



BANK FOR INTERNATIONAL SETTLEMENTS

Global Liquidity: BIS Data and Analysis*

Presentation at the RTI Working Party on « Managing Global Liquidity as a Global Public Good ».

Paris, 20 March 2019

Luiz A Pereira da Silva**

* The remarks express my own opinion and do not necessarily represent those of the Bank for International Settlements (BIS). I thank Stefan Avdjiev and Bryan Hardy for their help.



Outline

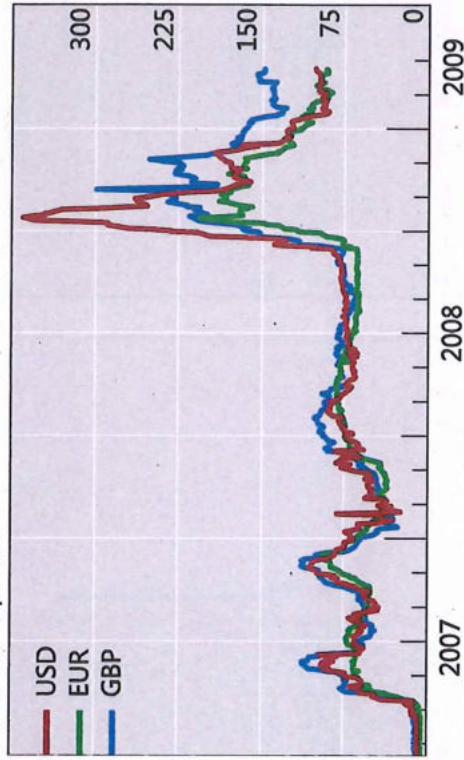
- I. Global Liquidity – definition and measurements**
- II. The BIS Global Liquidity Indicators (GLIs)**
- III. Drivers of Global Liquidity**
- IV. Policy responses to global liquidity**
- V. Available BIS data on global liquidity**



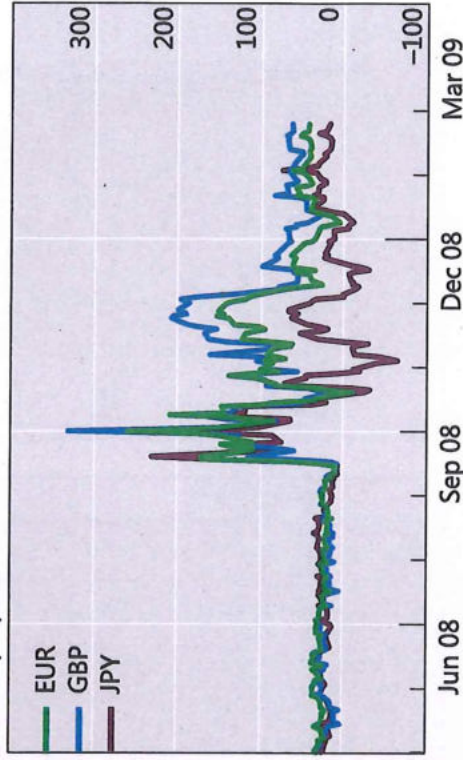
During the GFC, US dollar shortages led to sharp spikes in funding markets

Selected spreads

Libor-OIS spread¹



FX swap spreads²



¹ Libor panel, three-month rates, in basis points. ² In basis points. Spread between three-month FX swap-implied dollar rate and three-month Libor; the FX swap-implied dollar rate is the implied cost of raising US dollars via FX swaps using the funding currency. For details on calculation, see N Baba, F Packer and T Nagano, "The spillover of money market turbulence to FX swap and crosscurrency swap markets", BIS Quarterly Review, March 2008, pp 73-86.

Source: Federal Reserve; Bloomberg; BIS calculations.

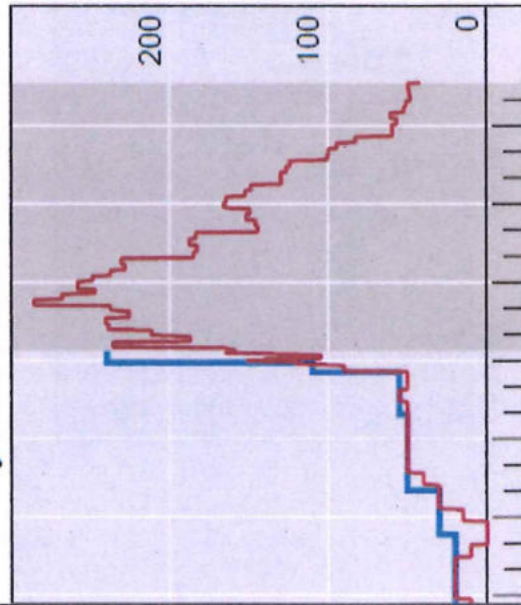


Central banks' swap lines provided USD liquidity

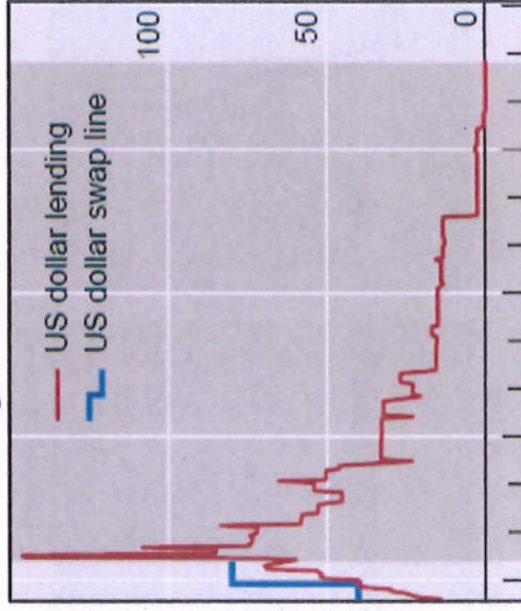
Central banks' US dollar swap lines¹

In billions

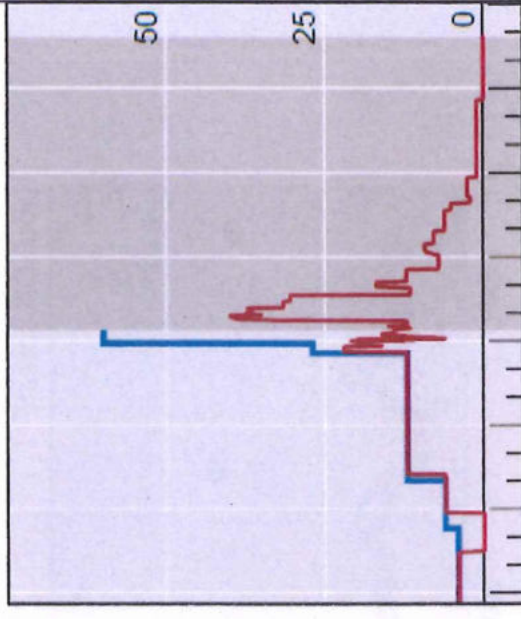
Eurosystem



Bank of England



Swiss National Bank



¹ Amounts outstanding are constructed by cumulating US dollar auction allotments, taking into account the term to maturity. The shaded area indicates the period of unlimited swap lines (as of 13 October 2008).

Source: Central banks.

Figure 8

Source: McGuire and von Peter (2009).



BANK FOR
INTERNATIONAL
SETTLEMENTS

Restricted

CGFS (2011): What is global liquidity?

- Global liquidity is **ease of financing** in global financial markets
 - Can only really examine the “footprints,” Global Liquidity (GL) not directly observed (Borio 2013).
- Global liquidity composed of
 - **Private liquidity** → **majority of global liquidity**
 - Determined in equilibrium by market participants
 - Market liquidity → how easy to sell assets for cash?
 - Funding liquidity → how easy to obtain more financing?
 - Leverage of financial institutions linked to creation of private liquidity
 - Linked to dynamics of international capital flows
 - Produce instability on its own or by amplifying domestic cycles
 - **Official liquidity**
 - Regular monetary operations
 - Emergency facilities (eg CB swap lines) → **relied upon in times of stress**



CGFS (2011): How to measure global liquidity?

- Assess global liquidity along different dimensions and measures
 - **Quantities**
 - Credit (flows and stocks), leverage, mismatch, reserves, monetary aggregates
 - **Prices**
 - Policy rates, spreads, FX swap basis, property prices, VIX
- Changes in these GL measures can reflect **funding conditions, volatility, risk appetite**, and the build up of **vulnerabilities**



The BIS Global Liquidity Indicators (GLIs)

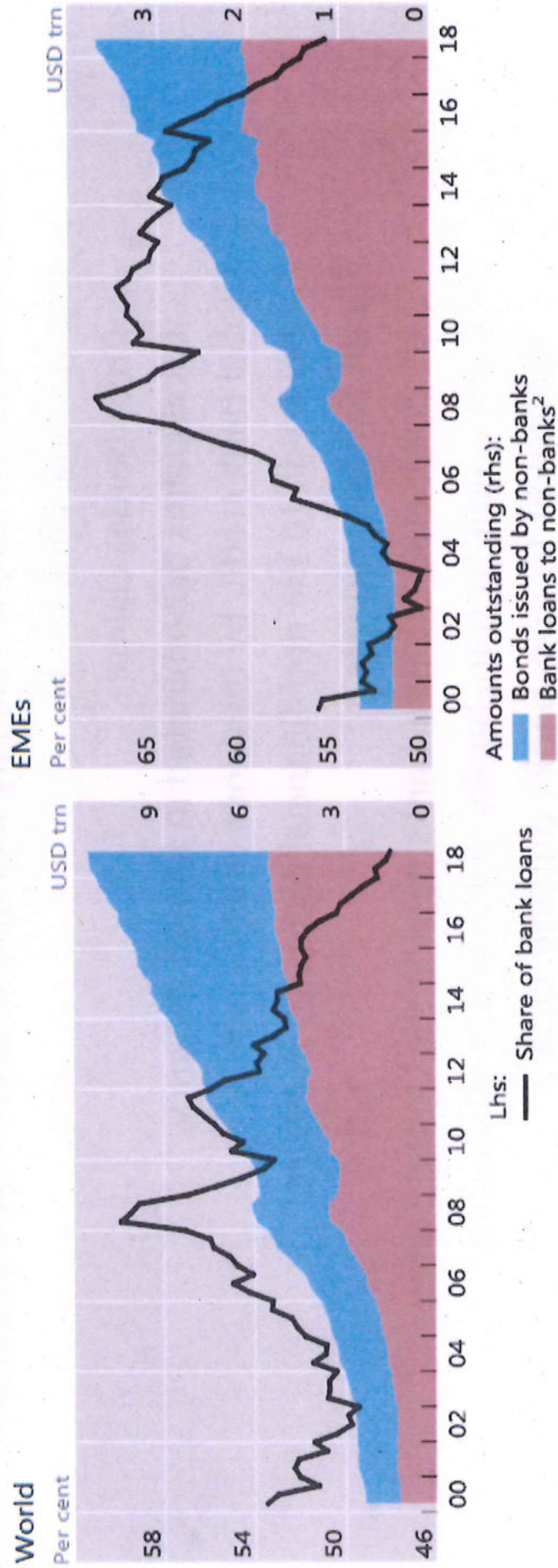
- Following up on the recommendations of the CGFS (2011) report, the BIS has produced several (quantity-based) indicators of global liquidity.
 1. International bank credit
 - Cross border claims;
 - Local claims denominated in foreign currency.
 2. Global bank credit, by residence of borrower.
 3. Global credit to the non-financial sector, by currency.
 4. Credit to non-residents.
 - US dollar credit to non-banks outside the United States;
 - Euro credit to non-banks outside the euro area;
 - Yen credit to non-banks outside Japan.



Against the backdrop of loose US MP, US dollar credit outside the US has surged since the GFC

US dollar-denominated credit to non-banks outside the United States¹

Graph A4



Further information on the BIS global liquidity indicators is available at www.bis.org/statistics/gli.htm.

¹ Non-banks comprise non-bank financial entities, non-financial corporations, governments, households and international organisations. ² Loans by LBS-reporting banks to non-bank borrowers, including non-bank financial entities, comprise cross-border plus local loans.

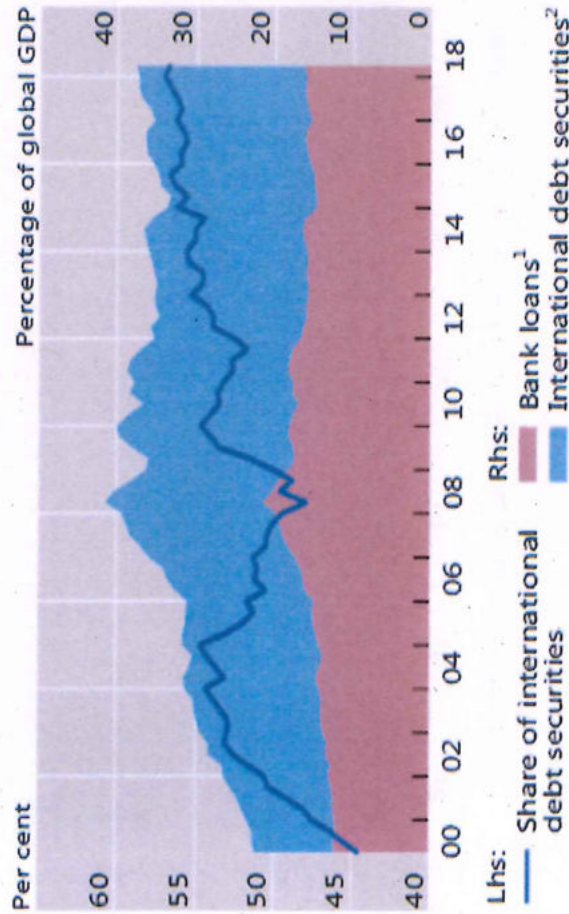
Sources: Datastream; Dealogic; Euroclear; Thomson Reuters; Xtrakter Ltd; national data; BIS locational banking statistics (LBS); BIS calculations.



Post-GFC, the US dollar has become even more dominant as an international funding currency, mainly driven by bond issuance

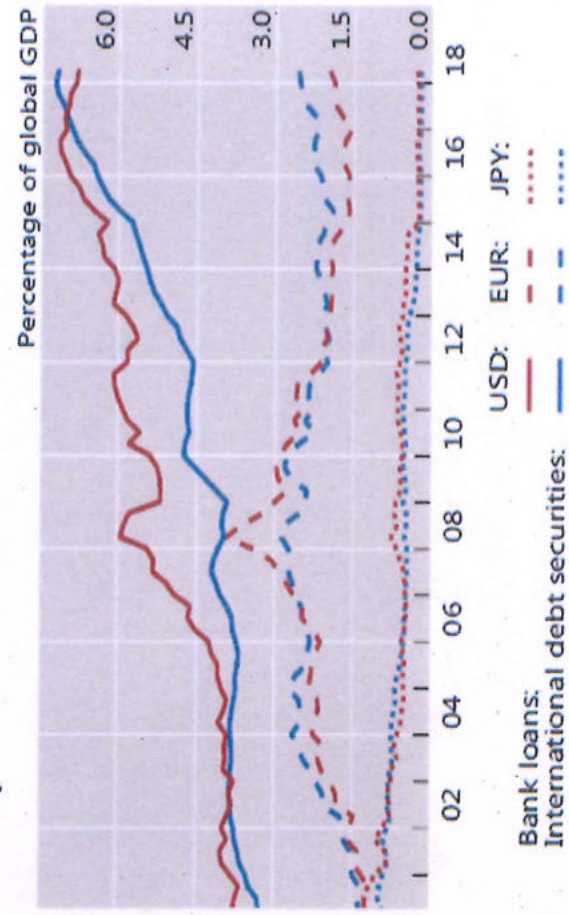
The share of debt securities and the US dollar in international credit has risen
International credit to the non-bank sector, amounts outstanding

International credit to non-banks by instrument



Graph 1

International credit to non-residents by instruments and currency



Further information on the BIS global liquidity indicators is available at www.bis.org/statistics/about_gli_stats.htm.

¹ Cross-border loans and local loans in foreign currency to non-bank borrowers. ² By residence and immediate sector of issuer; all instruments; all maturities; non-bank issuers. International debt securities are debt securities issued by non-banks in a market other than the local market of the country where the borrower resides.

Sources: Dealogic; Euroclear; Thomson Reuters; Xtrakter Ltd; BIS locational banking statistics and global liquidity indicators; BIS calculations; authors' calculations.

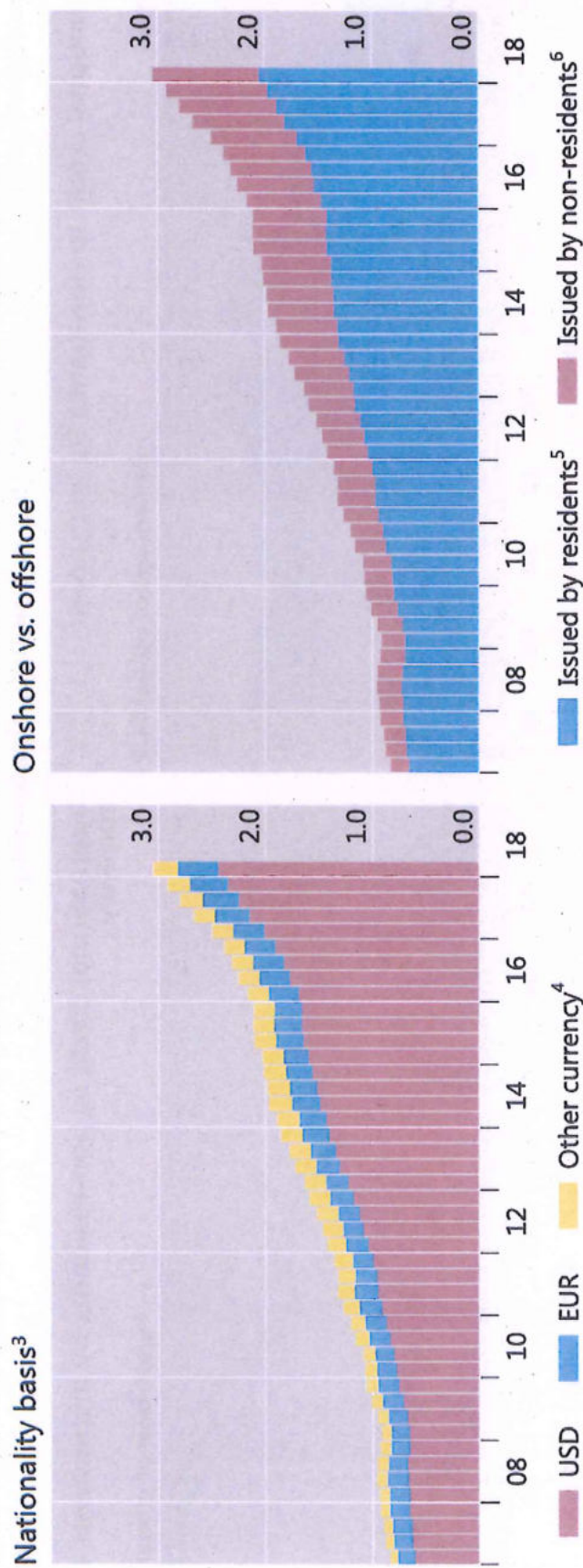
Source: Aldasoro and Ehlers (2018).



BANK FOR INTERNATIONAL SETTLEMENTS

Amounts outstanding of international debt securities¹

Emerging market non-bank corporations², at quarter end, in trillions of US dollars



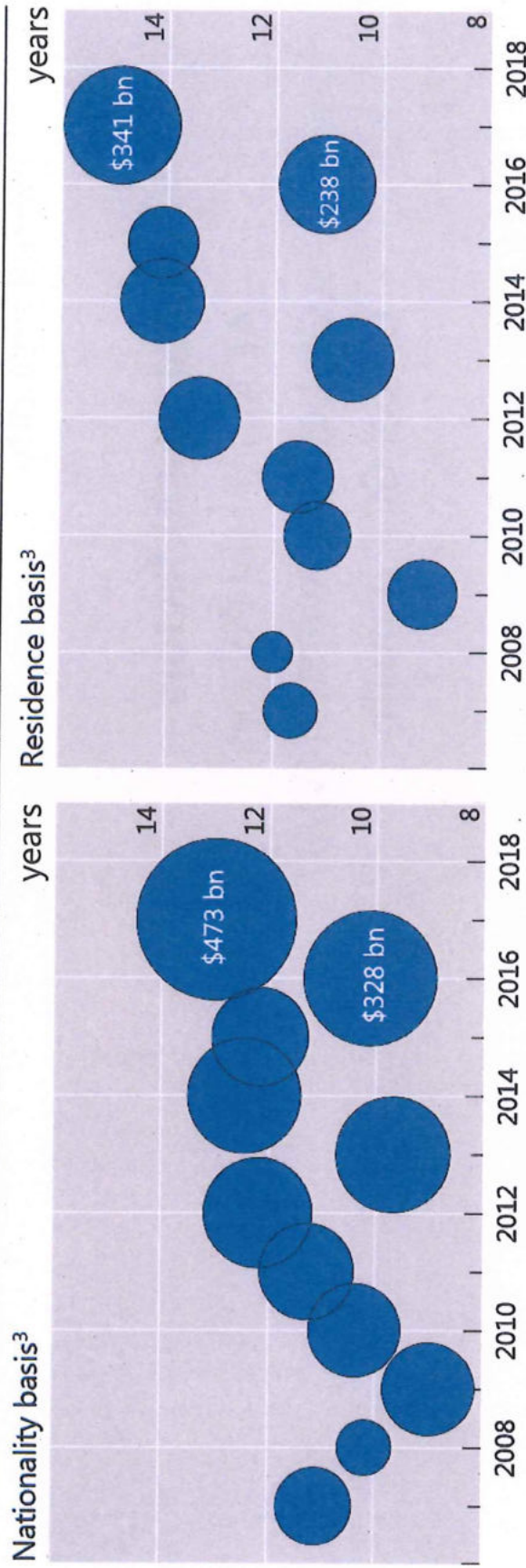
¹ International debt securities are issued outside the local market of the country where the borrower resides. ² Non-bank financial institutions, government and non-financial institutions. ³ Nationality basis refers to firms with the headquarters in the EME countries. ⁴ Any other currency except those listed. ⁵ Amounts outstanding of the international debt securities issued by the EME nationals residing in the countries of their headquarters. ⁶ Amounts outstanding of the international debt securities issued by the EME nationals residing outside the countries of their headquarters.

Sources: Dealogic; Euroclear; Thomson Reuters; Trax (Xtrakter Ltd.); BIS calculations.



Annual gross issuance and maturity¹ of US dollar international debt securities

Emerging market non-bank corporations², in years



¹ Weighted average. ² Non-bank financial institutions, government and non-financial institutions. ³ Nationality basis refers to firms with headquarters in the EME countries. Residence basis refers to firms resident in the EME countries. The size of bubbles reflects relative volume of annual gross issuance of long-term securities.

Sources: Dealogic; Euroclear; Thomson Reuters; Trax (Xtrakter Ltd.); BIS calculations.



Drivers of global liquidity

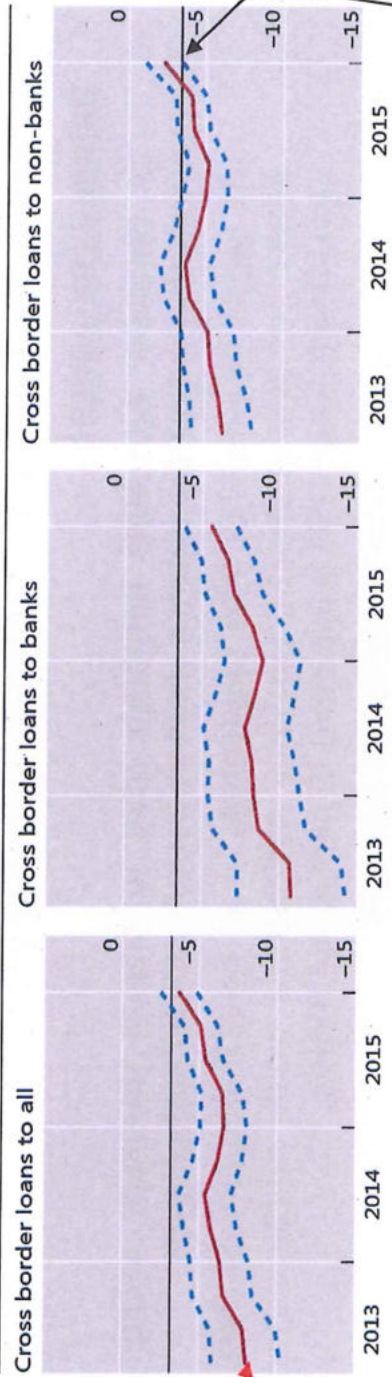
- The existing literature has identified **two main sets of drivers** of global liquidity
 - **Global (push) factors**
 - AE Monetary Policies
 - Global Risk Aversion (VIX)
 - Global GDP growth
 - **Local (pull) factors**
 - Local GDP growth
 - Local asset returns
 - Country risk



Drivers of global liquidity: post-GFC developments

- Recent BIS research (Avdjiev, Gambacorta, Goldberg and Schiaffi, 2017) has documented that:
 - The sensitivity of loan and bond flows to **US monetary policy** rose substantially (in absolute terms) after the GFC and peaked around the 2013 Fed "taper tantrum".

Post-break sensitivities to US MP (β_1), evolution over time

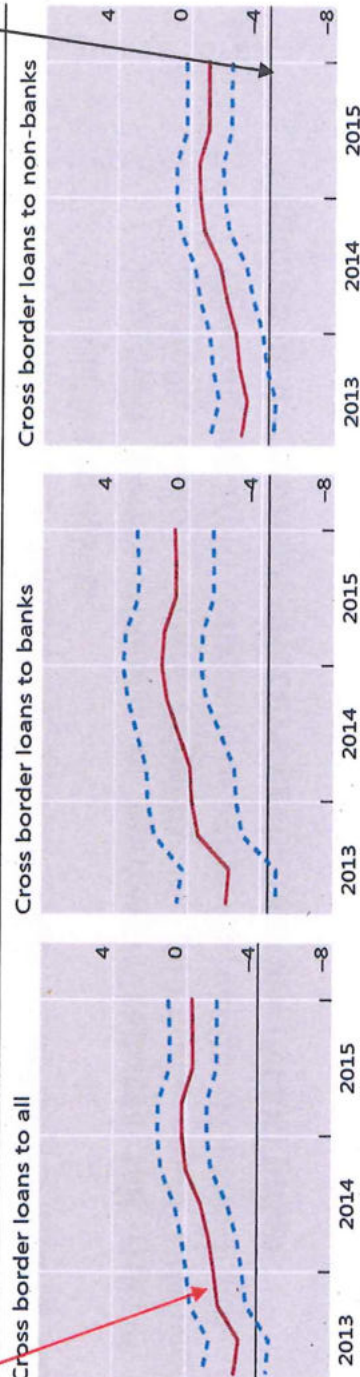


Red lines: post-GFC sensitivities

Black lines: pre-GFC sensitivities

- The responsiveness of loan flows to **global risk conditions** declined considerably (in absolute terms) post-GFC.

Post-break sensitivities to global risk (β_2), evolution over time



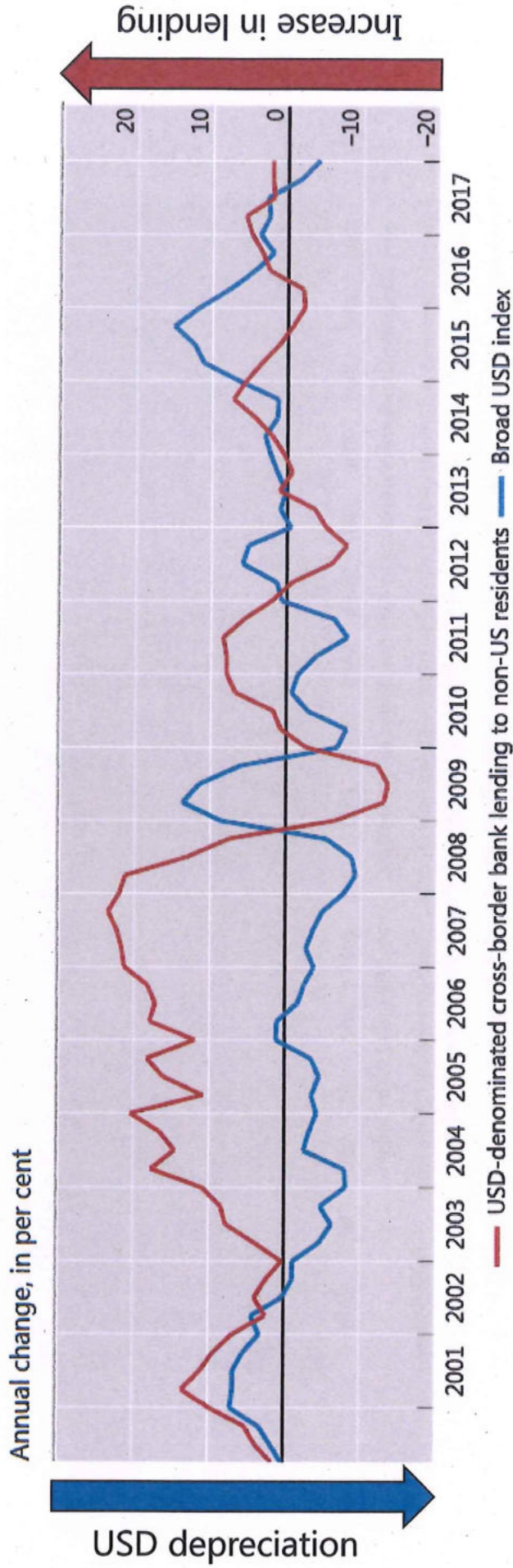
The US dollar as driver of USD-denominated flows

- BIS research (*Avdjiev, Bruno, Koch and Shin; 2019*) has documented the FX value of the US dollar is a major driver of USD-denominated flows through the **financial channel of exchange rates**.
- Components of the financial channel of exchange rates.
 - **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 flattens 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**



Broad dollar weakness boosts USD cross-border bank lending

Growth of USD-denominated cross-border bank lending and the broad USD index



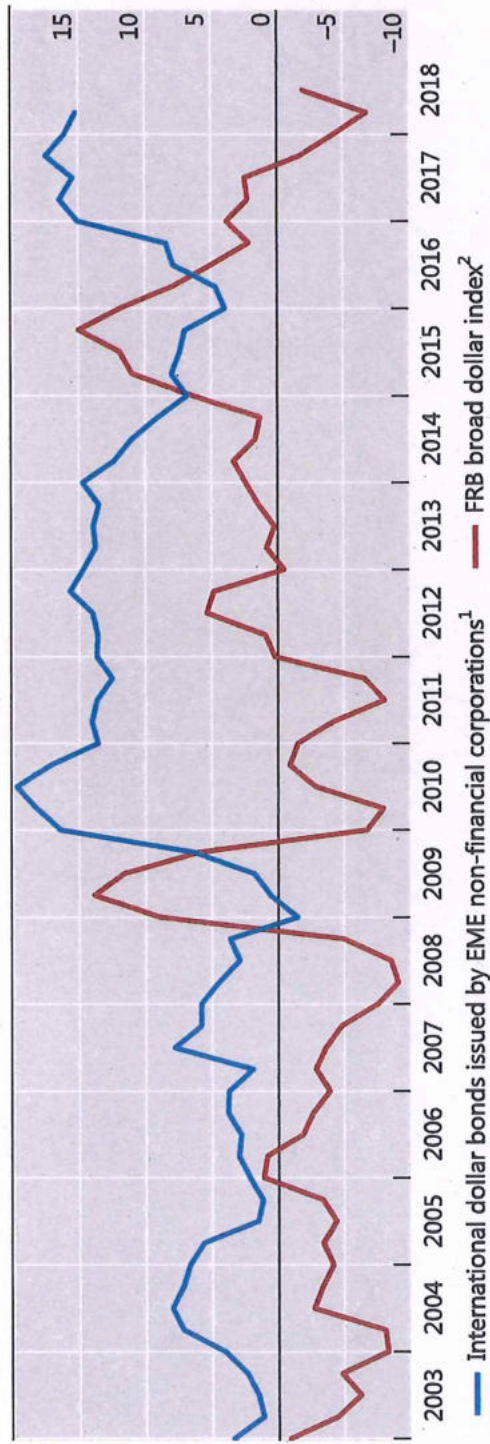
Sources: BIS locational banking statistics and nominal effective exchange rate indices.



Broad dollar weakness also boosts USD IDS issuance

US dollar strength and dollar bonds issued by EME non-financial borrowers

Annual growth in per cent

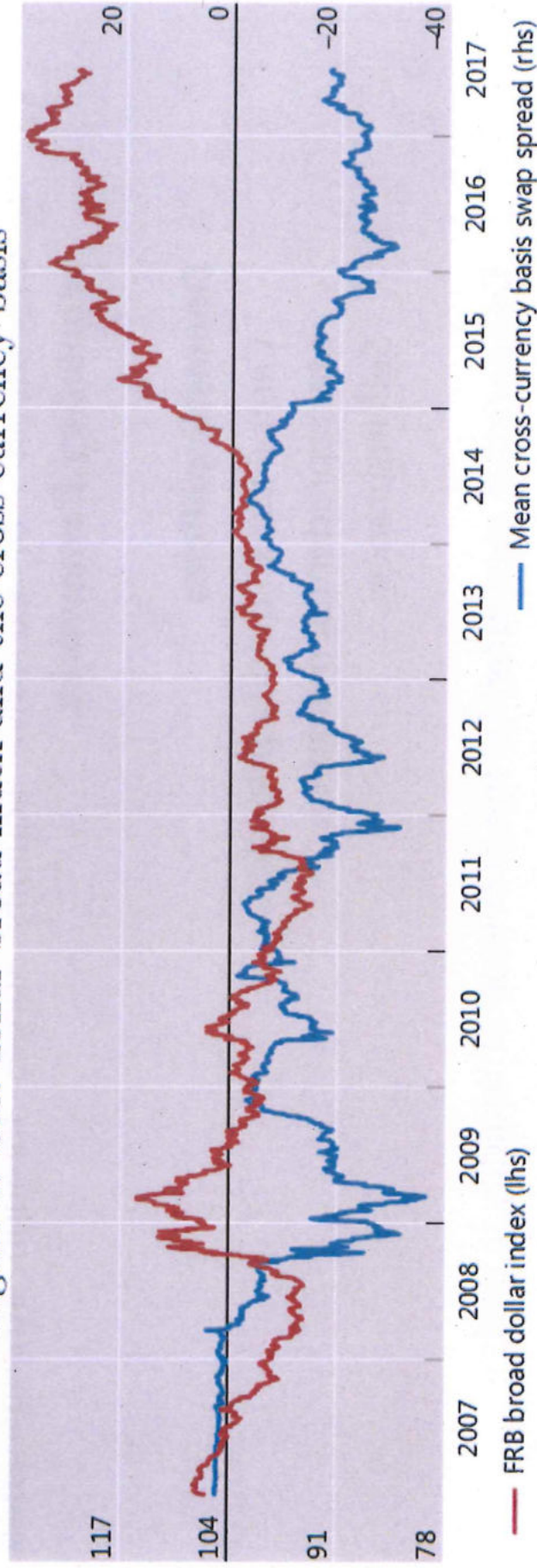


¹ International debt securities issued by EME non-financial corporations in US dollars; based on residency of the issuer. ² Federal Reserve Board trade-weighted nominal broad dollar index; quarterly average. Higher values indicate a stronger US dollar.

Sources: Board of Governors of the Federal Reserve System; Datastream; BIS global liquidity indicators.

Stronger dollar is associated with larger CIP deviations

Figure 1: U.S. dollar broad index and the cross-currency basis



Source: Avdjiev, Du, Koch and Shin (2019).



BANK FOR
INTERNATIONAL
SETTLEMENTS

Policy responses to global liquidity

- The CGFS (2011) report proposes three lines of defense:

1. Prevention of excessive liquidity surges through **strengthened regulatory frameworks**.

2. Domestic policies

- Central bank liquidity provision.
- Macroprudential measures.
- Self-insurance.

3. **Cooperative measures** for the provision of liquidity in crisis

- IMF precautionary facilities.
- Central bank swap lines.
- Regional safety nets.



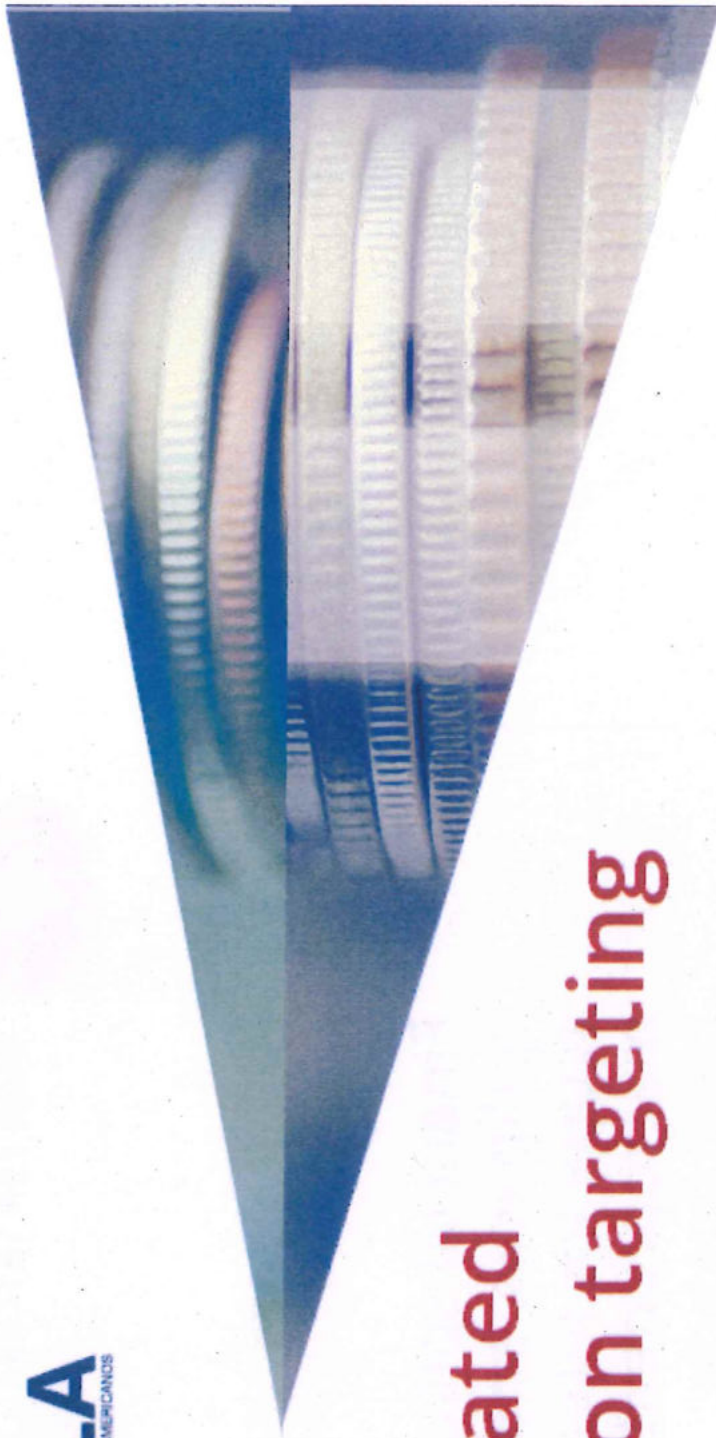


Integrated inflation targeting

Another perspective
from the developing world

Pierre-Richard Agénor and Luiz A Pereira da Silva

February 2019



BANK FOR
INTERNATIONAL
SETTLEMENTS



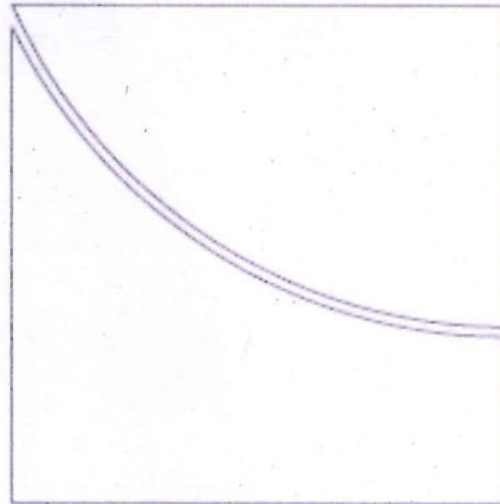
Restricted



BANK FOR INTERNATIONAL SETTLEMENTS

BIS Papers

No 97



Financial spillovers, spillbacks, and the scope for international macroprudential policy coordination

by Pierre-Richard Agénor and Luiz A Pereira da Silva

Monetary and Economic Department

April 2018



BANK FOR
INTERNATIONAL
SETTLEMENTS



Restricted

Are the existing lines of defense sufficient?

- **Private liquidity** - outstanding stock of US dollar debt outside the US
 - According to the BIS GLIs, the outstanding stock of US dollar-denominated credit to non-banks outside the US stood at **\$11.5 trillion** as of end-September 2018.
- **Official liquidity** – resources available for addressing sudden shortages of global liquidity
 - IMF members have failed to keep resources up to date and indeed.
 - As of 2016, total quotas stood at SDR 477 billion.
 - The IMF has access to resources above and beyond the quotas through the New Arrangements to Borrow (SDR 182 billion) and bilateral credit lines with 40 members (SDR 316 billion).
 - In total, taking all the resources together, the IMF has access to SDR 975 billion, or about **\$1.3 trillion**.
 - The amount of US dollars provided globally through international dollar swap lines peaked at **\$583 billion** in December 2008 (Federal Reserve Statistical Release H.4.1).



- **Total reserves (incl. gold) in 2018:**
 - China (\$3,168 bn),
 - Russia (\$468 bn),
 - India (\$396 bn),
 - Brazil (\$375 bn),
 - Indonesia (\$121 bn),
 - Turkey (\$93 bn),
 - South Africa (\$52 bn).
- **Regional Safety Nets:**
 - Chiang Mai Initiative Mult. (ASEAN+CN,JP,KR), \$240 billion
 - Eurasian Fund for Stabilization and Development (\$8.5 bn)
 - Fondo Latinoamericano de Reservas (\$3.9 bn subscribed, \$2.9 bn paid-in)
- **Regional Multilateral Banks:**
 - European Investment Bank (total assets \$659 bn)
 - Asian Development Bank (total assets \$182 bn)
 - Inter-American Development Bank Group (total assets \$113 bn)
 - African Development Bank (total assets \$38 bn)
 - Islamic Development Bank (total assets \$27 bn)



Central bank network of swap lines



The arrows indicate the direction of flows (where known); light shaded arrows represent US dollars provided to other central banks, dark arrows represent other currencies (evaluated at the average exchange rate during Q4 2008). The thickness of the arrows is proportional to the size of central bank swap lines, as announced; where swap lines are unlimited, the figure shows maximum usage instead, derived from auction allotments (Figure 8). The ASEAN swap network is not shown.

Source: Central banks.

Figure 7

Source: McGuire and von Peter (2009).

Available BIS data on global liquidity

Total credit to non-bank borrowers by currency of denomination: US dollar

Bank loans and debt securities issues, by residence of non-bank borrower

Table E2.1

	Amount outstanding (USD bn)			Annual change (%)		
	Q1 18	Q2 18	Q3 18	Q1 18	Q2 18	Q3 18
Borrowers outside the United States	11,422	11,471	11,480	65	5.6	3.5
Of which: emerging market economies	3,669	3,679	3,663	8.5	7.4	4.4
Africa and Middle East	783	820	826	19.3	20.3	17.7
Saudi Arabia	112	125	127	34.4	34.5	34.6
South Africa	38	41	45	15.2	18.6	17.1
Emerging Asia and Pacific	1,414	1,414	1,397	8.7	7.5	3.3
China	547	534	511	7.8	3.5	-0.9
Chinese Taipei	62	60	62	16.7	12.3	3.9
India	103	100	102	1.5	3.8	0.5
Indonesia	166	172	172	11.1	11.0	7.9
Korea	119	123	126	2.2	7.5	9.1
Malaysia	41	41	40	7.7	4.1	4.7
Emerging Europe	474	453	444	-5.7	-8.5	-9.6
Russia	189	176	160	-8.4	-12.8	-14.0
Turkey	198	195	185	7.1	4.2	4.6
Latin America	998	992	994	8.2	6.2	3.3
Argentina	130	129	130	42.0	19.7	15.0
Brazil	185	182	182	-3.3	-0.7	0.1
Chile	100	103	102	13.5	15.5	6.8
Mexico	265	265	267	9.1	8.6	3.4
By instrument						
Borrowers outside the United States	11,422	11,471	11,480	65	5.6	3.5
Bank loans	5,557	5,529	5,512	3.3	2.6	1.2
Debt securities issues	5,865	5,942	5,968	9.7	8.5	5.7
Of which: non-financial borrowers	3,039	3,083	3,071	7.9	7.3	4.2
Of which: emerging market economies	3,669	3,679	3,663	8.5	7.4	4.4
Bank loans	2,086	2,051	2,040	3.8	2.6	0.5
Debt securities issues	1,582	1,628	1,622	15.3	14.0	9.7
Of which: non-financial borrowers	1,360	1,400	1,396	14.1	12.8	9.1
Memo: Borrowers in the United States						
Non-financial borrowers	49,193	50,093	50,656	4.7	5.4	5.3
Of which: government	20,250	20,544	20,828	5.6	6.1	6.1

For definitions and sources, see www.bis.org/statistics/gli.htm.

Available BIS data on global liquidity (cont'd)

Total credit to non-bank borrowers by currency of denomination: euro

Bank loans and debt securities issues, by residence of non-bank borrower

Table E2.2

	Amount outstanding (EUR bn)			Annual change (%)		
	Q1 18	Q2 18	Q3 18	Q1 18	Q2 18	Q3 18
Borrowers outside the euro area	3,060	3,146	3,221	6.4	6.9	8.9
Of which: emerging market economies	652	661	685	11.0	10.7	12.7
Africa and Middle East	91	97	108	9.7	14.1	23.6
Saudi Arabia	2	1	1	52.5	9.5	-34.7
South Africa	6	6	6	-10.1	-14.9	-12.5
Emerging Asia and Pacific	113	113	121	18.4	20.5	18.4
China	27	26	28	42.8	21.4	19.9
Chinese Taipei	2	1	1	26.3	-4.5	-1.4
India	9	9	9	11.9	11.4	16.5
Indonesia	17	18	18	19.6	27.9	7.8
Korea	7	8	8	-0.3	14.1	7.5
Malaysia	1	1	1	27.6	30.0	54.4
Emerging Europe	353	353	359	10.9	7.6	9.5
Russia	43	44	47	2.8	-1.5	1.4
Turkey	98	100	107	8.5	6.5	7.5
Latin America	95	98	97	5.2	9.0	7.4
Argentina	22	22	22	17.8	17.7	15.6
Brazil	11	11	12	-0.4	-1.5	-0.9
Chile	6	6	6	39.8	19.3	18.4
Mexico	45	48	47	-3.3	5.6	3.6
By instrument						
Borrowers outside the euro area	3,060	3,146	3,221	6.4	6.9	8.9
Bank loans	1,349	1,416	1,444	5.5	8.6	11.7
Debt securities issues	1,710	1,729	1,777	7.1	5.5	6.8
Of which: non-financial borrowers	1,115	1,132	1,168	8.7	6.7	8.3
Of which: emerging market economies	652	661	685	11.0	10.7	12.7
Bank loans	423	431	455	11.7	11.1	14.8
Debt securities issues	229	231	230	9.8	10.1	8.9
Of which: non-financial borrowers	215	217	216	9.7	10.1	8.5
Memo: Borrowers in the euro area						
Non-financial borrowers	28,409	28,498	28,521	1.2	1.5	1.7
Of which: government	11,385	11,312	11,259	1.2	-0.1	-0.3

For definitions and sources, see www.bis.org/statistics/gli.htm.



Available BIS data on global liquidity (cont'd)

Total credit to non-bank borrowers by currency of denomination: Japanese yen
Bank loans and debt securities issues, by residence of non-bank borrower

Table E2.3

	Amount outstanding (JPY bn)				Annual change (%)		
	Q1 18	Q2 18	Q3 18	Q1 18	Q2 18	Q3 18	
Borrowers outside Japan	46,129	45,810	48,006	5.9	0.7	8.3	
Of which: emerging market economies	7,644	8,262	8,519	3.0	0.5	11.9	
Africa and Middle East	713	667	620	4.1	-11.0	-6.4	
Saudi Arabia	9	8	7	-51.0	-68.3	-69.1	
South Africa	33	34	34	-1.0	2.6	1.7	
Emerging Asia and Pacific	4,975	5,485	5,802	4.1	-2.0	14.4	
China	756	858	896	6.3	1.8	25.7	
Chinese Taipei	317	341	327	-1.0	5.0	8.1	
India	365	446	484	-29.3	-22.6	14.6	
Indonesia	894	1,049	1,085	-2.7	-5.7	14.2	
Korea	646	745	805	-11.4	-1.3	10.6	
Malaysia	100	125	135	-10.1	-4.0	41.1	
Emerging Europe	1,067	1,100	1,107	4.5	9.7	11.3	
Russia	2	3	3	-52.3	2.1	29.6	
Turkey	660	665	673	24.6	23.2	26.6	
Latin America	889	1,011	991	-4.7	15.7	12.2	
Argentina	19	19	21	-7.1	-5.4	5.4	
Brazil	34	37	38	-58.4	-3.9	-12.7	
Chile	1	1	1	4.4	-38.3	-34.5	
Mexico	665	803	778	-3.1	20.4	15.7	
By instrument							
Borrowers outside Japan	46,129	45,810	48,006	5.9	0.7	8.3	
Bank loans	25,907	25,201	27,364	7.8	-2.0	13.5	
Debt securities issues	20,222	20,609	20,642	3.5	4.1	2.1	
Of which: non-financial borrowers	7,239	7,563	7,664	2.8	12.7	8.1	
Of which: emerging market economies	7,644	8,262	8,519	3.0	0.5	11.9	
Bank loans	4,759	5,140	5,239	-0.3	-5.8	8.9	
Debt securities issues	2,885	3,122	3,281	9.2	13.0	17.2	
Of which: non-financial borrowers	2,812	3,049	3,186	10.0	13.9	17.4	
Memo: Borrowers in Japan							
Non-financial borrowers	2,027,056	2,037,170	2,031,033	1.3	1.6	1.1	
Of which: government	1,227,941	1,231,939	1,219,867	1.2	1.1	0.0	

For definitions and sources, see www.bis.org/statistics/gli.htm.

Available BIS data on global liquidity (cont'd)

Global liquidity: banks' claims

By type of claim and residence of borrower

Table E1

	Per cent of GDP			Annual change (%)		
	Q1 18	Q2 18	Q3 18	Q1 18	Q2 18	Q3 18
International claims on all sectors						
On the bank sector	43.0	41.3	40.3	1.8	2.0	1.5
On the non-bank sector	21.6	20.9	20.1	-1.6	0.1	-0.7
	20.1	19.5	19.5	3.4	4.3	4.1
Total claims on private non-financial sector	104.0	104.0	104.4	6.1	5.8	5.7
Local claims	90.9	90.9	91.1	6.0	6.0	6.1
Cross-border claims	13.1	13.1	13.3	7.4	5.7	3.4
Claims on advanced economies						
On euro area	105.7	105.4	106.2	1.0	1.3	2.2
Local claims	85.7	85.4	85.2	2.1	2.0	2.3
Cross-border claims	20.0	20.0	20.9	-5.4	-3.2	0.9
On the United States	66.5	65.6	65.3	5.5	4.3	3.8
Local claims	51.2	51.3	51.0	4.4	4.4	4.2
Cross-border claims	15.3	14.3	14.3	9.4	4.3	2.5
On other advanced economies	131.3	133.2	133.7	3.8	5.1	4.4
Local claims	113.4	114.1	114.7	3.6	4.0	4.0
Cross-border claims	17.9	19.1	19.0	7.7	16.2	7.0
Claims on emerging market economies						
On emerging Asia	141.9	141.9	143.5	10.6	10.5	10.9
Local claims	136.3	136.3	137.9	10.4	10.6	11.3
Cross-border claims	5.6	5.6	5.6	14.3	7.9	5.2
On central Europe	57.2	57.8	57.5	4.8	4.9	5.2
Local claims	49.0	49.5	49.6	4.6	5.9	6.3
Cross-border claims	8.2	8.3	7.8	6.5	1.2	1.4
On Latin America	49.8	50.1	51.0	11.3	8.7	6.4
Local claims	42.9	42.9	43.4	12.1	12.0	10.2
Cross-border claims	6.9	7.3	7.6	9.0	1.9	-2.5
On other emerging market economies	62.6	62.7	62.8	5.8	5.4	5.0
Local claims	55.4	55.3	55.2	6.2	6.0	5.4
Cross-border claims	7.2	7.4	7.6	2.3	1.1	1.4

For definitions and sources, see www.bis.org/statistics/gli.htm.



Selected BIS references

- Aldasoro, I and T Ehlers (2018): "Global liquidity: changing instruments and currency patterns", *BIS Quarterly Review*, September, pp 17-27.
- Avdjiev, S, V Bruno, C Koch and H Shin (2019), "The dollar exchange rate as a global risk factor: evidence from investment", *IMF Economic Review*, forthcoming. Also published as BIS Working Papers, no 695.
- Avdjiev, S, W Du, C Koch and H Shin (2018), "The dollar, bank leverage and the deviation from covered interest parity", *American Economic Review: Insights*, forthcoming. Also published as *BIS Working Papers*, no 592.
- Avdjiev, S, L Gambacorta, L Goldberg and S Schiaffi (2017): "The shifting drivers of global liquidity", *BIS Working Papers*, no 644, June.
- BIS global liquidity indicators, https://www.bis.org/statistics/about_gli_stats.htm.
- McGuire, P and G von Peter (2009): "The US dollar shortage in global banking and the international policy response", *BIS Working Papers*, no 291, October.



Annex



BANK FOR
INTERNATIONAL
SETTLEMENTS



Restricted

BIS GLs and international credit

Outstanding credit to the non-bank sector at end-March 2018, in billions of US dollars

Table A

	Bank loans, total	Bank loans: Cross-border	Bank loans: Local in foreign currency	International debt securities, total	Debt securities: Held by banks	Total
(1) International credit to non-residents ¹ in major currencies	7,409	4,324	3,085	8,154	1,102	15,563
USD	5,554	3,323	2,231	5,860	811	11,414
Of which: to EMEs	2,085	1,041	1,044	1,582	171	3,667
EUR	1,615	872	743	2,104	290	3,719
Of which: to EMEs	511	260	251	282	38	792
JPY	240	129	111	190	...	430
Of which: to EMEs	44	26	19	27	...	72
(2) International credit to residents in major currencies	2,282	2,282		6,930 ²	2,487	9,212
Of which: euro credit to euro area countries	1,030	1,030		4,811	1,192	5,841
(3) International credit in other currencies	3,610	1,429	2,181	2,367	1,007	5,976
Of which: to EMEs	442	248	195	120	125	562
Total international credit (sum of (1), (2) and (3)) ³	13,301	8,035	5,266	17,450	4,676	30,751
Total international credit (% GDP) ⁴	16.27	9.83	6.44	21.34	5.72	37.60

¹ Credit to borrowers outside the respective currency area. ² International debt securities (IDS) are defined as those issued in a market other than that of the country where the borrower resides (Gruic and Woodbridge (2012)). This does not necessarily imply that the securities are held cross-border. Nevertheless, in most cases, the IDS represent a reasonably good approximation. ³ Calculation does not include national data for China and Argentina as in the GLs. ⁴ Cumulative sum over quarterly global GDP in last four quarters, ending in Q1 2018.

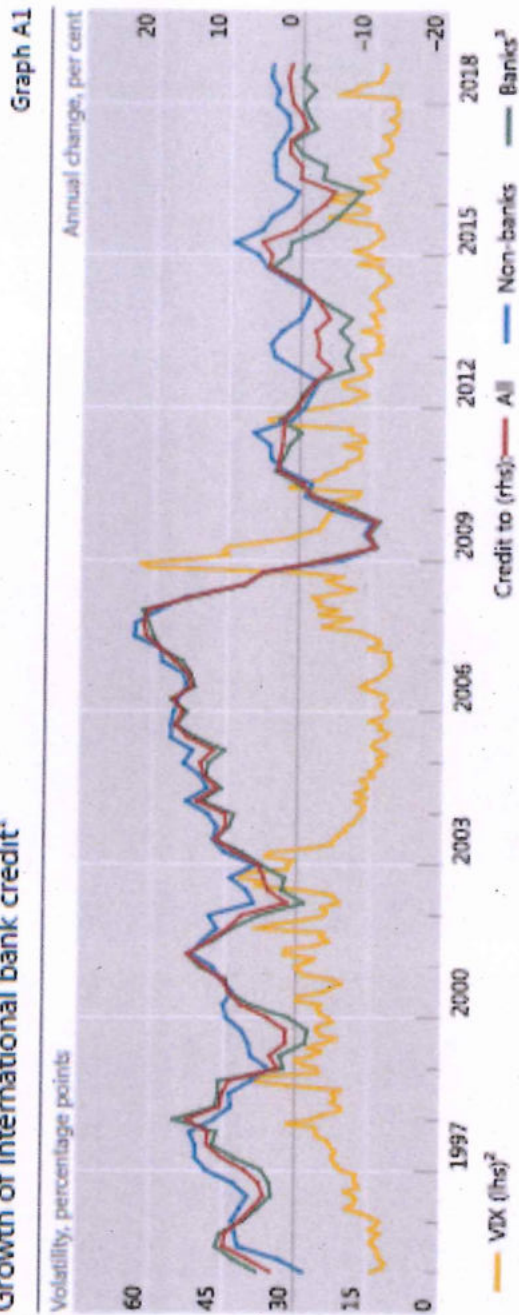
Sources: IMF, World Economic Outlook; Dealogic; Thomson Reuters; Xtraktier Ltd; BIS locational banking statistics and global liquidity indicators; BIS calculations; authors' calculations.

Source: Aldasoro and Ehlers (2018).



BANK FOR
INTERNATIONAL
SETTLEMENTS

Growth of international bank credit¹



Further information on the BIS global liquidity indicators is available at www.bis.org/statistics/about_gli_stats.htm.

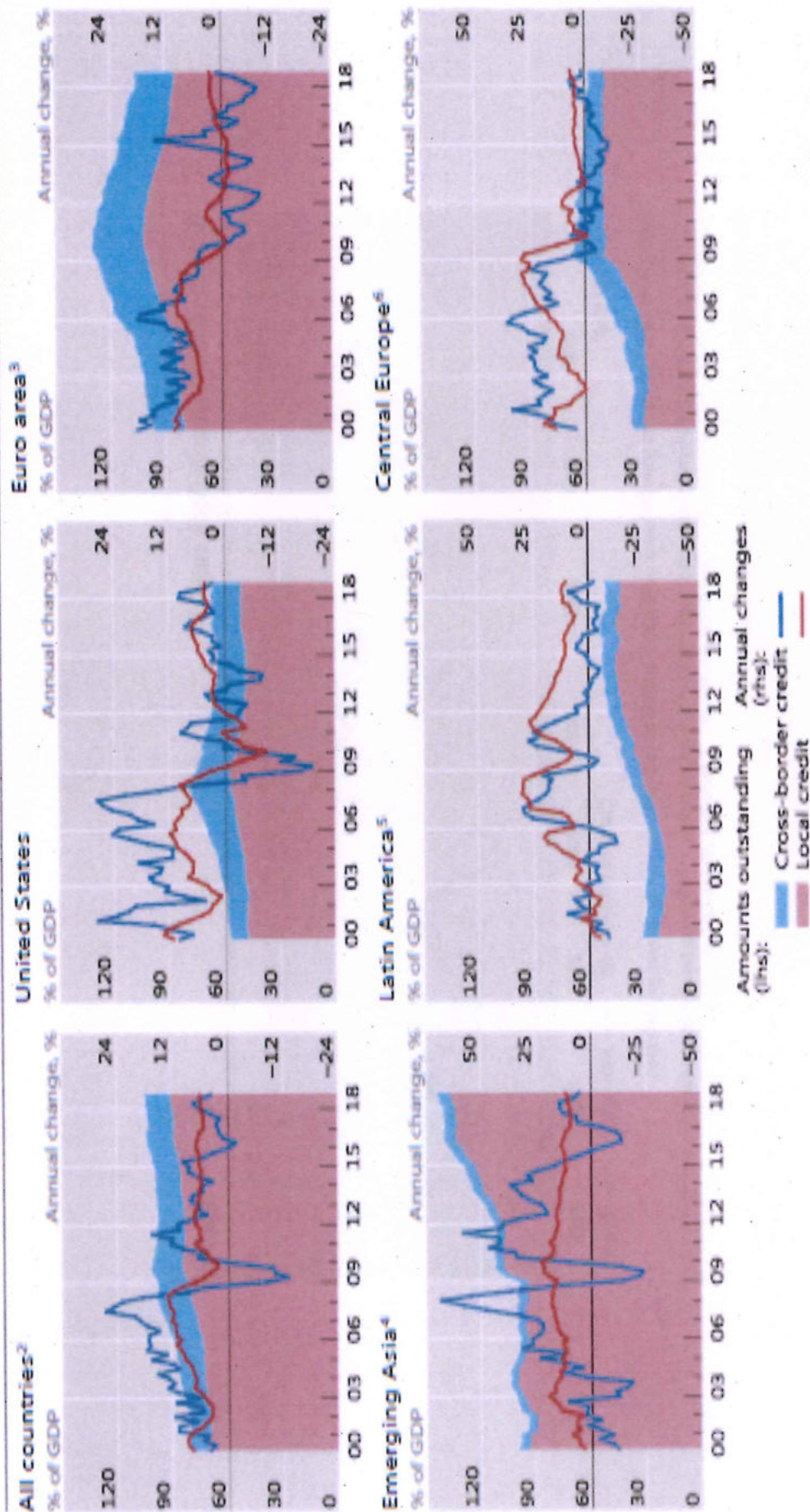
¹ LBS-reporting banks' cross-border claims plus local claims in foreign currencies. ² Chicago Board Options Exchange S&P 500 implied volatility index; standard deviation, in percentage points per annum. ³ Including intragroup transactions.

Sources: Bloomberg; BIS locational banking statistics (LBS).

Global bank credit to the private non-financial sector, by residence of borrower

Banks' cross-border credit plus local credit in all currencies¹

Graph A2



Further information on the BIS global liquidity indicators is available at www.bis.org/statistics/about_gli_stats.htm.

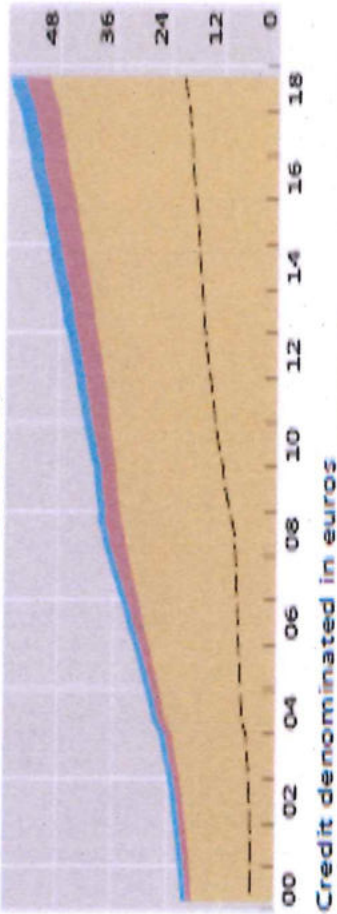
¹ Cross-border claims of LBS-reporting banks to the non-bank sector plus local claims of all banks to the private non-financial sector. Weighted averages of the economies listed, based on four-quarter moving sums of GDP. ² Australia, Canada, Denmark, Japan, New Zealand, Norway, Russia, Saudi Arabia, South Africa, Sweden, Switzerland, Turkey and the United Kingdom, plus the countries in the other panels. ³ Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal and Spain. ⁴ China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, Singapore and Thailand. ⁵ Argentina, Brazil, Chile and Mexico. ⁶ The Czech Republic, Hungary and Poland.

Sources: BIS statistics on credit to the non-financial sector; BIS locational banking statistics (LBS); BIS calculations.

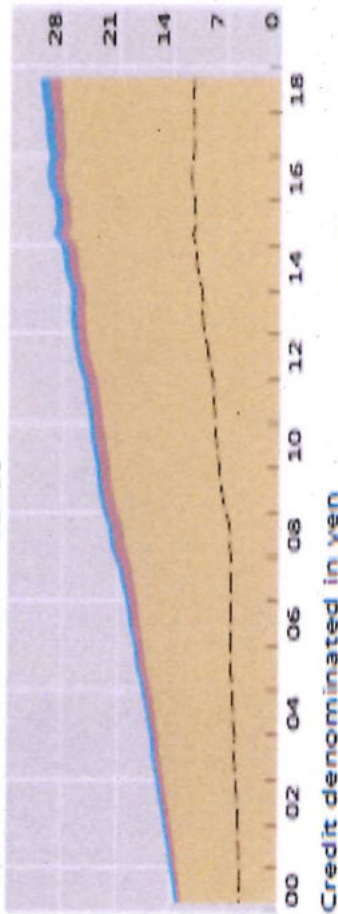
Global credit to the non-financial sector, by currency

Graph A3

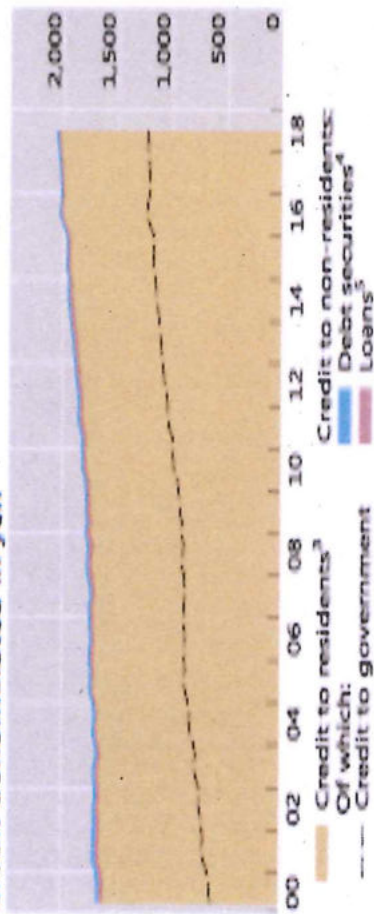
Amounts outstanding, in trillions of currency units¹
 Credit denominated in US dollars



Credit denominated in euros



Credit denominated in yen

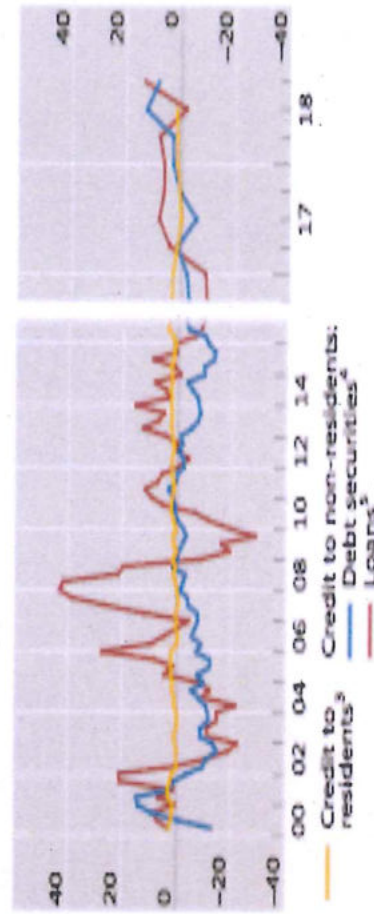
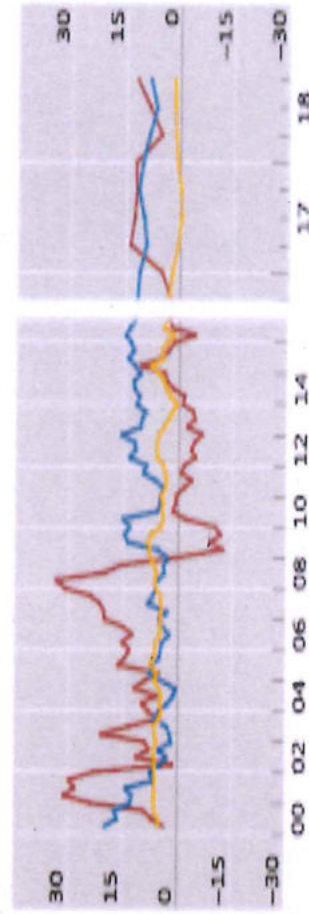
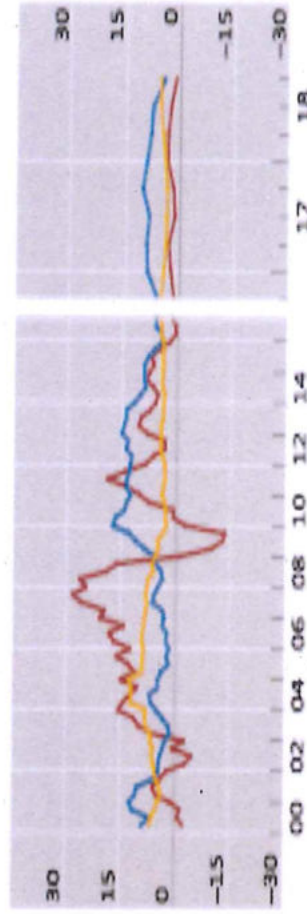


Further information on the BIS global liquidity indicators is available at www.bis.org/statistics/about_gli_stats.htm.

¹ Amounts outstanding at quarter-end. ² Based on quarterly break- and exchange rate-adjusted changes. ³ Credit to non-financial borrowers residing in the United States/euro area/Japan. National financial accounts are adjusted using BIS banking and securities statistics to exclude credit denominated in non-local currencies. ⁴ Excluding debt securities issued by special purpose vehicles and other financial entities controlled by non-financial parents. Euro-denominated debt securities exclude those issued by institutions of the European Union. ⁵ Loans by LBS-reporting banks to non-bank borrowers, including non-bank financial entities, comprise cross-border plus local loans.

Sources: Datastream; Dealogic; Euroclear; Thomson Reuters; Xtrakter Ltd; national data; BIS locational banking statistics (LBS); BIS calculations.

Annual change, in per cent²



² Based on quarterly break- and exchange rate-adjusted changes. ³ Credit to non-financial borrowers residing in the United States/euro area/Japan. National financial accounts are adjusted using BIS banking and securities statistics to exclude credit denominated in non-local currencies. ⁴ Excluding debt securities issued by special purpose vehicles and other financial entities controlled by non-financial parents. Euro-denominated debt securities exclude those issued by institutions of the European Union. ⁵ Loans by LBS-reporting banks to non-bank borrowers, including non-bank financial entities, comprise cross-border plus local loans.

Sources: Datastream; Dealogic; Euroclear; Thomson Reuters; Xtrakter Ltd; national data; BIS locational banking statistics (LBS); BIS calculations.