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IFC Workshop on the use of financial accounts, co-organised with the Central Bank of the Republic of Turkey

18-20 March 2019, Istanbul, Turkey

## Assessing global liquidity: beyond borders<sup>1</sup>

Bryan Hardy,

Bank for International Settlements

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<sup>1</sup> This presentation was prepared for the meeting. The views expressed are those of the author and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.



# Assessing Global Liquidity: Beyond Borders

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Workshop on the Use of Financial Accounts – 18-20 March 2019 | Istanbul, Turkey

Session VII “Looking Forward”

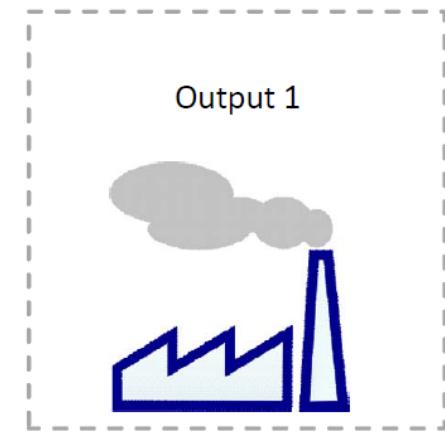
*The views expressed are those of the presenter and do not necessarily reflect those of the BIS.*

# Borders and macro-financial data

- Often thinking within the “**triple coincidence**” framework:

- The **economic (GDP)** area
- The **currency** area
- The **decision making** area

“Economic territory” 1



“Economic territory” 2

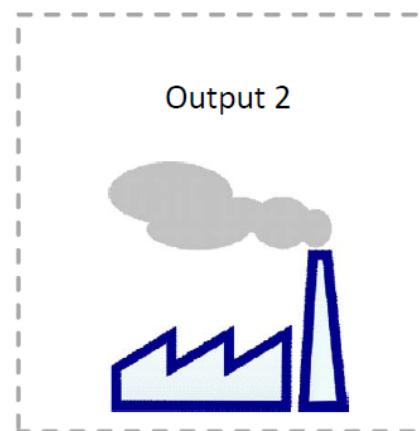
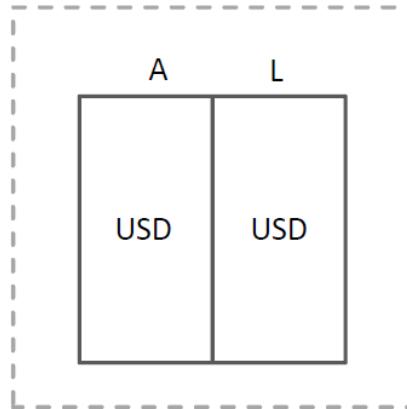
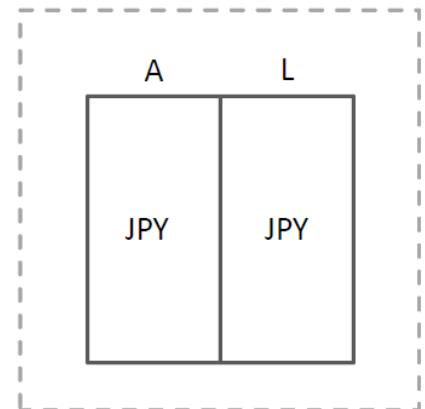


Figure 1. Boundary for national income accounting defines “economic territory”

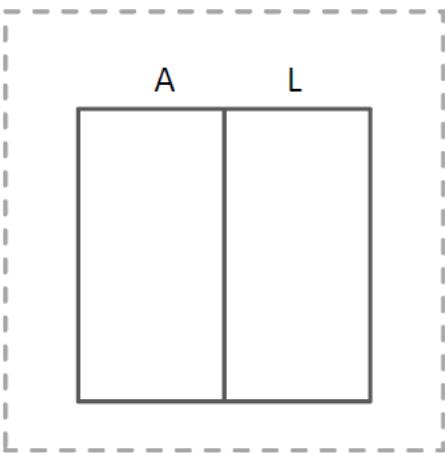
Economic territory 1  
(USD)



Economic territory 2  
(JPY)



Economic territory 1



Economic territory 2

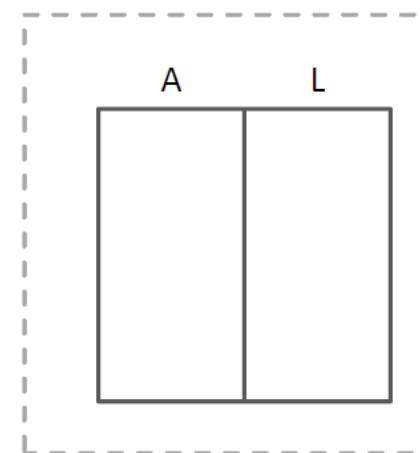


Figure 3. Boundary for national income accounting defines exchange rates as relative prices across boundary

Figure 2. Boundary for national income accounting defines decision-making unit

# Borders and macro-financial data

- Same boundaries define financial accounts data

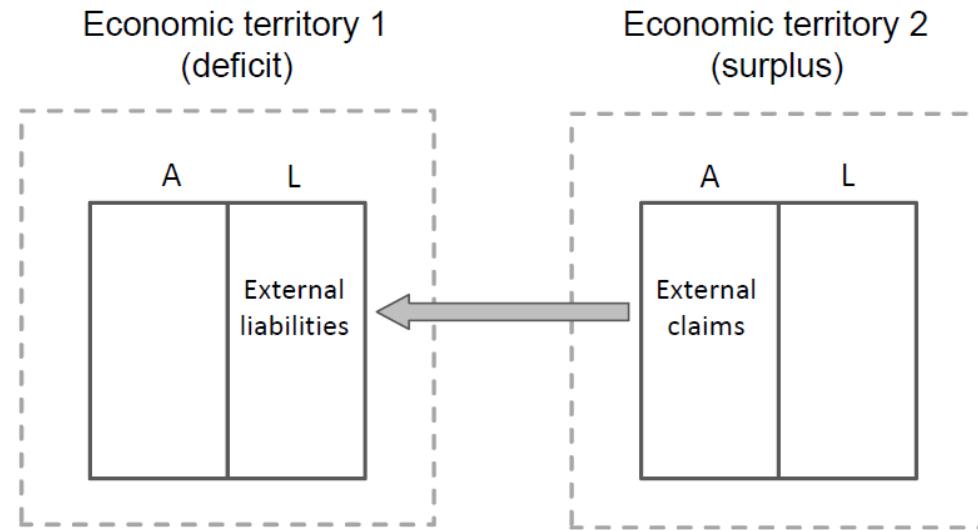


Figure 4. Boundary for national income accounting defines balance of payments and external claims/liabilities

- If triple coincidence holds and exchange rate is flexible:
  - Reach of monetary policy remains within the border

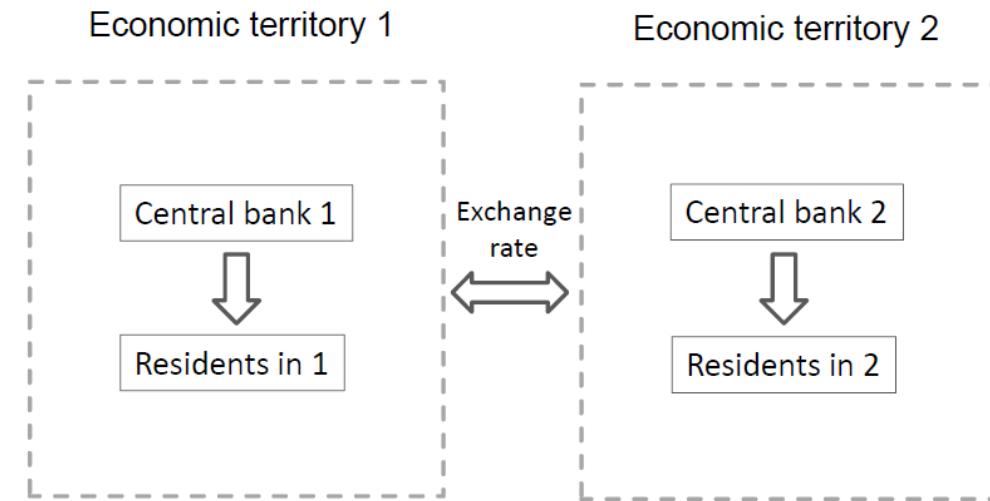


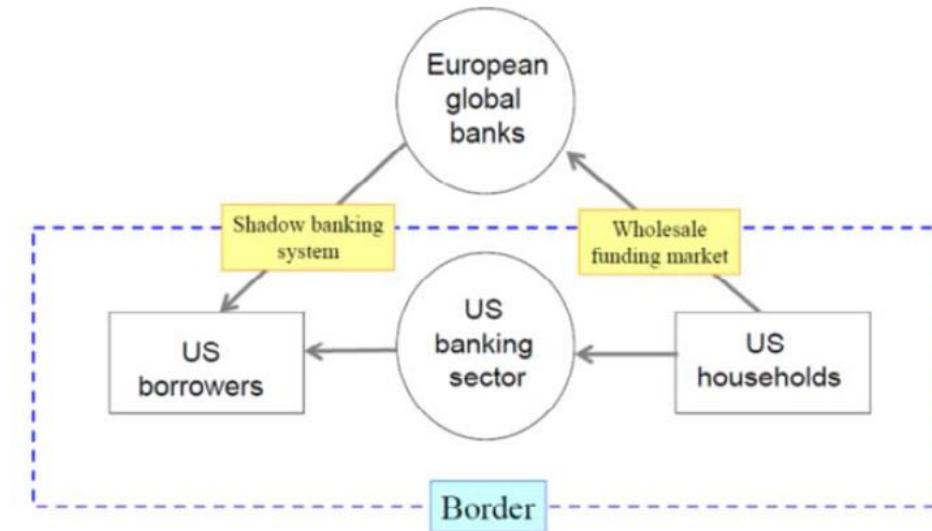
Figure 5. Boundary for national income accounting defines reach of monetary policy; floating exchange rates ensures monetary policy autonomy

# Borders and macro-financial data

- Thinking “outside the box”  
complementary to financial accounts framework
  - Assessing **global financial conditions**
  - Analyzing **domestic risks**
  - Understanding how the global affects the domestic
    - **Monetary policy spillovers**, etc.

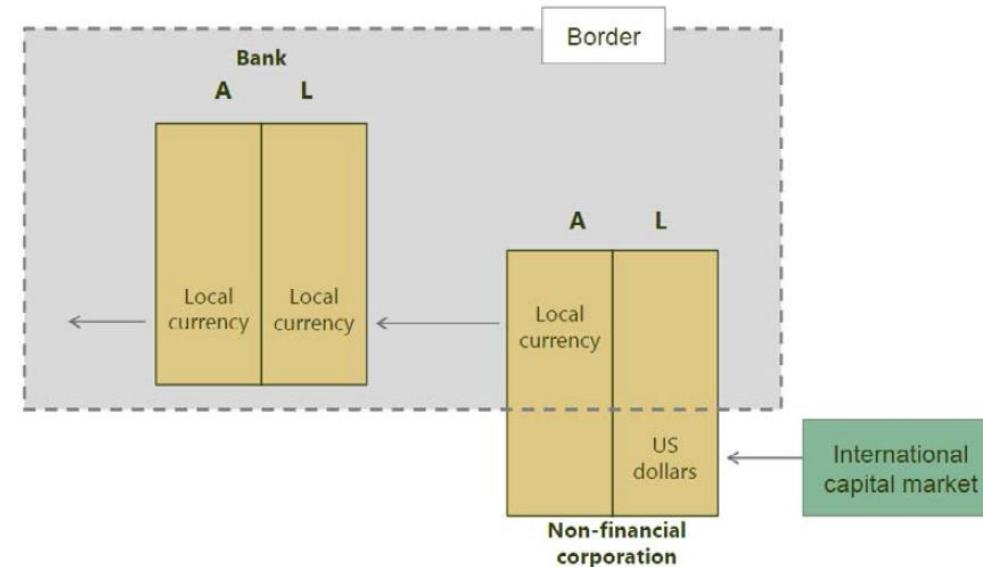
European banks and US shadow banks

Graph 3



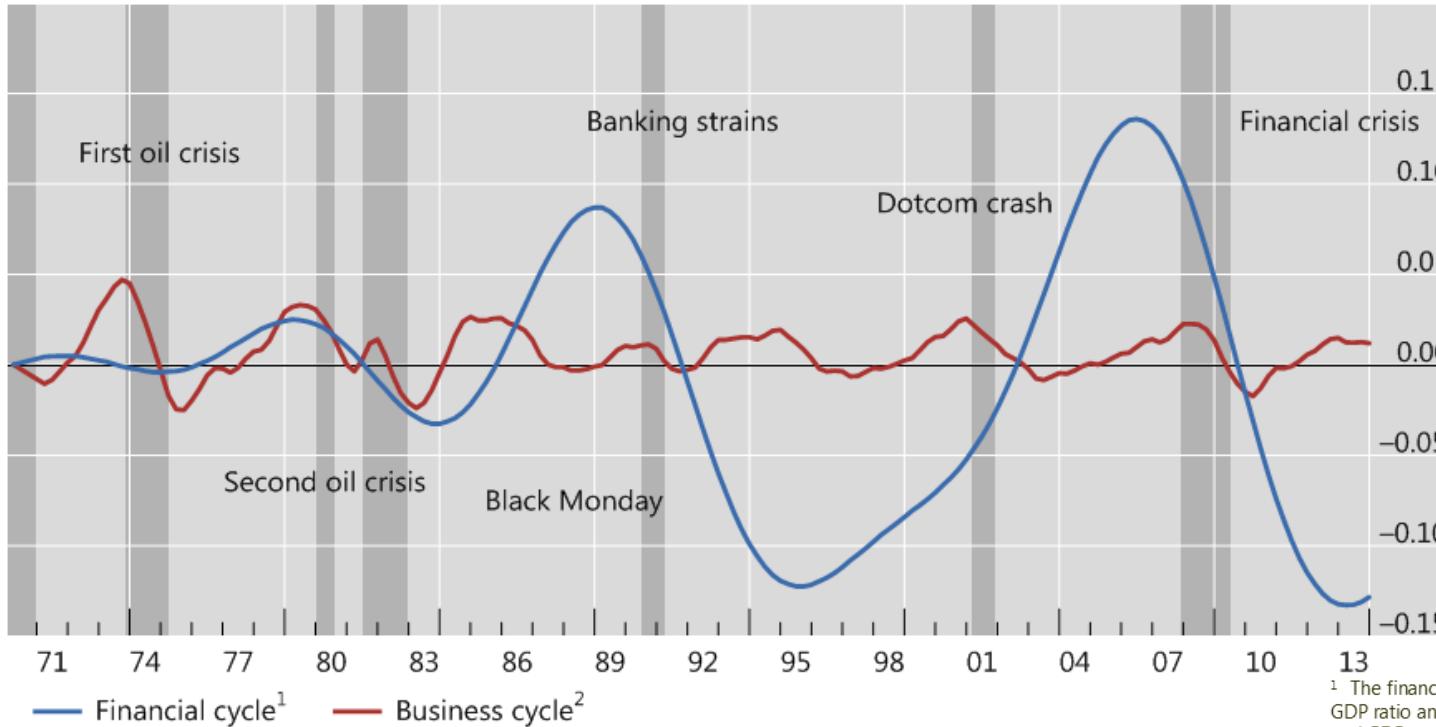
Multinational firm as carry trader

Graph 7



# Why a global view

- Crises, spillovers → need to better understand global financial trends and assess global liquidity
- **Global financial cycle**
  - Boom/bust episodes for credit
  - Not always in line with **domestic business cycles**



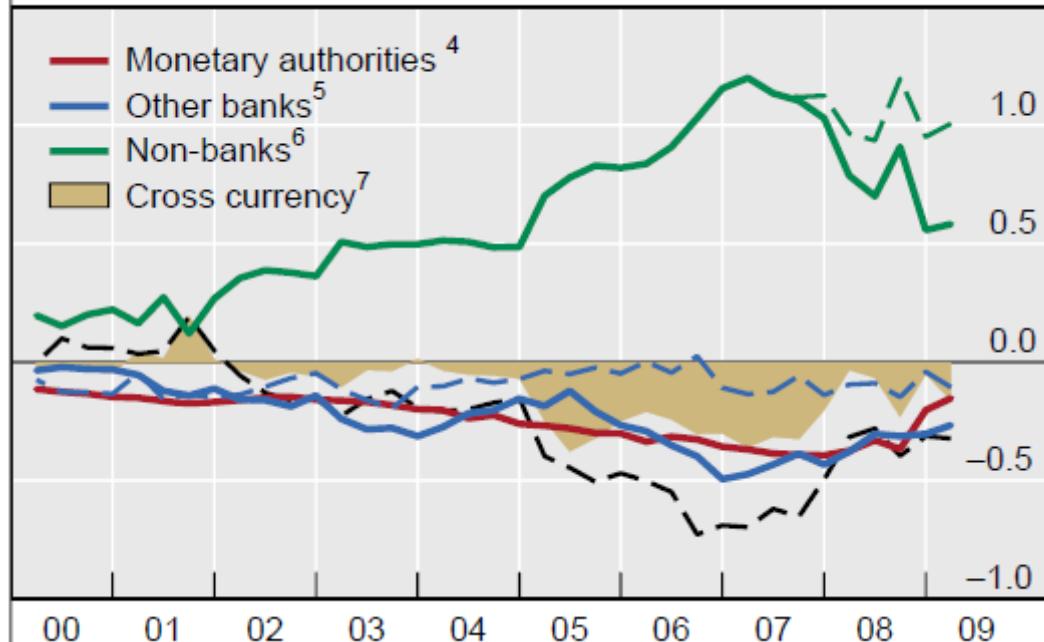
<sup>1</sup> The financial cycle as measured by frequency-based (bandpass) filters capturing medium-term cycles in real credit, the credit-to-GDP ratio and real house prices. <sup>2</sup> The business cycle as measured by a frequency-based (bandpass) filter capturing fluctuations in real GDP over a period from one to eight years. Source: from Drehmann et al (2012), updated.

# Experience from the GFC

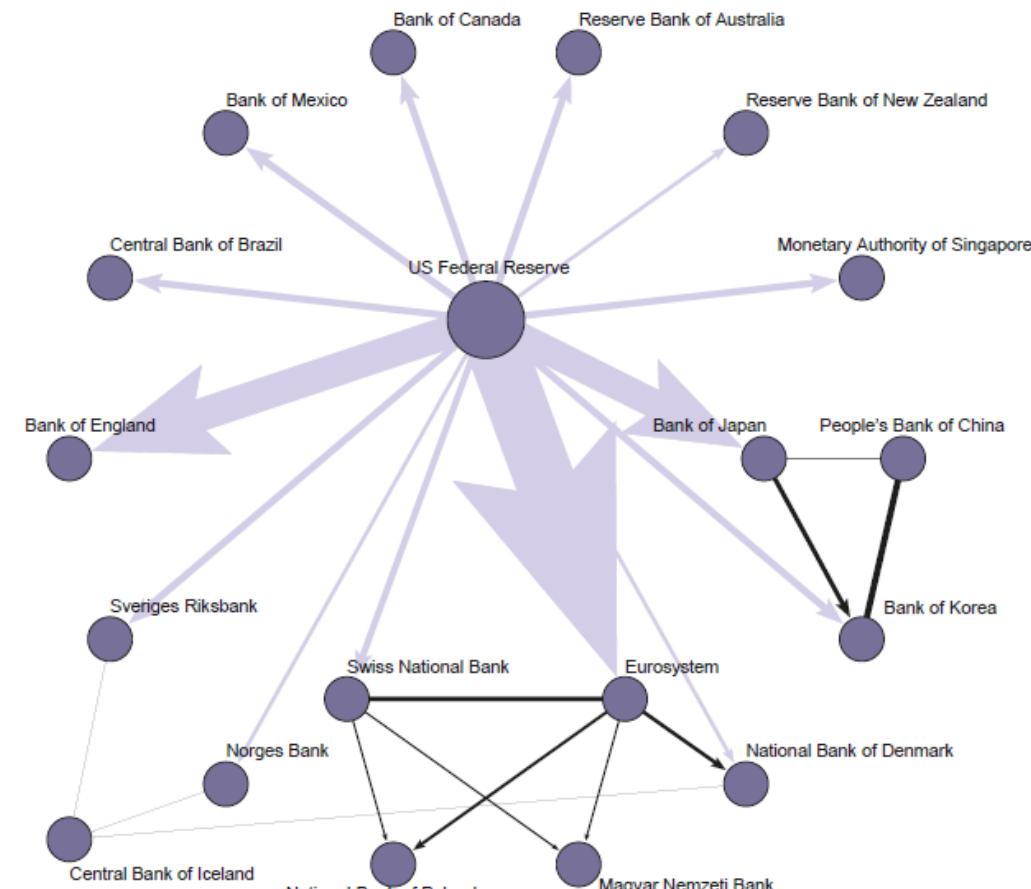
McGuire and von Peter (2009)

- **Insufficient USD liquidity** for European banks
  - Maturity mismatch
  - Short term funding proved to be **less stable** than expected
- Network of CB swap lines provided liquidity

Net USD positions, by counterparty sector



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

## CGFS (2011): How to measure global liquidity?

- Global liquidity is **ease of financing** in global financial markets
  - Can only really examine the “footprints,” GL not directly observed (Borio 2013)
- Global liquidity composed of
  - **Private liquidity** → majority of global liquidity
    - Determined in equilibrium by market participants
    - Focus on financial intermediaries and their leverage
      - Market liquidity → how easy to sell assets for cash?
      - Funding liquidity → how easy to obtain more financing?
  - **Public liquidity**
    - Regular monetary operations
    - Emergency facilities (eg CB swap lines) → relied upon in times of stress
- Policy relevant
  - Vulnerabilities build up (asset prices, leverage, mismatch of currency/maturity)
  - Foreign monetary policy transmission (break triple coincidence!)

## 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 measures can reflect **funding conditions, volatility, risk appetite**, and the build up of **vulnerabilities**

# Global liquidity indicators

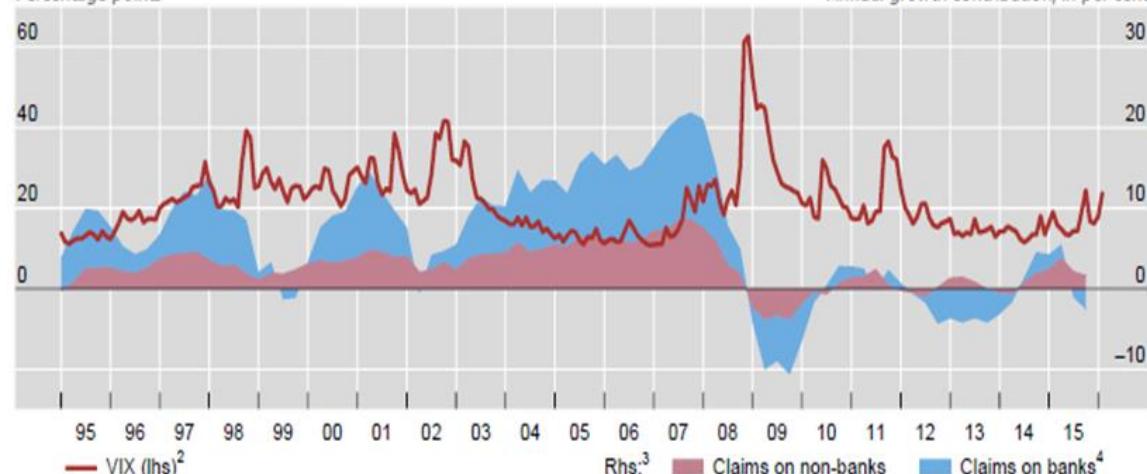
- BIS Global Liquidity Indicators (GLIs) focus on the **international credit** components
  - **High correlation with booms and busts** in global financial conditions
  - **Marginal source** of financing in the run up to crises
  - **Amplifies domestic trends**

International bank credit, international debt securities and volatility

Graph 1

## International bank claims<sup>1</sup>

Percentage points



## International debt securities<sup>5</sup>

Percentage points



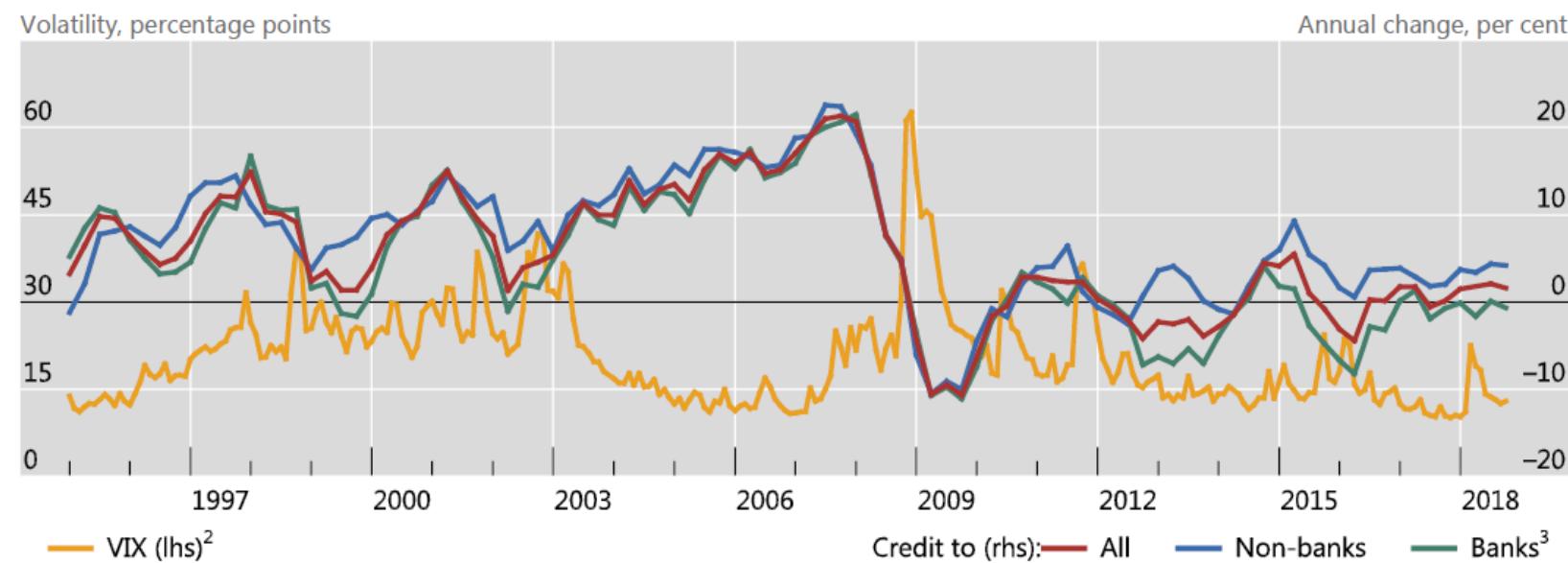
Further information on the BIS global liquidity indicators is available at [www.bis.org/statistics/gli.htm](http://www.bis.org/statistics/gli.htm).

# Global liquidity indicators

- **Banks' international claims**
  - Cross border claims
  - Local claims in foreign currency
- **Total credit by currency** of denomination
  - Bank loans + debt securities credit of non-banks
  - Currencies: USD, EUR, JPY
    - Data split by whether the currency is domestic for the borrower or foreign for the borrower

Growth of international bank credit<sup>1</sup>

Graph A1



Further information on the BIS global liquidity indicators is available at [www.bis.org/statistics/about\\_gli\\_stats.htm](http://www.bis.org/statistics/about_gli_stats.htm).

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

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

# Global liquidity indicators: bank credit

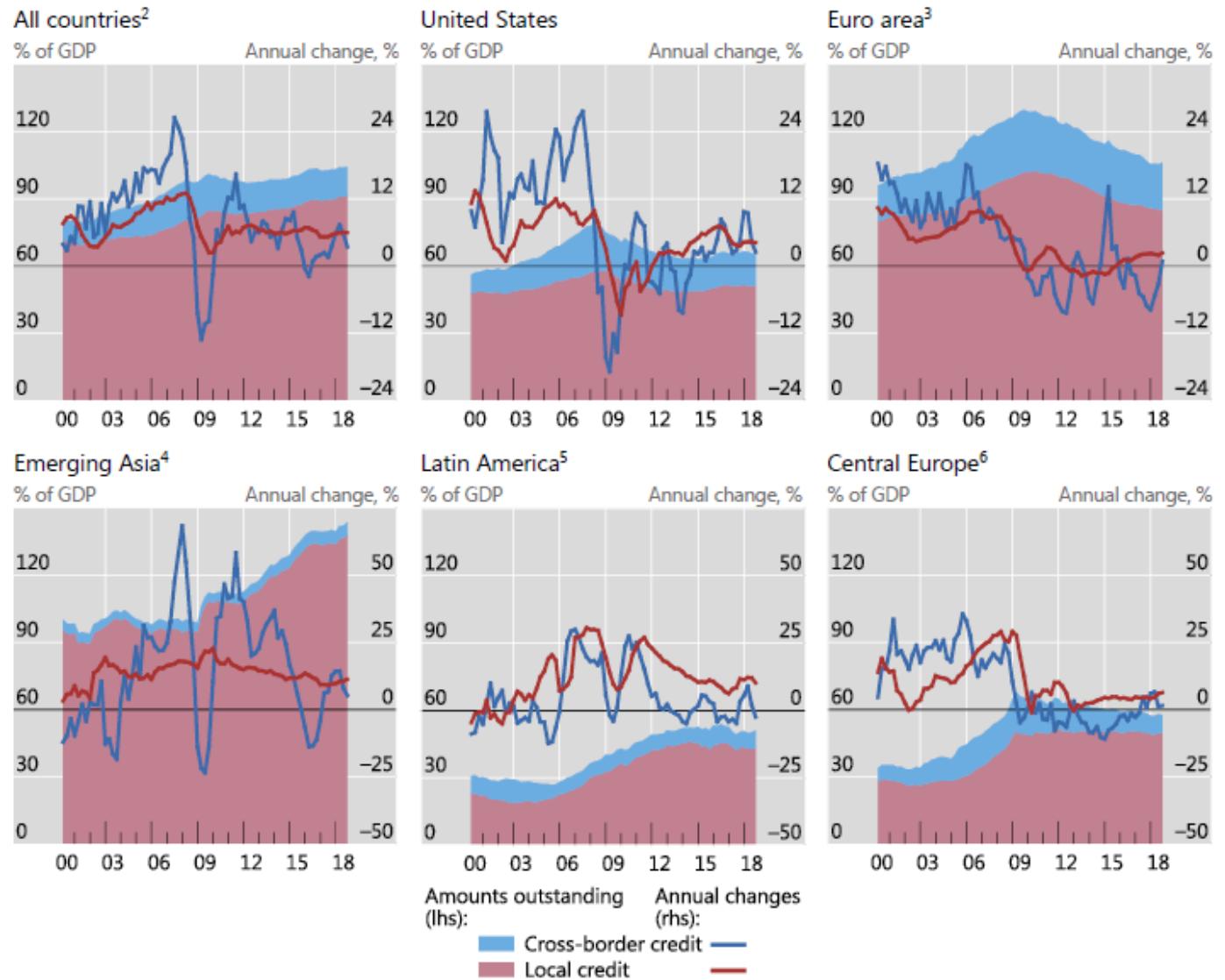
- Global bank credit...

- ...to US and the Euro area in decline after GFC...
- ...but increasing to emerging Asia

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

Banks' cross-border credit plus local credit in all currencies<sup>1</sup>

Graph A2



Further information on the BIS global liquidity indicators is available at [www.bis.org/statistics/about\\_gli\\_stats.htm](http://www.bis.org/statistics/about_gli_stats.htm).

<sup>1</sup> 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. <sup>2</sup> 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. <sup>3</sup> Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal and Spain. <sup>4</sup> China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, Singapore and Thailand. <sup>5</sup> Argentina, Brazil, Chile and Mexico. <sup>6</sup> The Czech Republic, Hungary and Poland.

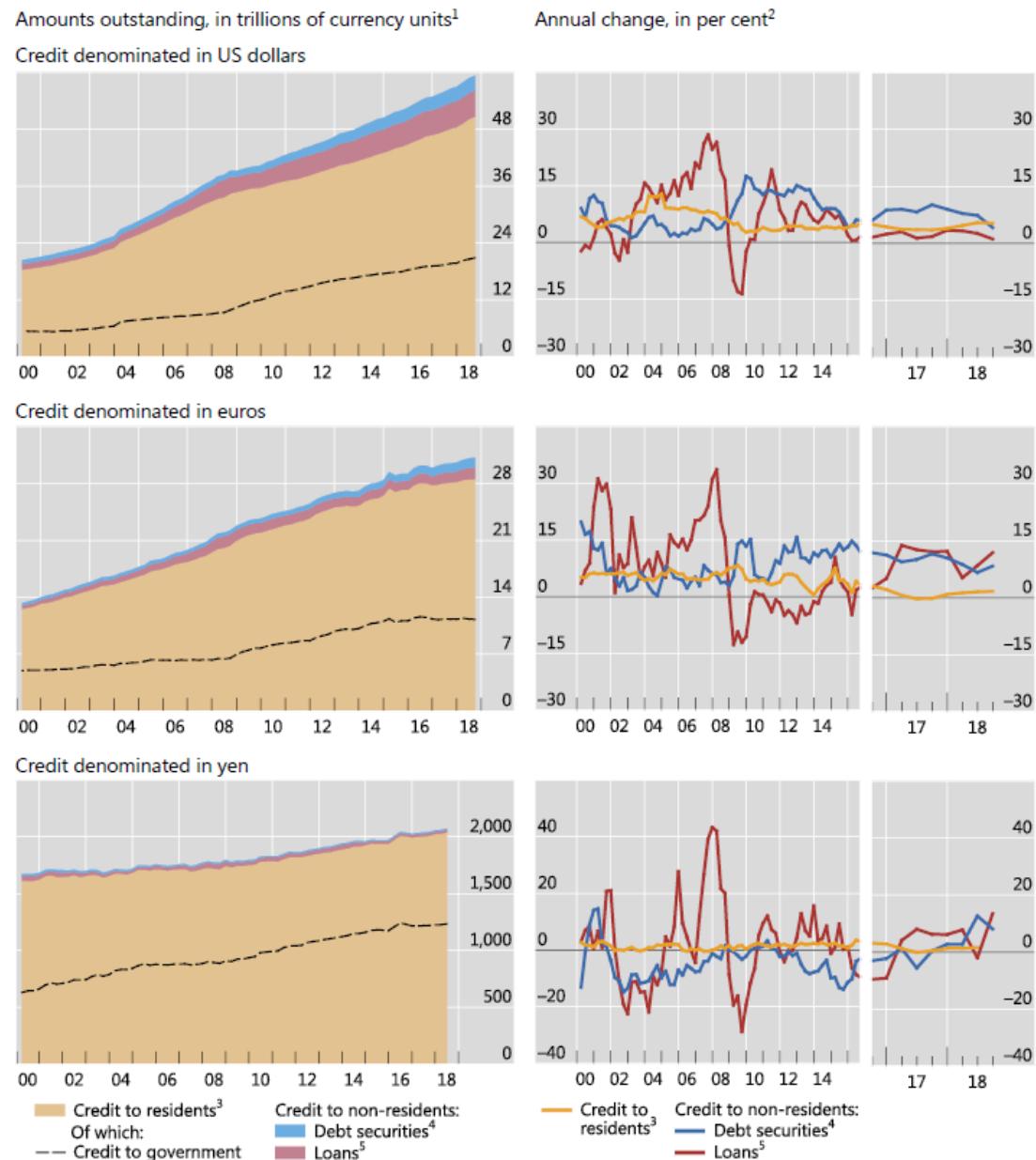
Sources: BIS statistics on credit to the non-financial sector; BIS locational banking statistics (LBS); BIS calculations.

# Global liquidity indicators: by currency

- USD
  - Cross border credit slowing
    - Bonds still growing faster than loans
  - Credit to US residents increasing
  
- EUR
  - Cross border credit growing quickly
    - Both bonds and loans!
  - Credit to Euro area little growth

Global credit to the non-financial sector, by currency

Graph A3



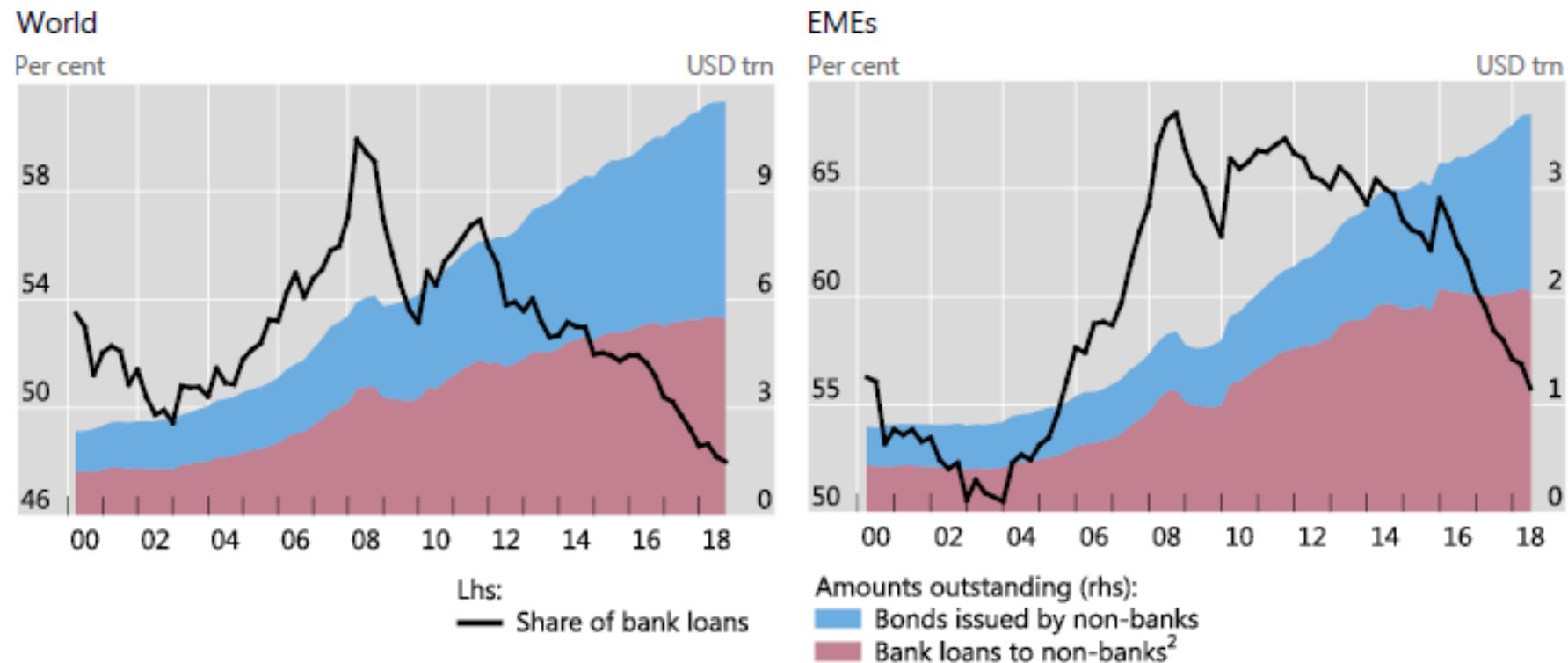
1 Amounts outstanding at quarter-end. Amounts denominated in currencies other than USD are converted to USD at the exchange rate prevailing at end-September 2018. 2 Credit to non-financial borrowers residing in the United States/euro area/Japan. National financial accounts are adjusted using BIS banking and securities statistics to exclude credit denominated in non-local currencies. 3 Excluding debt securities issued by special purpose vehicles and other financial entities controlled by non-financial parents. EUR-denominated debt securities exclude those issued by institutions of the European Union. 4 Loans by LBS-reporting banks to non-bank borrowers, including non-bank financial entities, comprise cross-border plus local loans. For countries that are not LBS-reporting countries, local loans in USD/EUR/JPY are estimated as follows: for China, local loans in foreign currencies are from national data and are assumed to be composed of 80% USD, 10% EUR and 10% JPY; for other non-reporting countries, local loans to non-banks are set equal to LBS-reporting banks' cross-border loans to banks in the country (denominated in USD/EUR/JPY), on the assumption that these funds are on lent to non-banks.

# Global liquidity indicators: USD in world and EMEs

- Dollar credit expanding worldwide
- Bonds now more than 50%
- EMEs still get majority from loans

US dollar-denominated credit to non-banks outside the United States<sup>1</sup>

Graph A4



Further information on the BIS global liquidity indicators is available at [www.bis.org/statistics/gli.htm](http://www.bis.org/statistics/gli.htm).

<sup>1</sup> Non-banks comprise non-bank financial entities, non-financial corporations, governments, households and international organisations. <sup>2</sup> 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.

# Role of bond financing

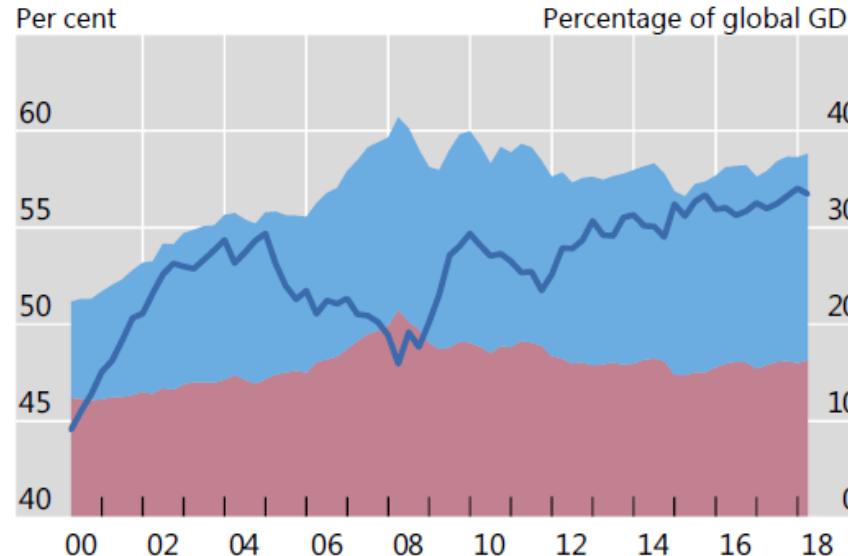
- Bond debt in international credit (all currencies) has increased worldwide
- More bonds than loans for both USD and EUR

The share of debt securities and the US dollar in international credit has risen

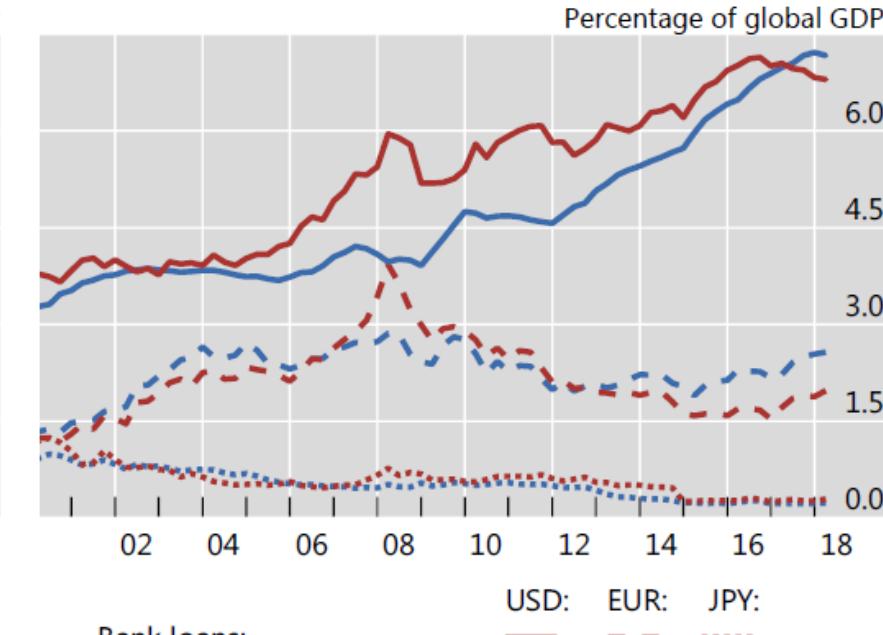
International credit to the non-bank sector, amounts outstanding

Graph 1

International credit to non-banks by instrument



International credit to non-residents by instruments and currency



Lhs:  
— Share of international debt securities

Rhs:  
■ Bank loans<sup>1</sup>  
■ International debt securities<sup>2</sup>

USD: EUR: JPY:  
Bank loans: — — —  
International debt securities: - - - - -

Further information on the BIS global liquidity indicators is available at [www.bis.org/statistics/about\\_gli\\_stats.htm](http://www.bis.org/statistics/about_gli_stats.htm).

<sup>1</sup> Cross-border loans and local loans in foreign currency to non-bank borrowers. <sup>2</sup> 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.

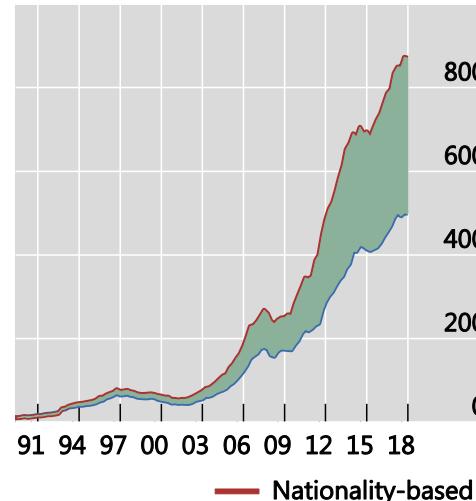
# Offshore debt securities issuance

- Financial and non-financial firms operate **across borders**
  - Foreign affiliates can raise funds abroad
    - generates liabilities ultimately borne by domestic parent
    - **Not captured by standard statistics**

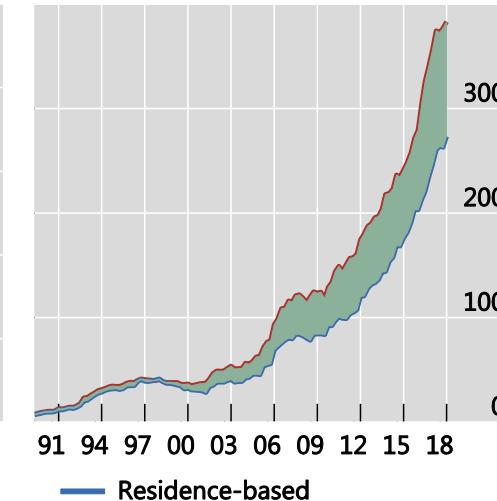
## Emerging markets - international debt securities

Amounts outstanding, USD billion

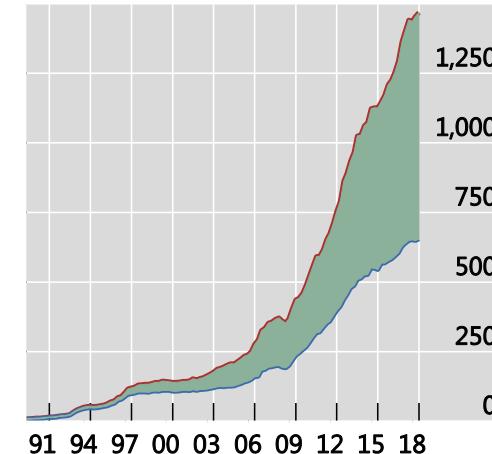
Banks



Non-bank financials



Non-financial corporates

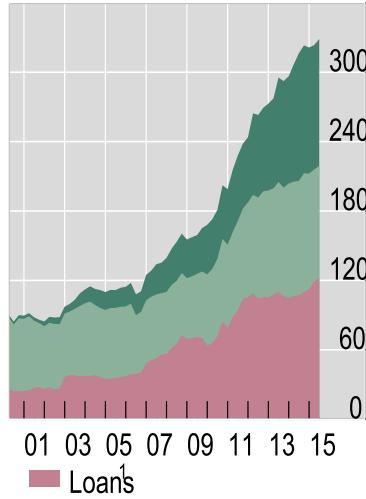


Nationality-based data by sector of the ultimate issuer; residence-based data by sector of immediate the issuer.

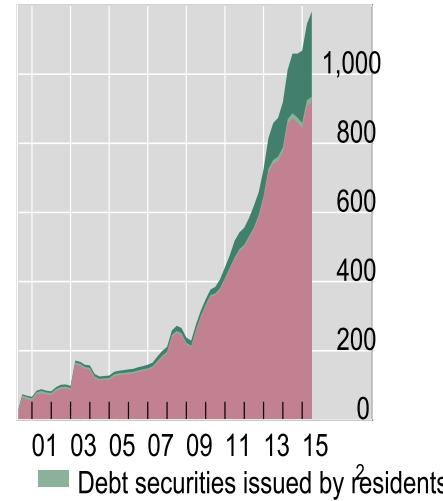
Source: BIS debt securities statistics.

# Global liquidity indicators: USD credit to non-banks + offshore issuance

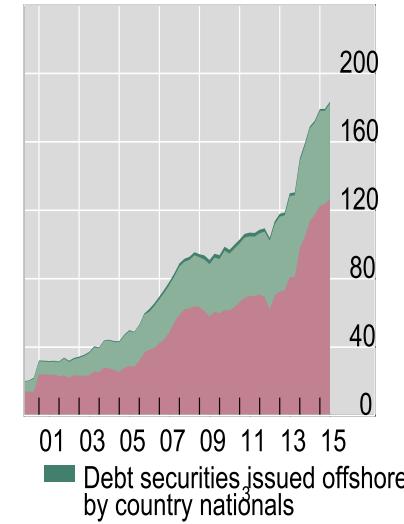
Brazil



China



Turkey



<sup>1</sup> US dollar-denominated loans to non-bank residents of the country listed in the panel titles. For China, locally extended US dollar loans are estimated from national data on total foreign currency loans, assuming 80% are dollar-denominated. <sup>2</sup> Outstanding US dollar debt securities issued by non-bank residents of the country listed in the panel title. <sup>3</sup> Outstanding US dollar-denominated bonds issued offshore (ie outside the country listed in the panel title) by non-banks with the nationality listed in the panel title.

Sources: BIS locational banking statistics by residency; BIS International Debt Securities Statistics; national sources; BIS calculations.

## Other relevant BIS datasets

- **Total credit series**

- Aligns more with financial accounts definitions → borders
- Credit from **all sectors**: domestic banks, cross border banks, non-banks
- **Instruments**: Loans, debt securities (and currency and deposits for government sector)
- **Borrowing sectors**: government, households, non-financial corporations
- Comparable across (40+) countries
- Long time series
  - Facilitates computation of credit-to-GDP gaps

- **Credit-to-GDP gaps**

- Indicator of leverage → excess liquidity creation → vulnerabilities

- **Debt service ratios**

- **Property prices**

- **Foreign exchange and derivatives turnover**

## Looking forward

- Greater financial integration → **global financial conditions have a growing impact on domestic economic conditions**
  - Affects international capital flows & dynamics of credit, financial asset and property prices
- **Global liquidity can contribute to the build-up of financial system vulnerabilities**
  - Large mismatches across currencies, maturities and countries
- **Shortages of global liquidity can have important implications for economic growth**
  - Lessons from the 2008 crisis
- **Assessing global liquidity and utilizing “borderless” measures an important complement to enhanced financial accounts data**
  - More granular data + different measures for a more complete financial stability picture

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