inside-area foreign banks not consolidated by their parent are encouraged to report the same breakdowns as domestic banks. ² Report international claims only. ³ Prior to Q4 2013, reported for LBS/N only. ⁴ Prior to Q4 2013, reported for LBS/R only.

Cumulative flows of cross-border bank lending to non-residents

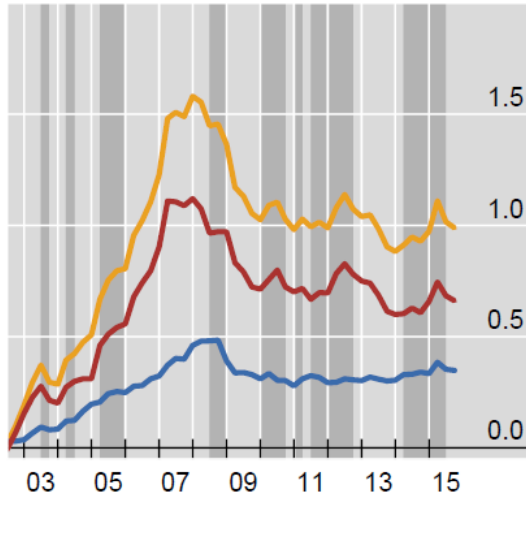
US dollar



Japanese yen

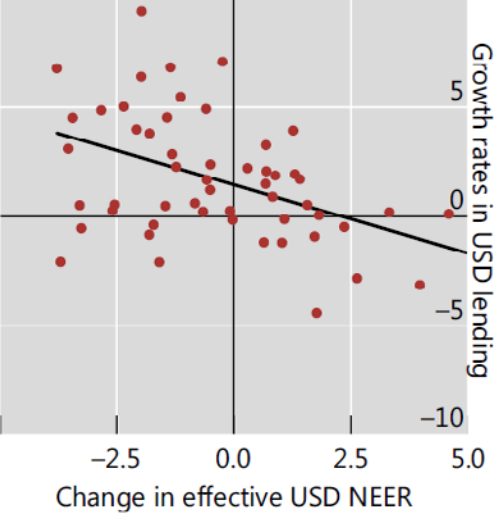


Euro

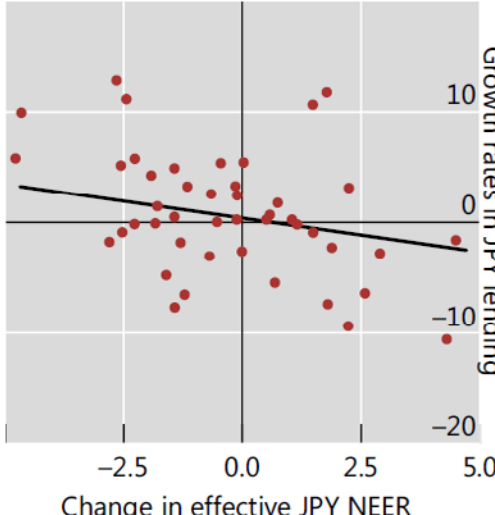


Cross-border bank lending to non-residents vs NEER

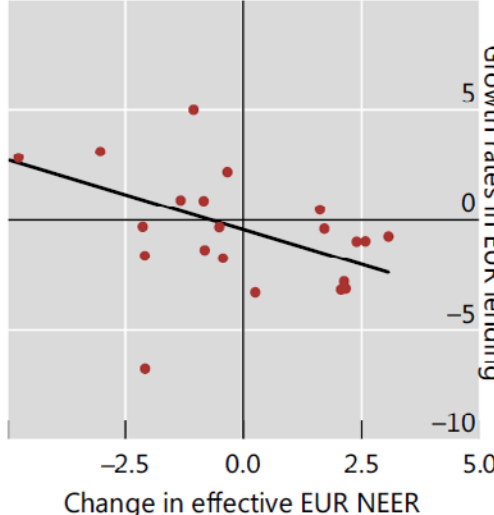
US dollar
(coef -0.63, p-value 0.000)



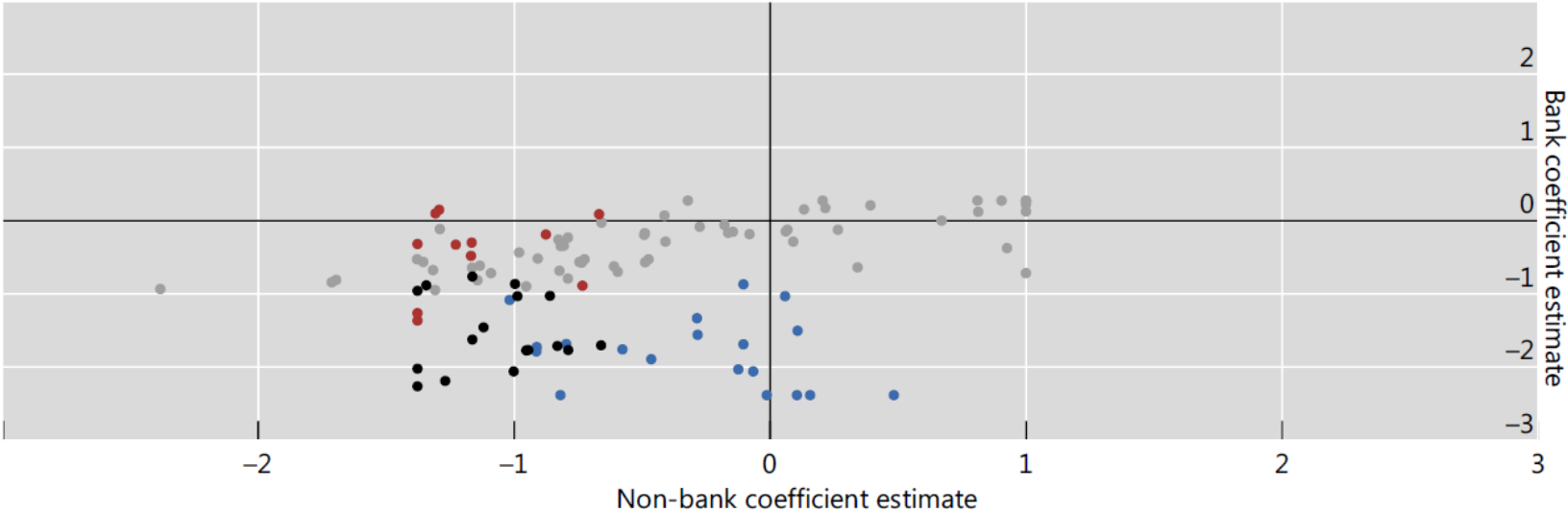
Japanese yen
(coef -0.61, p-value 0.000)



Euro
(coef -0.64, p-value 0.011)



Estimated coefficients from country-specific regressions, US dollar



US dollar panel regressions

Cross-border lending to selected borrowing country groups, by borrowing sector

	All sectors			Banks			Non-banks			
All countries	Δ BER	-0.224*** (0.067)			-0.280*** (0.092)			-0.148*** (0.053)		
	Δ NEER	-0.496*** (0.049)		-0.498*** (0.052)	-0.664*** (0.088)		-0.673*** (0.094)	-0.295*** (0.055)		-0.304*** (0.059)
	Δ BER ^{orth}	-0.148** (0.069)			-0.175* (0.091)			-0.106* (0.058)		
	Obs	5,775	5,775	5,260	5,771	5,771	5,256	5,775	5,775	5,260
	R-squared	0.042	0.045	0.049	0.028	0.031	0.034	0.031	0.032	0.033
	Δ BER	-0.341*** (0.041)			-0.410*** (0.071)			-0.186*** (0.058)		
	Δ NEER	-0.513*** (0.096)		-0.513*** (0.096)	-0.622*** (0.168)		-0.622*** (0.168)	-0.339*** (0.102)		-0.339*** (0.102)
Advanced economies	Δ BER ^{orth}	-0.248*** (0.071)			-0.289** (0.109)			-0.125 (0.082)		
	Obs	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650
	R-squared	0.032	0.028	0.033	0.032	0.030	0.033	0.012	0.013	0.014
	Δ BER	-0.169** (0.077)			-0.223** (0.109)			-0.117* (0.063)		
	Δ NEER	-0.435*** (0.062)		-0.430*** (0.067)	-0.703*** (0.120)		-0.693*** (0.128)	-0.196*** (0.070)		-0.211*** (0.075)
	Δ BER ^{orth}	-0.120 (0.075)			-0.138 (0.098)			-0.094 (0.066)		
	Obs	3,335	3,335	3,060	3,334	3,334	3,059	3,335	3,335	3,060
R-squared	0.038	0.042	0.046	0.020	0.025	0.028	0.036	0.034	0.037	
EMEs	Δ BER	-0.543*** (0.087)			-0.391*** (0.119)			-0.458** (0.172)		
	Δ NEER	-0.651*** (0.126)		-0.755*** (0.108)	-0.492** (0.225)		-0.605* (0.304)	-0.558*** (0.136)		-0.646*** (0.171)
	Δ BER ^{orth}	-0.458*** (0.128)			-0.438** (0.169)			-0.349* (0.155)		
	Obs	680	680	440	677	677	437	680	680	440
	R-squared	0.103	0.113	0.142	0.073	0.076	0.085	0.064	0.070	0.063
	Δ BER	-0.169** (0.077)			-0.223** (0.109)			-0.117* (0.063)		
	Δ NEER	-0.435*** (0.062)		-0.430*** (0.067)	-0.703*** (0.120)		-0.693*** (0.128)	-0.196*** (0.070)		-0.211*** (0.075)
Offshore centers	Δ BER ^{orth}	-0.120 (0.075)			-0.138 (0.098)			-0.094 (0.066)		
	Obs	3,335	3,335	3,060	3,334	3,334	3,059	3,335	3,335	3,060
	R-squared	0.038	0.042	0.046	0.020	0.025	0.028	0.036	0.034	0.037
	Δ BER	-0.543*** (0.087)			-0.391*** (0.119)			-0.458** (0.172)		
	Δ NEER	-0.651*** (0.126)		-0.755*** (0.108)	-0.492** (0.225)		-0.605* (0.304)	-0.558*** (0.136)		-0.646*** (0.171)
	Δ BER ^{orth}	-0.458*** (0.128)			-0.438** (0.169)			-0.349* (0.155)		
	Obs	680	680	440	677	677	437	680	680	440
R-squared	0.103	0.113	0.142	0.073	0.076	0.085	0.064	0.070	0.063	



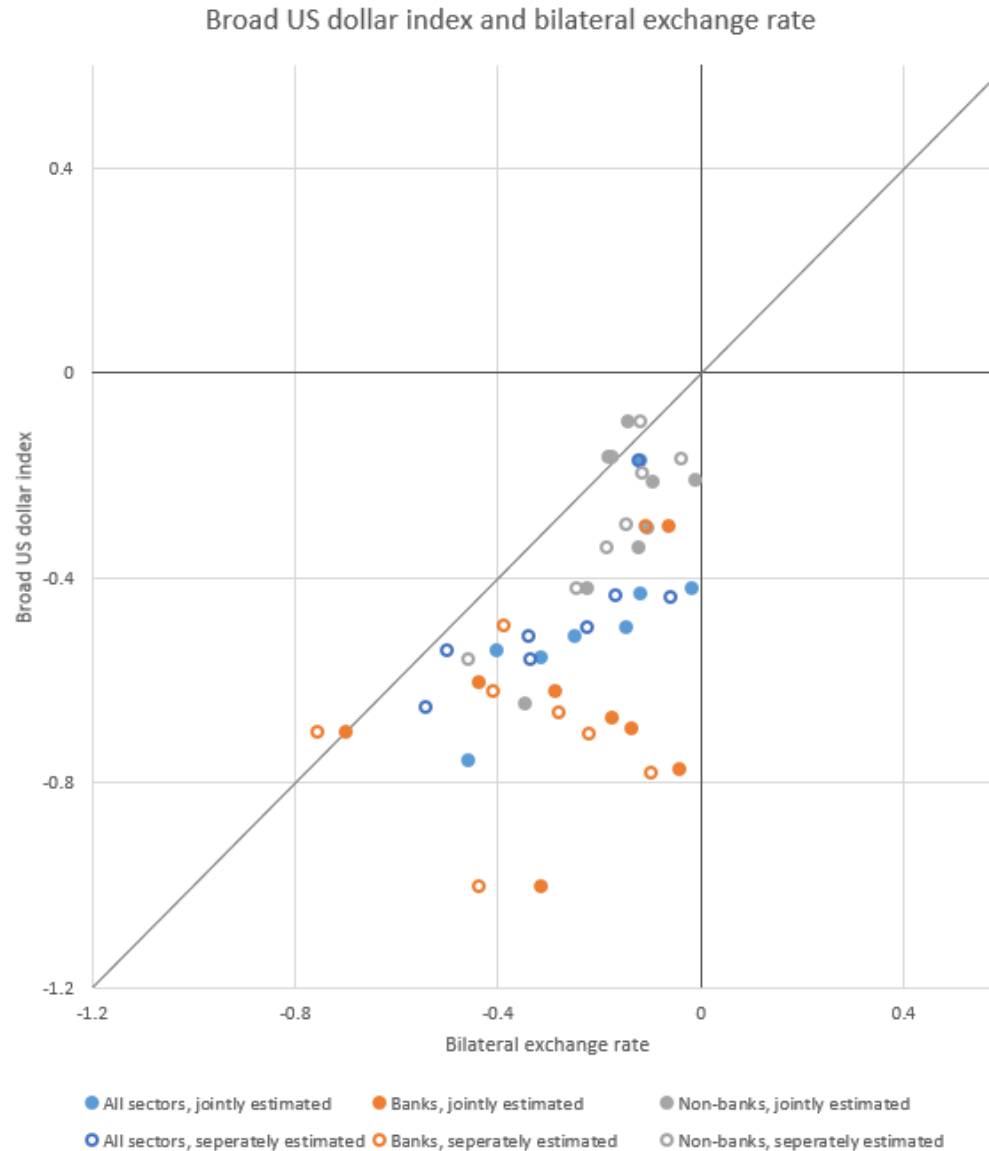
US dollar panel regressions

Cross-border lending to all sectors, by borrowing emerging market regions

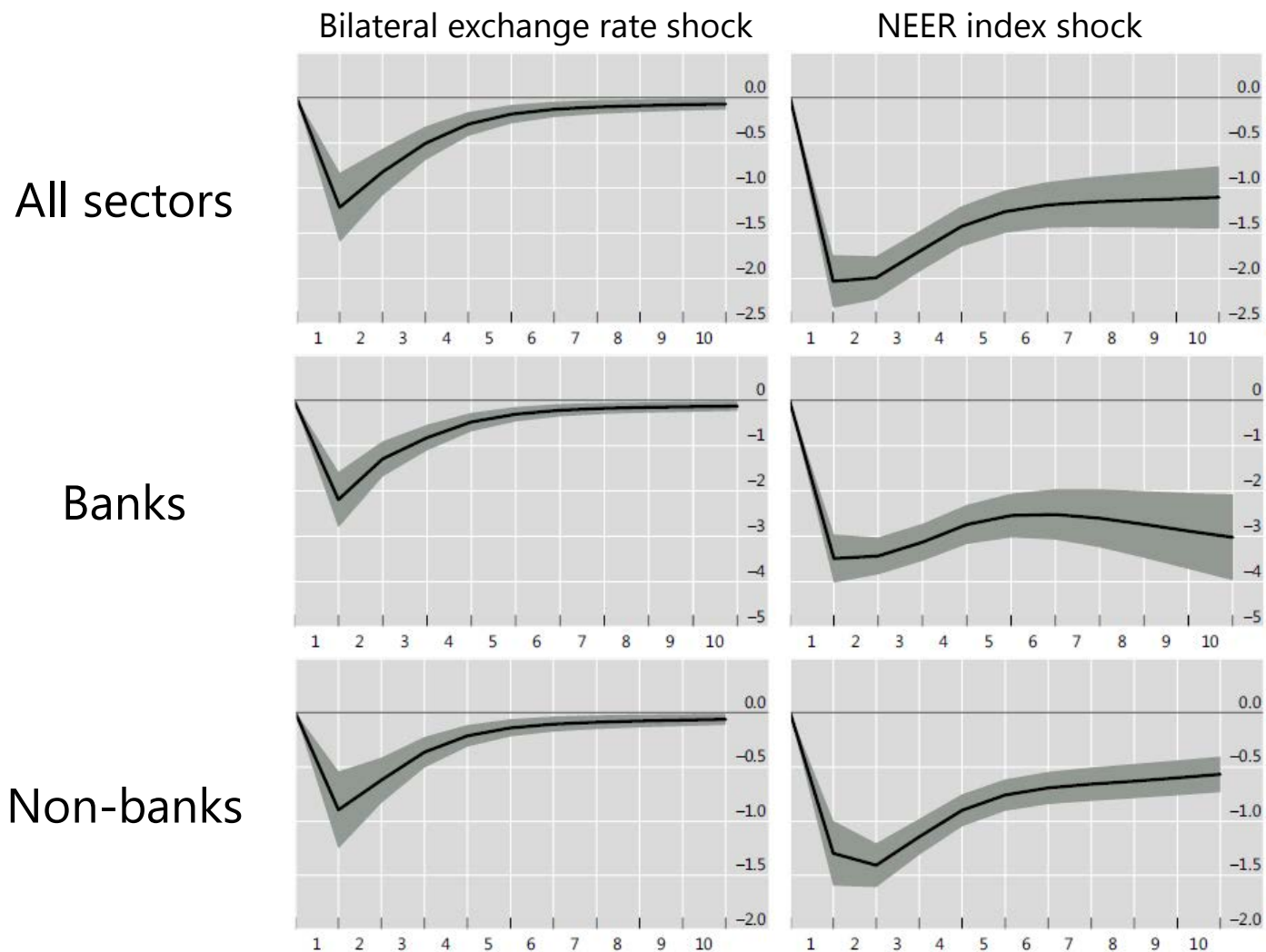
	Emerging Asia			Emerging Europe		
Δ BER	-0.501*** (0.129)			-0.338*** (0.070)		
Δ NEER		-0.542*** (0.108)	-0.542*** (0.108)		-0.558** (0.195)	-0.556** (0.195)
Δ BER ^{orth}			-0.402** (0.147)			-0.316*** (0.057)
Obs	935	935	935	585	585	585
R-squared	0.039	0.039	0.049	0.041	0.024	0.041
	Latin America			Africa and Middle East		
Δ BER	-0.123** (0.049)			-0.059 (0.097)		
Δ NEER		-0.171 (0.118)	-0.171 (0.118)		-0.437*** (0.096)	-0.419*** (0.122)
Δ BER ^{orth}			-0.120** (0.054)			-0.017 (0.081)
Obs	660	660	660	1,155	1,155	880
R-squared	0.038	0.031	0.040	0.038	0.049	0.050



Estimated coefficients from panel regressions, US dollar



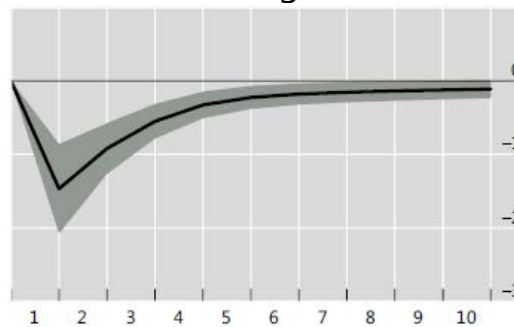
Structural panel VAR, US dollar



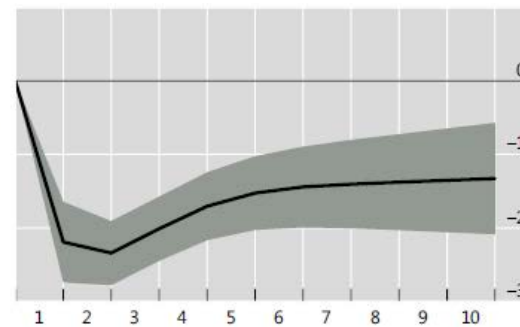
Structural panel VAR, US dollar

Advanced economies

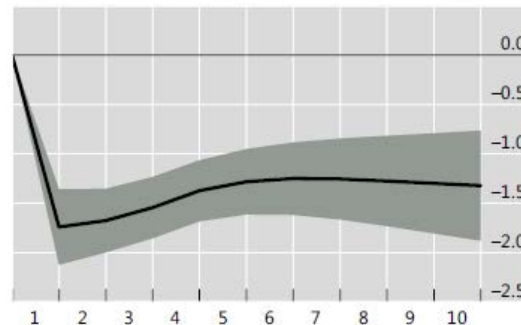
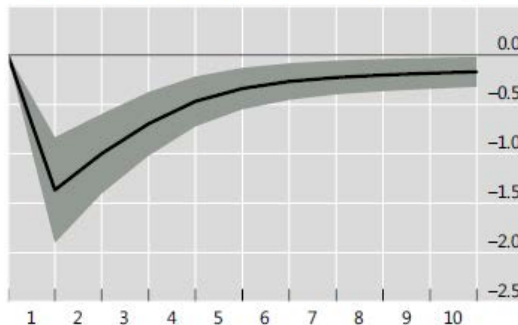
Bilateral exchange rate shock



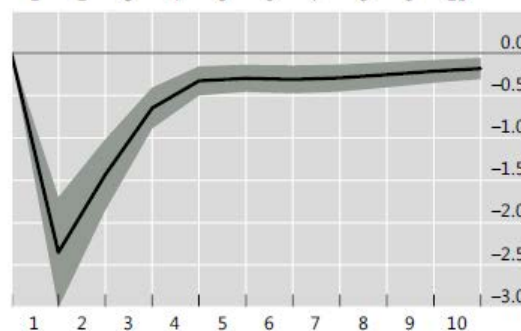
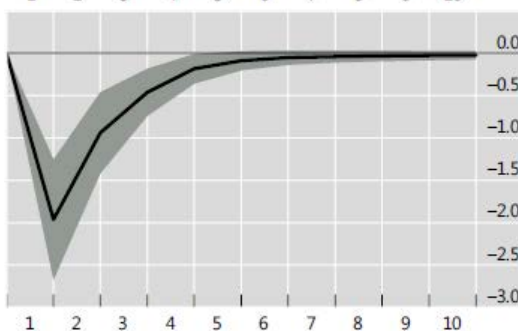
NEER index shock



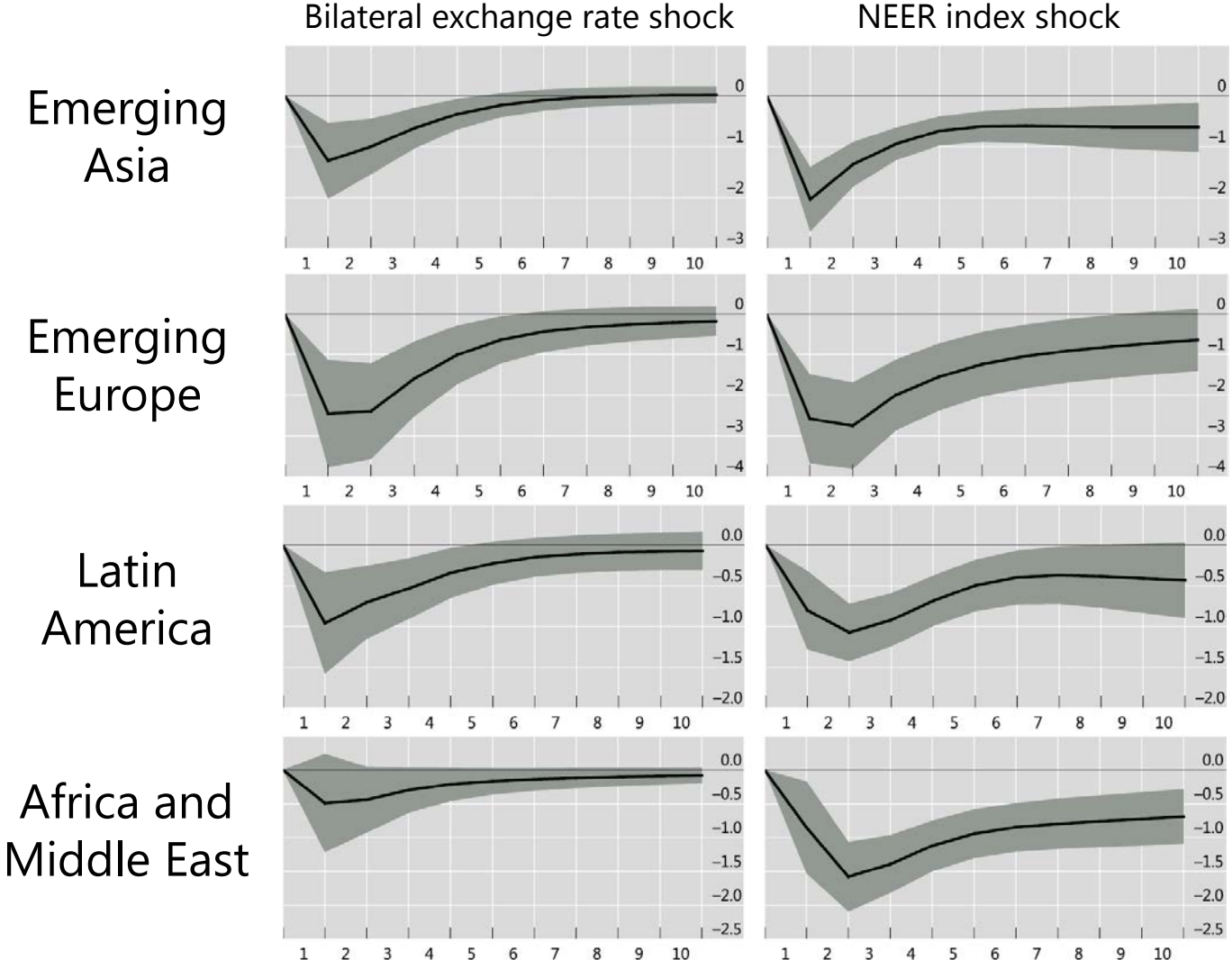
EMEs



Offshore centers



Structural panel VAR, US dollar



Japanese yen panel regressions

Cross-border lending to all sectors, by borrowing country group

	All countries			Advanced economies		
Δ BER	-0.222*** (0.062)			-0.405*** (0.071)		
Δ NEER		-0.411*** (0.062)	-0.411*** (0.062)		-0.578*** (0.091)	-0.577*** (0.091)
Δ BER ^{orth}			-0.066 (0.079)			-0.176 (0.150)
Obs	6,074	6,074	6,074	1,640	1,640	1,640
R-squared	0.023	0.026	0.026	0.025	0.027	0.028
	Emerging market economies			Offshore centres		
Δ BER	-0.148** (0.074)			-0.339** (0.118)		
Δ NEER		-0.307*** (0.091)	-0.307*** (0.091)		-0.431*** (0.140)	-0.431*** (0.140)
Δ BER ^{orth}			-0.049 (0.088)			-0.050 (0.273)
Obs	3,479	3,479	3,479	845	845	845
R-squared	0.018	0.020	0.020	0.057	0.061	0.061



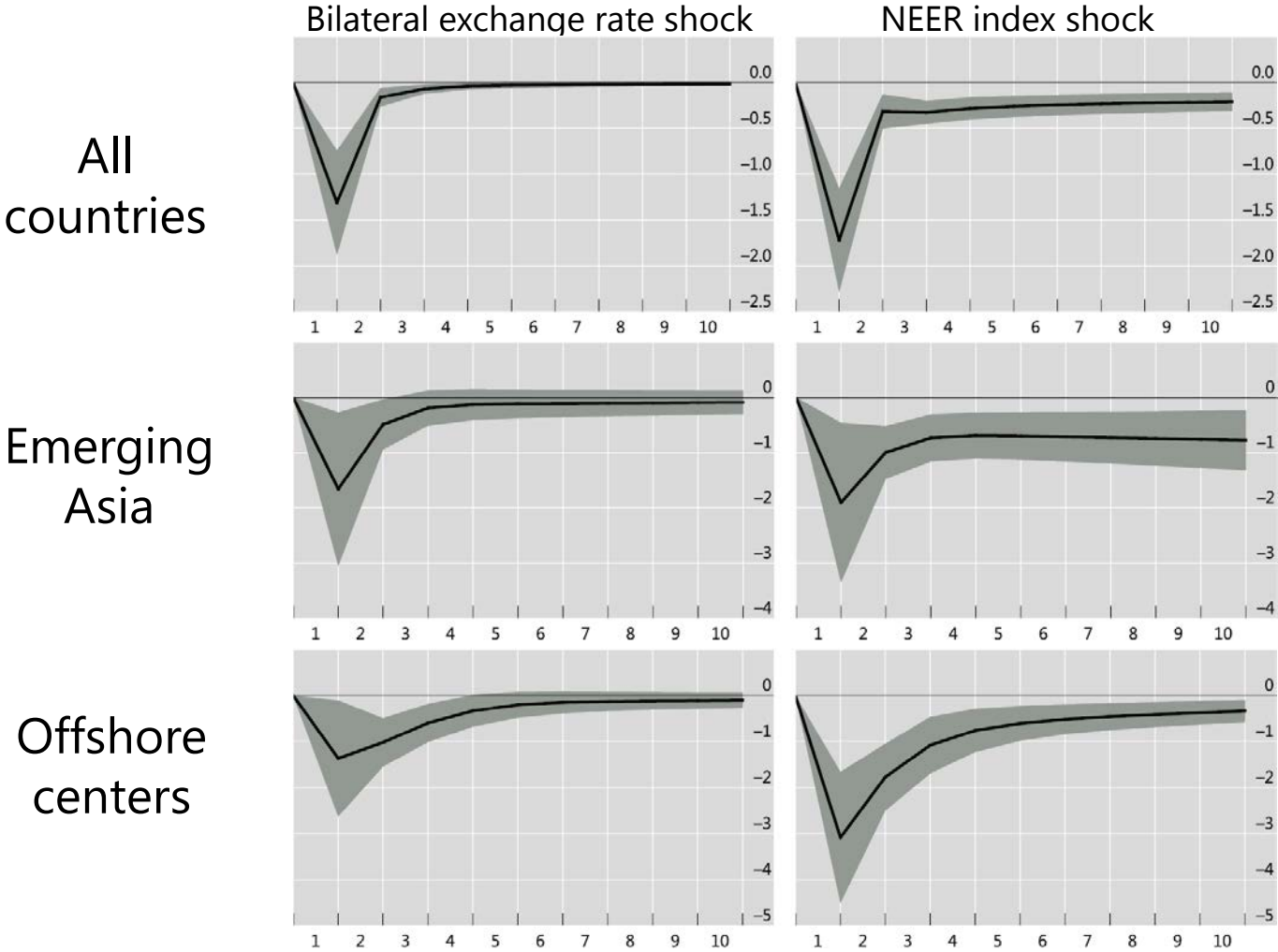
Japanese yen panel regressions

Cross-border lending to all sectors, by borrowing emerging market region

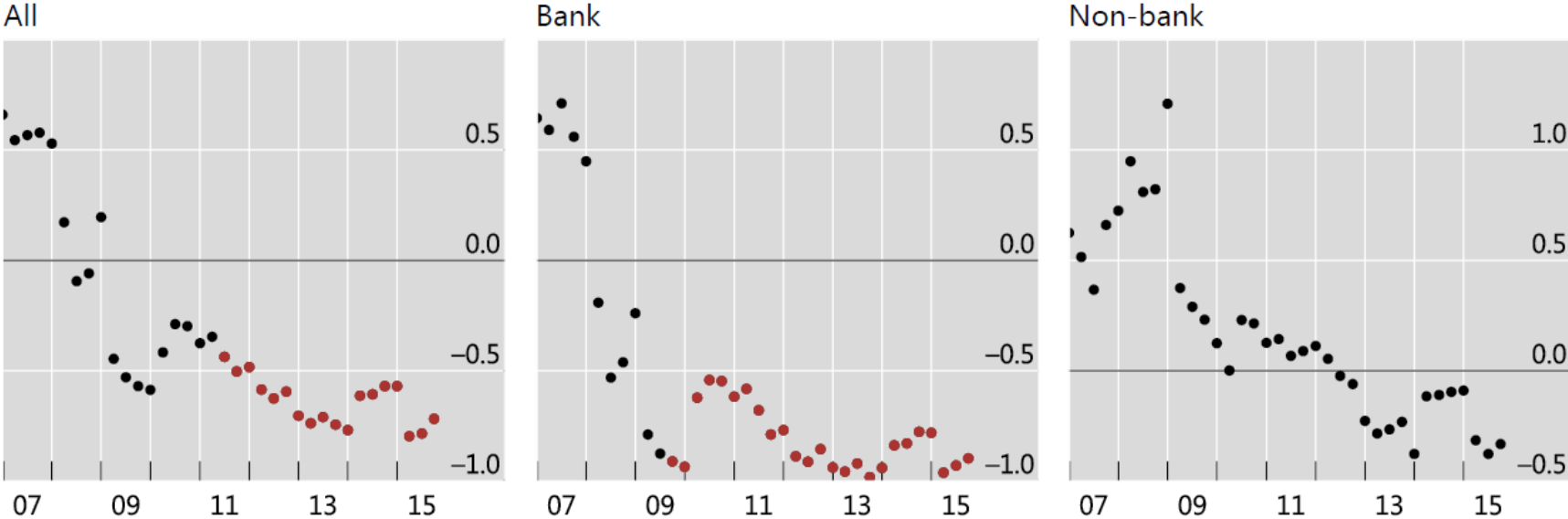
	Emerging Asia			Emerging Europe		
Δ BER	-0.530*** (0.119)			-0.066 (0.114)		
Δ NEER		-0.622*** (0.143)	-0.623*** (0.142)		0.090 (0.246)	0.093 (0.247)
Δ BER ^{orth}			-0.247 (0.281)			-0.146 (0.160)
Obs	961	961	961	547	547	547
R-squared	0.033	0.034	0.035	0.023	0.022	0.024
	Latin America			Africa and Middle East		
Δ BER	-0.222** (0.081)			-0.007 (0.123)		
Δ NEER		-0.425** (0.159)	-0.425** (0.159)		-0.150 (0.175)	-0.149 (0.176)
Δ BER ^{orth}			-0.155* (0.073)			0.089 (0.094)
Obs	849	849	849	1,122	1,122	1,122
R-squared	0.018	0.019	0.021	0.013	0.014	0.015



Structural panel VAR, Japanese yen



20 quarter rolling window regressions, euro



Euro panel regressions

Cross-border lending to all sectors, by borrowing country group

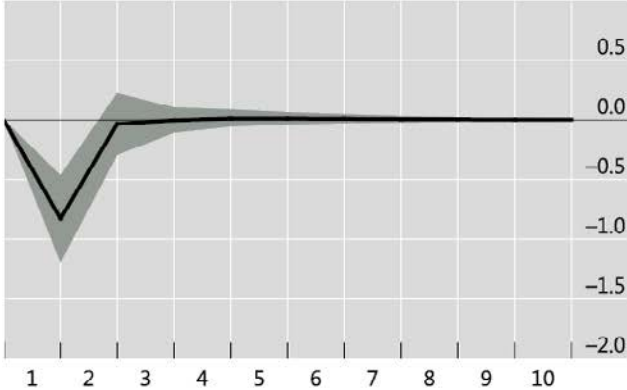
	All countries			Non-euro area Europe		
Δ BER	0.041 (0.042)			-0.669** (0.194)		
Δ NEER		0.116 (0.091)	0.120 (0.092)		-1.014** (0.273)	-1.014** (0.274)
Δ BER ^{orth}			0.002 (0.060)			0.006 (0.129)
Obs	2,106	2,106	2,083	85	85	85
R-squared	0.068	0.069	0.067	0.134	0.234	0.234
	Non-Europe advanced			Emerging Europe		
Δ BER	0.041 (0.196)			-0.092 (0.052)		
Δ NEER		-0.060 (0.286)	-0.060 (0.287)		0.317 (0.184)	0.317 (0.185)
Δ BER ^{orth}			0.186 (0.282)			-0.116** (0.050)
Obs	115	115	115	230	230	230
R-squared	0.016	0.016	0.019	0.129	0.139	0.155



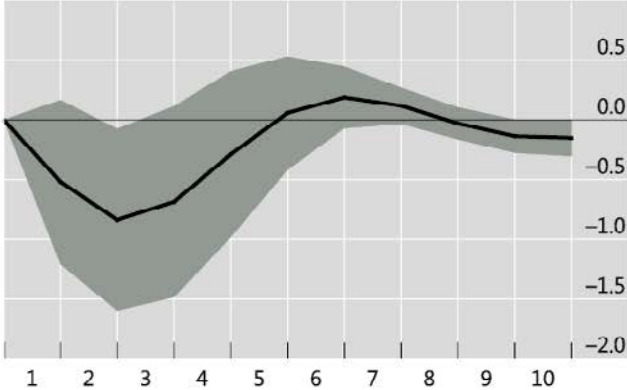
Structural panel VAR, euro

Emerging Europe

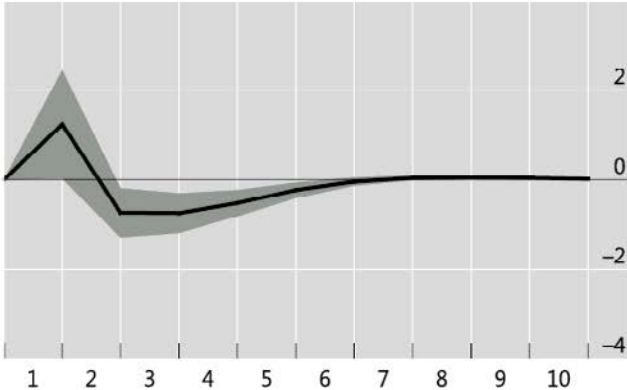
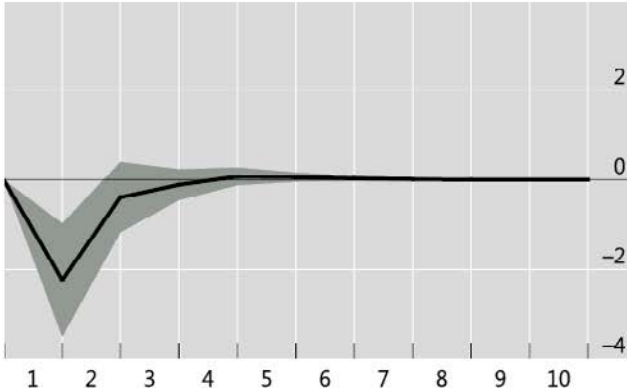
Bilateral exchange rate shock



NEER index shock



Africa and Middle East



Summary

- Examined the financial channel of the exchange rate fluctuations.
- Main focus - quantity dimension, as manifested in cross-border bank lending flows.
- Our main findings corroborate the existence of the risk-taking channel of currency appreciation.
 - An appreciation of an international funding currency is associated with a decline in cross-border bank lending denominated in that currency.
 - The US dollar - the preeminent global funding currency.
 - The Japanese yen also exhibits some key characteristics of an international funding currency, but not as strongly as the US dollar.
 - The euro has started to emerge as an international funding currency since the GFC.
 - While the dollar is a truly global funding currency, the yen and the euro have more of a regional flavor.
- The supply component of the financial channel tends to be more impactful than its demand component.



Supplementary Slides



Definition of variables

Variable Name	Description	Data Source
$\Delta xbl_{i,s,t}^c$	Cross-border lending (loans and debt securities) denominated in currency c (USD, JPY, EUR), to sector s (all sectors, banks, non-banks) resident in country i ; quarterly percentage changes	BIS Locational Banking Statistics
$\Delta NEER_t^c$	Broad nominal effective exchange rate (EER) index for currency c , quarterly changes	BIS effective exchange rate (EER) indices
$\Delta BER_{i,t}^c$	Bilateral exchange rate of country i against currency c (USD, JPY, EUR), average quarterly percent changes	National Sources
$\Delta ir(SSR)_t^c$	Policy rate, quarterly changes USD: Federal Funds Rate, Shadow Short Rates (L. Krippner), JPY and EUR: Shadow Short Rates (L. Krippner)	Reserve Bank of New Zealand
$\ln VIX_{i,t}$	natural log of CBOE volatility index, VIX	Federal Reserve Bank of St. Louis



Descriptive statistics

	mean	median	sd	min	max	N
Panel A: USD (Q1 2002–Q3 2015, 106 borrower countries)						
Δx_{bl} (all)	2.22	1.38	10.99	-17.70	26.98	5,775
Δx_{bl} (banks)	3.38	1.36	19.80	-32.35	53.57	5,771
Δx_{bl} (non-banks)	2.38	1.25	11.95	-19.53	31.06	5,775
ΔBER	0.39	0.00	5.54	-26.46	117.08	5,830
$\Delta NEER$	-0.09	-0.50	2.60	-3.77	10.80	5,830
$\ln Vix$	2.94	2.86	0.35	2.40	4.07	5,830
$\Delta ir(SSR)$	-0.03	0.00	0.60	-2.17	1.13	5,830
Panel B: JPY (Q1 2002–Q3 2015, 114 borrower countries)						
Δx_{bl} (all)	1.06	-0.67	21.32	-38.58	56.05	6,074
Δx_{bl} (banks)	1.40	-1.87	38.12	-69.35	97.87	5,762
Δx_{bl} (non-banks)	1.25	-0.44	23.15	-42.99	62.77	5,921
ΔBER	0.51	0.00	6.89	-22.42	116.66	6,270
$\Delta NEER$	-0.11	-0.46	4.47	-12.40	21.15	6,270
$\ln Vix$	2.94	2.86	0.35	2.40	4.07	6,270
$\Delta ir(SSR)$	-0.03	-0.14	0.53	-0.84	1.90	6,270
Panel C: EUR (Q1 2010–Q3 2015, 93 borrower countries)						
Δx_{bl} (all)	1.54	0.17	11.52	-18.40	31.99	2,106
Δx_{bl} (banks)	3.17	-0.32	25.16	-41.09	71.53	2,096
Δx_{bl} (non-banks)	1.81	0.39	12.75	-21.53	36.46	2,105
ΔBER	-0.18	0.00	4.92	-16.96	78.23	2,109
$\Delta NEER$	-0.53	-0.51	2.49	-5.65	3.07	2,109
$\ln Vix$	2.88	2.82	0.25	2.54	3.42	2,109
$\Delta ir(SSR)$	-0.18	-0.17	0.44	-0.91	0.67	2,109



US dollar panel regressions

Cross-border lending to selected borrowing emerging market regions, by borrowing sector

	All sectors			Banks			Non-banks			
Emerging Asia	ΔBER	-0.501*** (0.129)			-0.756*** (0.169)			-0.177 (0.127)		
	ΔNEER	-0.542*** (0.108)		-0.542*** (0.108)	-0.702*** (0.168)		-0.702*** (0.168)	-0.162 (0.157)		-0.162 (0.157)
	ΔBER ^{orth}	-0.402** (0.147)			-0.702*** (0.192)			-0.183 (0.137)		
	Obs	935	935	935	935	935	935	935	935	935
	R-squared	0.039	0.039	0.049	0.028	0.024	0.035	0.024	0.024	0.025
	Emerging Europe	ΔBER	-0.338*** (0.070)			0.437*** (0.137)			-0.247*** (0.077)	
ΔNEER		-0.558** (0.195)		-0.556** (0.195)	-1.004** (0.344)		-1.003** (0.343)	-0.420** (0.167)		-0.419** (0.167)
ΔBER ^{orth}		-0.316*** (0.057)			-0.315** (0.120)			-0.225** (0.085)		
Obs		585	585	585	585	585	585	585	585	585
R-squared		0.041	0.024	0.041	0.023	0.021	0.026	0.036	0.026	0.036
Latin America		ΔBER	-0.123** (0.049)			-0.110 (0.122)			-0.121** (0.040)	
	ΔNEER	-0.171 (0.118)		-0.171 (0.118)	-0.298 (0.269)		-0.298 (0.269)	-0.094 (0.094)		-0.094 (0.094)
	ΔBER ^{orth}	-0.120** (0.054)			-0.064 (0.116)			-0.143** (0.046)		
	Obs	660	660	660	660	660	660	660	660	660
	R-squared	0.038	0.031	0.040	0.011	0.012	0.012	0.036	0.027	0.039
	Africa and Middle East	ΔBFR	-0.059 (0.097)			-0.098 (0.140)			-0.040 (0.088)	
ΔNEER		-0.437*** (0.096)		-0.419*** (0.122)	-0.782*** (0.216)		-0.772** (0.268)	-0.167 (0.124)		-0.209 (0.153)
ΔBER ^{orth}		-0.017 (0.081)			-0.043 (0.118)			-0.011 (0.078)		
Obs		1,155	1,155	880	1,154	1,154	879	1,155	1,155	880
R-squared		0.038	0.049	0.050	0.024	0.033	0.039	0.031	0.032	0.033



Japanese yen panel regressions

Cross-border lending to selected borrowing country groups, by borrowing sector

	All sectors			Banks			Non-banks						
All countries	ΔBER	-0.222 ^{***} (0.062)			-0.216 ^{**} (0.099)			-0.156 ^{***} (0.039)					
	ΔNEER	-0.411 ^{***} (0.062)		-0.411 ^{***} (0.062)		-0.601 ^{***} (0.108)		-0.602 ^{***} (0.108)		-0.280 ^{***} (0.065)		-0.280 ^{***} (0.065)	
	ΔBER ^{orth}	-0.066 (0.079)			0.091 (0.113)			-0.062 (0.049)					
	Obs	6,074	6,074	6,074	5,762	5,762	5,762	5,921	5,921	5,921			
	R-squared	0.023	0.026	0.026	0.025	0.028	0.028	0.028	0.028	0.029			
	Advanced economies	ΔBER	-0.105 ^{***} (0.071)			-0.179 ^{***} (0.111)			-0.157 [*] (0.082)				
ΔNEER		0.578 ^{***} (0.091)		0.577 ^{***} (0.091)		0.678 ^{***} (0.127)		0.677 ^{***} (0.127)		0.349 ^{***} (0.097)		-0.350 ^{***} (0.097)	
ΔBER ^{orth}		-0.176 (0.150)			-0.223 (0.264)			0.177 (0.159)					
Obs		1,640	1,640	1,640	1,607	1,607	1,607	1,609	1,609	1,609			
R-squared		0.025	0.027	0.028	0.023	0.024	0.025	0.021	0.025	0.026			
EMEs		ΔBER	-0.148 ^{**} (0.074)			-0.075 (0.116)			-0.151 ^{***} (0.044)				
	ΔNEER	-0.307 ^{***} (0.091)		-0.307 ^{***} (0.091)		-0.445 ^{**} (0.172)		-0.446 ^{**} (0.172)		-0.248 ^{***} (0.093)		-0.248 ^{***} (0.093)	
	ΔBER ^{orth}	-0.049 (0.088)			0.123 (0.121)			-0.107 ^{**} (0.046)					
	Obs	3,479	3,479	3,479	3,215	3,215	3,215	3,361	3,361	3,361			
	R-squared	0.018	0.020	0.020	0.026	0.027	0.028	0.027	0.027	0.027			
	Offshore centers	ΔBER	-0.339 ^{**} (0.118)			-0.756 ^{***} (0.134)			-0.089 (0.164)				
ΔNEER		-0.431 ^{***} (0.140)		-0.431 ^{***} (0.140)		-0.953 ^{***} (0.178)		-0.954 ^{***} (0.179)		-0.202 (0.176)		-0.202 (0.176)	
ΔBER ^{orth}		-0.050 (0.273)			0.229 (0.470)			0.167 (0.366)					
Obs		845	845	845	830	830	830	841	841	841			
R-squared		0.057	0.061	0.061	0.036	0.041	0.041	0.021	0.022	0.022			



Japanese yen panel regressions

Cross-border lending to selected borrowing emerging market regions, by borrowing sector

	All sectors			Banks			Non-banks			
Emerging Asia	ΔBFR	-0.530*** (0.119)			-0.852*** (0.175)			-0.139 (0.126)		
	ΔNEER	-0.622*** (0.143)		-0.623*** (0.142)	-1.049*** (0.218)		-1.052*** (0.218)	-0.127 (0.118)		-0.127 (0.119)
	ΔBER ^{orth}	-0.247 (0.281)			-0.248 (0.378)			-0.238 (0.249)		
	Obs	961	961	961	918	918	918	905	905	905
	R-squared	0.033	0.034	0.035	0.039	0.042	0.043	0.050	0.050	0.051
Emerging Europe	ΔBER	-0.066 (0.114)			-0.095 (0.200)			0.032 (0.130)		
	ΔNEER	0.090 (0.246)		0.093 (0.247)	-0.074 (0.323)		-0.062 (0.313)	-0.069 (0.257)		-0.065 (0.256)
	ΔBER ^{orth}	-0.146 (0.160)			-0.181 (0.269)			0.248 (0.207)		
	Obs	547	547	547	485	485	485	525	525	525
	R-squared	0.023	0.022	0.024	0.030	0.030	0.031	0.030	0.030	0.033
Latin America	ΔBER	-0.222** (0.081)			0.095 (0.163)			-0.317*** (0.060)		
	ΔNEER	-0.425** (0.159)		-0.425** (0.159)	-0.319 (0.369)		-0.322 (0.370)	-0.625*** (0.158)		-0.627*** (0.158)
	ΔBER ^{orth}	-0.155* (0.073)			0.228 (0.184)			-0.247*** (0.049)		
	Obs	849	849	849	770	770	770	830	830	830
	R-squared	0.018	0.019	0.021	0.023	0.023	0.024	0.025	0.026	0.031
Africa and Middle East	ΔBER	-0.007 (0.123)			0.053 (0.204)			-0.110 (0.068)		
	ΔNEER	-0.150 (0.175)		-0.149 (0.176)	-0.184 (0.366)		-0.184 (0.367)	-0.154 (0.196)		-0.154 (0.197)
	ΔBER ^{orth}	0.089 (0.094)			0.185 (0.178)			-0.086* (0.041)		
	Obs	1,122	1,122	1,122	1,042	1,042	1,042	1,101	1,101	1,101
	R-squared	0.013	0.014	0.015	0.028	0.028	0.029	0.014	0.013	0.014



Euro panel regressions

Cross-border lending to selected borrowing country groups, by borrowing sector

	All sectors			Banks			Non-banks			
All countries	Δ BER	0.041 (0.042)		-0.012 (0.094)			0.061 (0.049)			
	Δ NEER	0.116 (0.091)	0.120 (0.092)	0.154 (0.189)	0.155 (0.191)	0.264** (0.115)	0.270** (0.116)			
	Δ BER ^{orth}	0.002 (0.060)		0.129 (0.119)			-0.078 (0.064)			
	Obs	2,106	2,106	2,083	2,096	2,096	2,073	2,105	2,105	2,082
	R-squared	0.068	0.069	0.067	0.041	0.041	0.041	0.061	0.063	0.062
	Advanced economies	Δ BER	-0.035 (0.162)		0.070 (0.191)			-0.348* (0.167)		
Δ NEER		-0.412* (0.213)	-0.427* (0.235)	0.267 (0.288)	0.282 (0.318)	0.401** (0.166)	0.418** (0.184)			
Δ BER ^{orth}		0.204 (0.179)		0.368* (0.170)			-0.446 (0.309)			
Obs		246	246	223	246	246	223	246	246	223
R-squared		0.072	0.091	0.078	0.110	0.115	0.114	0.074	0.070	0.072
EMEs		Δ BER	0.046 (0.046)		0.004 (0.107)			0.093* (0.051)		
	Δ NEER	0.176 (0.116)	0.176 (0.116)	0.118 (0.261)	0.118 (0.261)	0.329** (0.137)	0.329** (0.137)			
	Δ BER ^{orth}	0.008 (0.062)		0.123 (0.126)			-0.011 (0.062)			
	Obs	1,449	1,449	1,449	1,440	1,440	1,440	1,449	1,449	1,449
	R-squared	0.055	0.056	0.056	0.037	0.037	0.037	0.057	0.060	0.060
	Offshore centers	Δ BER	0.038 (0.152)		-0.220 (0.200)			0.053 (0.271)		
Δ NEER		0.249 (0.153)	0.249 (0.153)	0.202 (0.260)	0.202 (0.260)	0.469 (0.349)	0.467 (0.350)			
Δ BER ^{orth}		-0.469 (0.522)		-0.176 (0.784)			-1.083** (0.459)			
Obs		365	365	365	364	364	364	364	364	364
R-squared		0.101	0.103	0.108	0.035	0.034	0.035	0.062	0.068	0.083



Euro panel regressions

Cross-border lending to selected borrowing emerging market regions, by borrowing sector

	All sectors			Banks			Non-banks			
Emerging Asia	Δ BER	0.155 (0.100)		0.279 (0.226)		0.208** (0.094)				
	Δ NEER	0.213 (0.204)	0.213 (0.204)	-0.017 (0.408)	-0.017 (0.409)	0.458* (0.248)	0.458* (0.248)			
	Δ BER ^{orth}	0.048 (0.151)				0.818* (0.414)			-0.161 (0.198)	
	Obs	414	414	414	407	407	407	414	414	414
	R-squared	0.062	0.061	0.061	0.038	0.036	0.042	0.070	0.073	0.074
	Δ BER	-0.092 (0.052)		-0.165 (0.097)		-0.092** (0.032)				
Emerging Europe	Δ NEER	0.317 (0.184)	0.317 (0.185)	0.323 (0.361)	0.323 (0.362)	0.451 (0.342)	0.451 (0.343)			
	Δ BER ^{orth}	-0.116** (0.050)				-0.163 (0.094)			-0.153** (0.055)	
	Obs	230	230	230	230	230	230	230	230	
	R-squared	0.129	0.139	0.155	0.099	0.096	0.102	0.041	0.061	0.081
	Δ BER	0.176** (0.076)		0.227 (0.171)		0.117 (0.075)				
	Δ NEER	0.387 (0.290)	0.387 (0.290)	0.041 (0.748)	0.041 (0.749)	0.139 (0.281)	0.139 (0.281)			
Latin America	Δ BER ^{orth}	0.171* (0.083)				0.358* (0.189)			0.151 (0.116)	
	Obs	368	368	368	367	367	367	368	368	
	R-squared	0.035	0.033	0.037	0.035	0.033	0.036	0.035	0.033	0.036
	Δ BFR	-0.141 (0.110)		-0.478 (0.282)		0.152 (0.150)				
	Δ NFER	-0.112 (0.204)	-0.112 (0.204)	-0.578 (0.424)	-0.578 (0.424)	0.302 (0.263)	0.302 (0.263)			
	Δ BER ^{orth}	-0.170 (0.166)				-0.362 (0.449)			0.011 (0.174)	
Africa and Middle East	Obs	437	437	437	436	436	436	437	437	
	R-squared	0.042	0.040	0.041	0.028	0.026	0.027	0.043	0.044	0.044

