

# 12th UNCTAD Debt Management Conference

Making debt work for development

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## The unfolding debt crisis in developing countries revisited: Overview and recent trends

by

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*The views expressed are those of the author and do not necessarily reflect the views of UNCTAD.*



# How well can emerging market economies (EMEs) cope with global liquidity shocks?

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Panel presentation for 12th UNCTAD conference

"The unfolding debt crisis in developing  
countries revisited: Overview and recent trends"

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# Liquidity concepts

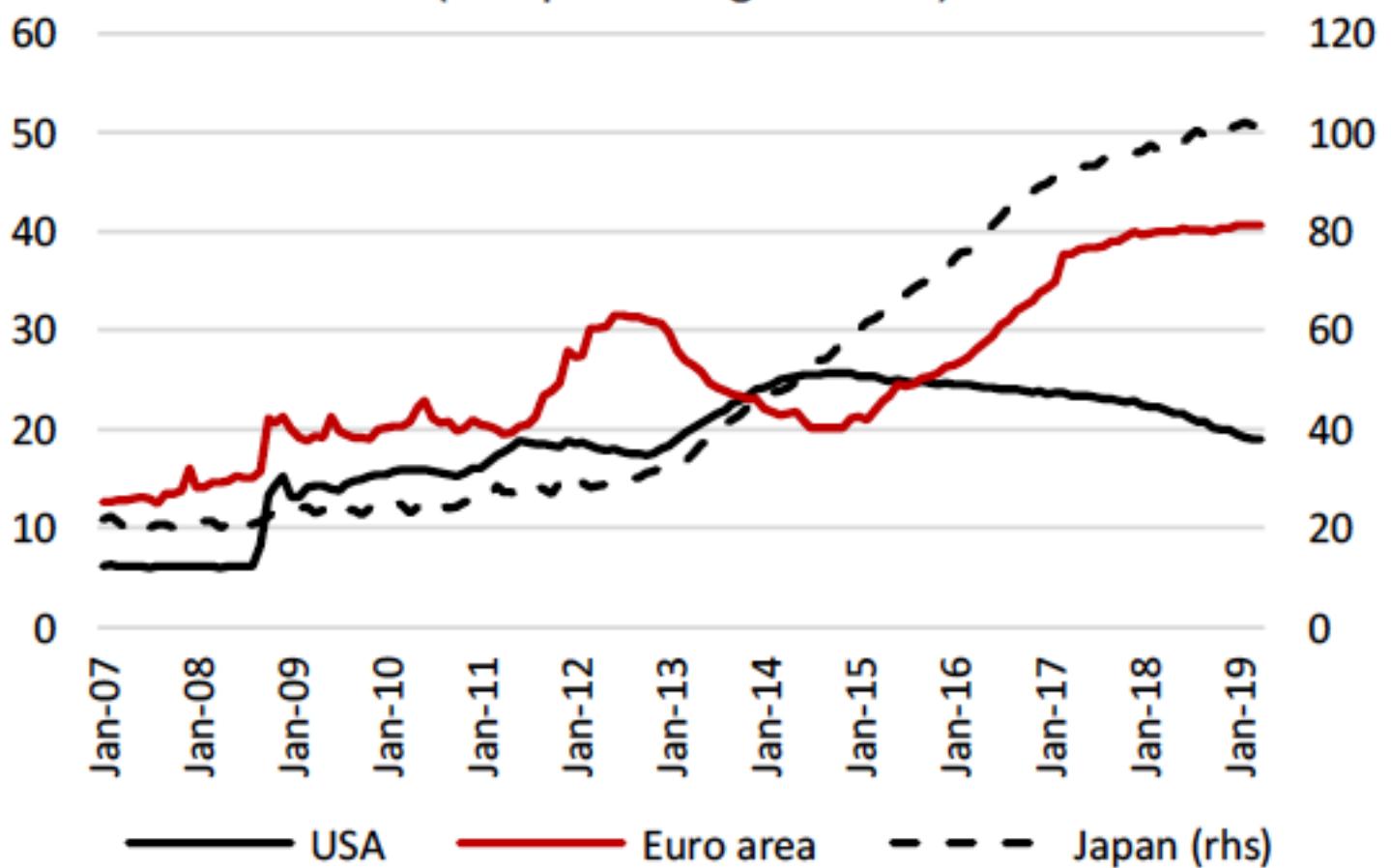
- Funding liquidity. “The amount of funding readily available to finance domestic and cross-border asset purchases.” Chen et al, 2012.
- *Indicators*. Cost of financing (interest rates) or growth in credit. Thus an abundance of liquidity is reflected in easy monetary or financing conditions.
- In FX markets, the global financial crisis (GFC) revealed that liquidity shortfalls may be reflected in gaps between benchmarks (eg LIBOR during GFC) and some FX market determined rate.

Liquidity shock in 2007-2009 GFC  
and aftermath

# GFC followed by dramatic easing in global liquidity

- Global financial crisis (GFC): implosion in global liquidity . Fall in global interbank claims: \$3 trillion in 2008 and 2009 and surge in demand for liquid assets, especially USD. (more details later).
- Easier monetary policy and large scale provision of liquidity in interbank and FX markets saved the financial system – right response but it has been hard to reverse the easy financing, which poses risks
- More than 10 years after outbreak of GFC, still easy financing conditions.
  - ***Still high official liquidity*** (Graph below) Large central bank balance sheets (reflecting “quantitative easing” or large scale asset purchases. In recent years Fed has reversed some earlier increases in its balance sheets. However ECB and BoJ balance sheets have continued to grow.
  - **Low and in some areas negative policy rates** (ECB, BoJ, SNB, not shown). Fed has recently reversed tightening.
  - ***Still negative term premium*** (Graph) contributing to low long term bond yields (blue line). Long term expectations of world short rate still low. Risks of a snapback?

### Central bank balance sheet - Major Central Banks (as a percentage of GDP)

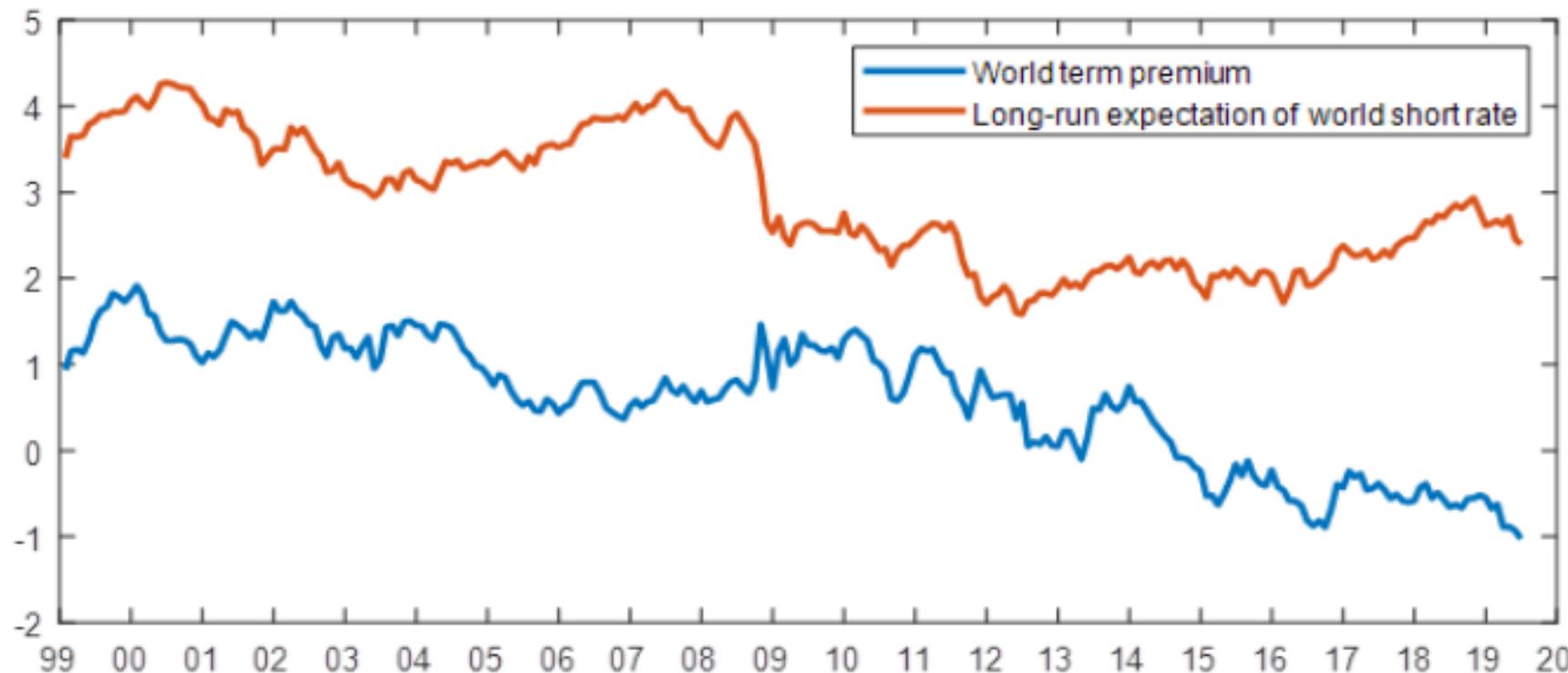


Last Observation: Apr-19

Source: BIS Annual Report, June 2018 (updated)

## “World” long-term interest rate

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Source: Hördahl et al (2016) updated

Hördahl, P, J Sobrun and P Turner (2016): “Low long-term interest rates as a global phenomenon”, BIS Working Papers, no 574, August.

# Trends in global liquidity

Growth in cross border financing

Shift to bond financing as opposed to bank financing (financial regulation increases cost of capital)

Fed scaling back balance sheet and ECB expanding it may have contributed to relative increase in Euro financing.

# Global liquidity (BIS aggregate)

**Foreign currency credit (loans + bonds) to non-resident non-banks**

... growing by 5% a year post-GFC

1. Measure of gross foreign currency liabilities.
2. Strong growth in credit relative to GDP suggests *increased leverage and costs of cross border financing are low*
3. But not a precise measure of liquidity: because no data on the maturity of liabilities

# US dollar credit to non-banks outside the US

**\$11.9 trillion 2019 Q2 – about 14% of world GDP from 10% in 2007**

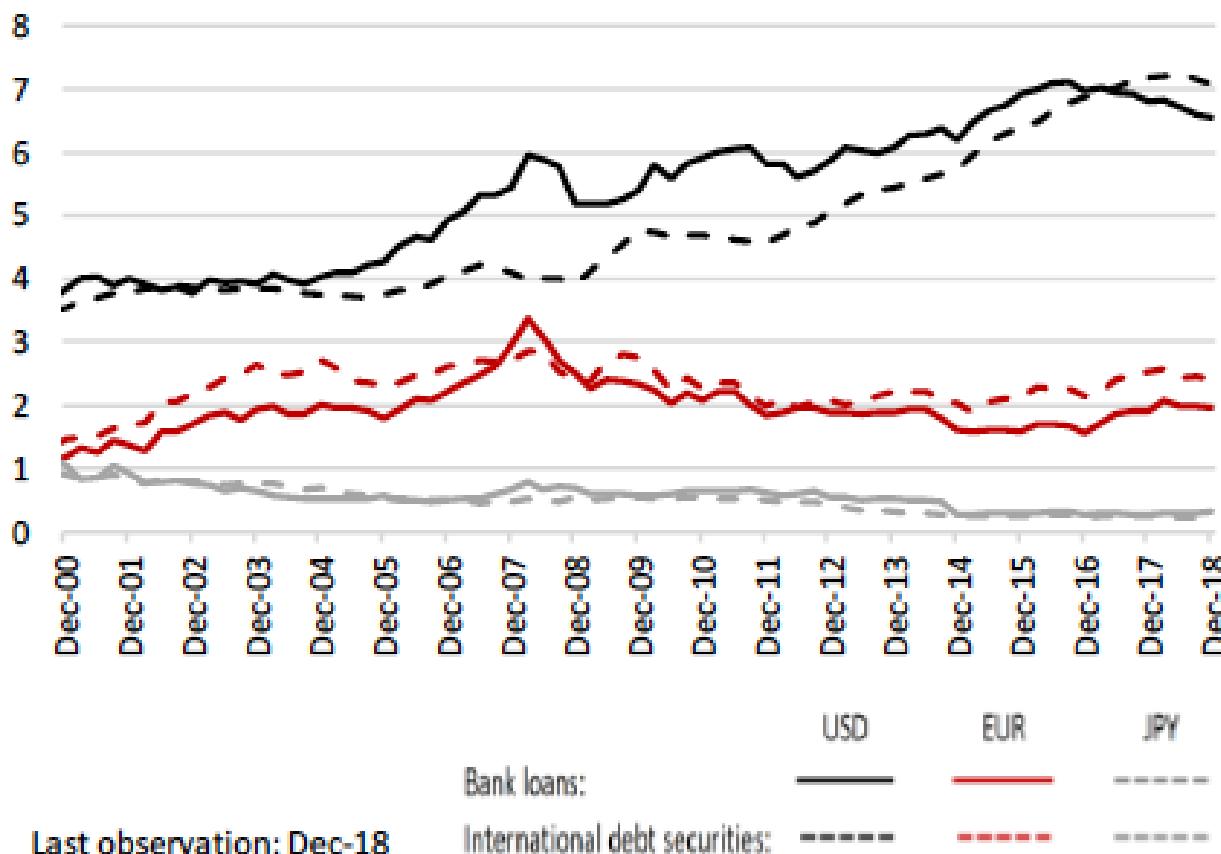
New and opaque risks as capital markets overtake bank loans

Rapid growth in credits to EMEs

But recently **non-\$ credit growth** exceeds \$ credit growth

- \$ credits up 4% since last year
- € credits up 9% to \$3.4 trillion
- Yen credits up 8% to \$0.5 trillion

International credit to non-residents non-banks  
(as a percentage of global GDP)



Source: BIS, Global Liquidity Indicators

# Factors affecting EMEs ability to cope with global liquidity shocks

- Availability of global lender of last resort and other support to financial sector, as well as policy environment (strength of financial sector, policy space)
- Currency and maturity mismatches

# GFC and need for Global Lender-of-Last Resort (LOLR)

- 2007-2008 unfolding GFC created USD shortages apparent in dislocations in USD FX markets. Some characteristics
- **Strong demand for USD by non-US banks**, which had to raise USD to maintain very large investment positions in USD. For euro area, UK and Swiss banks on-balance-sheet dollar exposures estimated at over USD 8 trillion in 2008, of which over USD 1 trillion was funded short-term.
- **Heavy reliance on wholesale financing by non-US banks**. Lacking a USD deposit base, non-US banks relied heavily on wholesale financing including money market funds and FX swap markets and interbank borrowing.
- **Less willingness or capacity of banks to lend USD in money or FX markets**. Non-US banks began having difficulties obtaining USD from their traditional sources. Reflected in anomalies in pricing in FX interbank markets. Widening spreads between USD Libor and OIS (overnight indexed swap) or deviations between LIBOR and the US dollar interest rate implied by foreign exchange swap markets .
- **EMEs capacity to cope significant but limited**. Large foreign reserve holdings helped EMEs maintain stability. However, a financial crisis in the US disrupting global liquidity and the global financial system could not be handled by EMEs indefinitely.
- **Global lender of last resort needed to offset liquidity shock**. No official global LOLR exists but the Federal Reserve responded by providing very large amounts of USD liquidity

## GFC and Global LOLR type response (continued)

- Federal Reserve provided USD via short term FX swap arrangements (ie in exchange for foreign currency) with other major central banks. Key features
- High and later unlimited ceilings for advanced economy counterparts. EU: as high as USD 240 billion in September 2008 and unlimited shortly afterwards. Ensured enough dollars supplied to end disruptions in USD market. Some EMEs were given access to this facility but use was more limited. However use by South Korea very instructive as research indicates that USD supplied by Korean authorities funded by swap lines reduced dislocations in Won-USD markets, whereas USD supplied from Korea's FX reserves did not.
- Fed LOLR type activity via foreign central banks who would supply USD to financial institutions facing USD liquidity shortages in their respective jurisdictions.
- Could be implemented immediately because allowed by existing US legislation, even today
- The swap lines (liquidity lines with pre-set expiration dates) were converted to standing facilities on 31 October 2013. These facilities established a network in which a set of major currencies, including the USD were made available via these standing facilities. Reduced uncertainty as to whether and when these arrangements would be renewed.

**Nevertheless not clear to what extent global capacity to respond to global liquidity shocks has improved. (1)  
Imbalances persist (2) While key liquidity facilities remain in place and banks are more robust, some facilities used  
in GFC now require congressional approval (3) policy space more limited.**

Sources: Board of Governors of the Federal Reserve System, Central Bank Liquidity Swaps.  
[federalreserve.gov/newsevents/pressreleases/monetary20080918a.htm](http://federalreserve.gov/newsevents/pressreleases/monetary20080918a.htm).

Linda S. Goldberg, Craig Kennedy, and Jason Miu (2011), Central Bank Dollar Swap Lines and Overseas Dollar Funding Costs, FRBNY Economic Policy Review, May.

Baba, N and I Shim (2014). Dislocations in the Won-Dollar Swap Markets during the crisis of 2007-2009.

Int. J. Fin. Econ. 19: 279–302 (2014)

# Imbalances persist: International hunger for liquid \$ debt

- Supply of ultimate safe asset of US Treasuries is too small ... so markets create new but riskier alternatives (Landau (2017))
- Global banks outside the US: vulnerable dollar lending
  - \$ debts of non-US banks exceed the total liabilities of banks operating within the US (Cecchetti and Schoenholtz (2014))
  - IMF: \$ assets at \$12.4 trillion and \$ liabilities at \$11 trillion ... Hence, cross-currency funding gap widens to \$1.4 trillion (IMF (2019))
  - Increased reliance on forex swaps ... short-term and volatile funding
- "Dollar intermediation that lacks a clear LOLR – a vacuum that could generate a problem " BIS General Manager, Agustin Carstens (Hinge (2019))

Landau, J-P (2017): "Debt as money: implications for financial stability" Keynote speech

Cecchetti, S G and K L Schoenholtz (2014): "The dollar is now everyone's problem" Money, Banking and Financial Markets blog, 29 September

International Monetary Fund (2019): "Banks' dollar funding: a source of financial vulnerability" *Global Financial Stability Report*. October

Hinge, D (2019): "The great wave: global liquidity in a turbulent world" *Central Banking* 7 August

# US financial support policies and policy environment: changes since GFC

**Support facilities still in place and stronger financial system**

**Facilities allowed or still in place**

8 domestic lending facilities

1 Guarantee program (FDIC transaction account)

**Network of major currency standing FX swap lines**

(successor to short term swap lines)

**More/better bank capital lower leverage (calibrated via stress testing)**

**More effective supervision/regulation**

**Reduced support, less space for macro stimulus**

**Facilities/programs no longer allowed without congressional approval**

4 domestic lending facilities

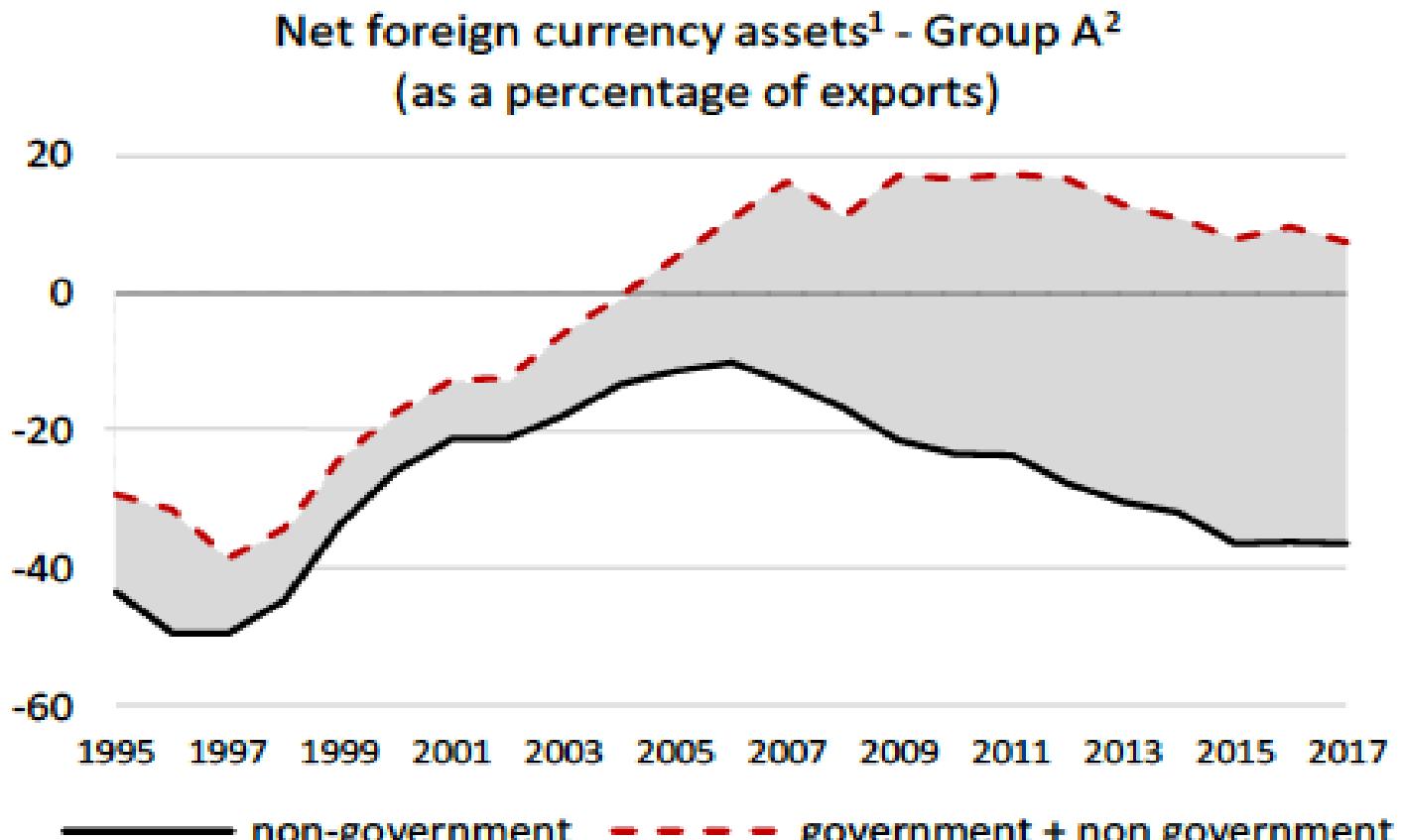
4 guarantee programs

4 capital programs

**Less fiscal or monetary space for stimulus (high public debts, already low interest rates)**

# Summary

- Network of FX swaps may function as a Global LOLR if disruptions to global financial system large.
- GFC showed that a Global LOLR can benefit the major economies : (1) Compensating for USD liquidity shortfalls contributed to financial stability in the US and elsewhere by averting potential runs and bankruptcies; (2) Cross border LOLR provided by swap lines helped preserve the USD role as major global currency.
- Banking institutions are stronger, more and better regulation/supervision and capital.
- Formal Global LOLR does not exist, which poses risks as there are still large global imbalances in USD financing.
- Less room for discretion in providing financial support, at least in the US. Although key liquidity support facilities remain in place, many facilities used during GFC have been discontinued, and would require congressional approval.
- Less room for expansionary fiscal (due to large public debts) and monetary (due to already low interest rates) policies.



<sup>1</sup>For net foreign currency assets, outstanding positions at year-end.

<sup>2</sup>Calculated with aggregates of Brazil, Chile, Colombia, the Czech Republic, Hungary, Indonesia, Malaysia, Mexico, Peru, the Philippines, Poland, South Africa, Thailand and Turkey

Source: M Chui, E Kuruc and P Turner (2016)

Chui M, E Kuruc and P Turner (2018): “A new dimension to currency mismatches in the emerging markets: non-financial companies” *The World Economy* Vol 41, no 12, Special Issue on Global Trade, February

# Currency mismatches may impair ability to cope with global liquidity shocks

- EME currency mismatches have grown from 2009 as Net foreign currency assets declined
- *Official sector*: Positive net foreign currency asset balance so that its balance sheet improves as currency depreciates. In many cases this reflects large foreign reserves.
- *Private sector*: *Net foreign currency asset positions negative*. Even firms without dollar earnings borrow dollars. Net foreign currency liabilities of medium-sized EMEs reach 40% of their annual exports -- 10% pre-crisis (Chui et al (2018)). Private sector balance sheets will worsen in domestic currency depreciates.
- ***Foreign reserves can be used to stabilize the exchange rates and prevent losses but several disadvantages*** (i) costly to accumulate foreign reserves (quasi-fiscal cost from sterilized purchases of foreign currency); (ii) sudden drain in foreign reserves during episodes of sharp depreciation might be seen as unsustainable, leading to speculative attacks on currency; (iii) large presence of central bank in FX markets can distort them, impairing market deepening and price discovery
- Instead some countries have improved resilience to FX liquidity shocks using two types of hedges: (1) Brazil: central bank foreign reserves back hedges against depreciation that stabilize financial position of private sector using nondeliverable derivatives contracts that pay in local currency (2) Chile (and also Colombia): private sector pension funds back similar hedges to private sector, facilitating much more limited central bank participation in FX related derivatives market

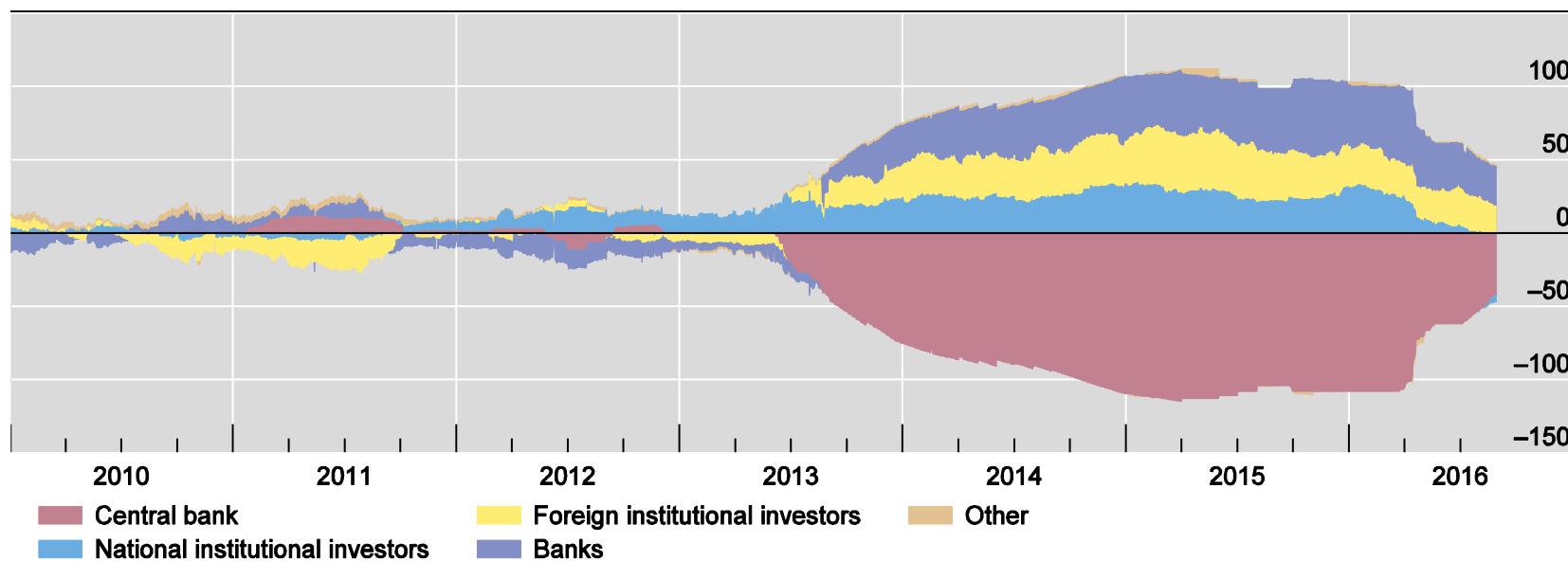
# Example 1 Brazil: hedging in derivatives markets by central bank

- Graph below. Both domestic and foreign institutional investors, and banks have taken USD **long** nondeliverable futures positions in Brazil futures market, in effect taking hedges against BRL depreciation.
- The **Central Bank of Brazil has taking USD short position, in effect providing hedges against BRL depreciation via a nondeliverable futures instrument** with a notional value in USD but settled in local currency.
- **No drain on foreign reserves.** Since settlement in the Brazilian derivatives markets is in local currency, the intervention does not directly increase the supply of USD in the FX market but is likely to reduce the demand for USD.
- **Payouts offset by capital gains.** The hedge offsets losses of borrowers in foreign currency during periods of depreciation, thus stabilizing their financial position. At the same time the cost of making payments on the hedge is offset by the capital gains the central bank obtains from its foreign reserve holdings when the BRL depreciates
- **Hedges against FX depreciation may be more easily reduced during periods of appreciation.** Graph: After the central bank stopped issuing new hedges the position remained stable for an extended period in 2015. However, the position was reduced significantly following the rebound of the BRL after early 2016 as the central bank took measures to reduce its exposure.
- **Others have adopted similar instrument.** Eg Bank of Mexico in 2017.
- **Caveats:** Official participation may still be large. Some participants may still require delivery of USD to meet their obligations.

## Brazil: FX derivatives exposure by type of investor<sup>1</sup>

Net long positions in US dollars; in billions of US dollars

Graph A6



<sup>1</sup> Sum of net positions on USD futures, DDI futures and swap cambial.

Sources: Bloomberg; national data; authors' calculations.

Source: BIS (2017): Foreign exchange liquidity in the Americas, BIS Papers 90. Report submitted by a study group established by the BIS CCA Consultative Group of Directors of Operations (CGDO) and chaired by Susan McLaughlin, Federal Reserve Bank of New York.

## Example 2 Chile: hedging in private markets

- Over a period of years, pension funds in Chile were allowed to acquire foreign assets. As their liabilities were in pesos *they were required to hedge their currency exposure.* They did so by entering into nondeliverable forward contracts that would compensate them if the CLP appreciated. In so doing, they also provided USD hedges to their counterparties, compensating them if the CLP depreciated.
- Graph. In the CLP derivatives markets, foreign investors have taken long positions in foreign currency, as have real sector corporations. They demand FX cover presumably to hedge CLP assets or external borrowing, respectively. As for non-bank financial institutions, including pension funds and insurance companies, they have hedged the FX exposure from their accumulated foreign asset positions by taking a USD short position in the forward market. They thus provide cover for FX risk.

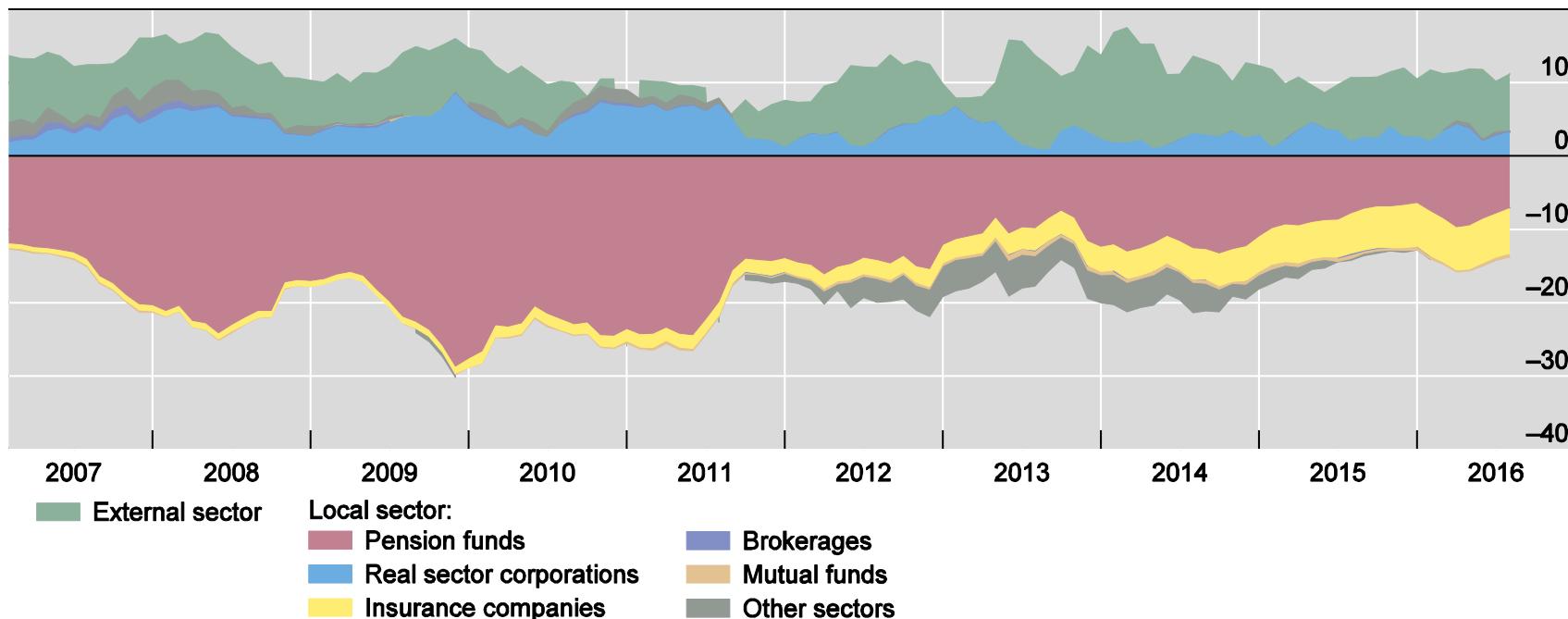
### References

- Avalos, F and R Moreno (2013): Hedging in derivatives markets: the experience of Chile. BIS Quarterly Review,  
BIS (2017): Foreign exchange liquidity in the Americas, BIS Papers 90. Report submitted by a study group  
established by the BIS CCA Consultative Group of Directors of Operations (CGDO) and chaired by Susan McLaughlin, Federal Reserve Bank of New York.

## Chile: FX derivatives positions in the local FX market<sup>1</sup>

Net long positions of foreign currency; in billions of US dollars

Graph A4



<sup>1</sup> Includes all open positions at the end of each month of all FX instruments used by banking corporations and other entities in the formal local FX market.

Source: Central Bank of Chile.

Source: BIS (2017): Foreign exchange liquidity in the Americas, BIS Papers 90. Report submitted by a study group established by the BIS CCA Consultative Group of Directors of Operations (CGDO) and chaired by Susan McLaughlin, Federal Reserve Bank of New York.

## Example 3 Korea: Can reduce currency mismatches but face maturity mismatches

- In Korea, banks purchased domestic bonds to offer Won hedges to exporters (eg shipbuilders) expecting to receive USD in the future
- Positions financed by short term USD borrowing from foreign bank affiliates in Korea. As crisis cut the availability of such financing, these positions could not be maintained and there were significant shortfalls in FX liquidity.
- Lessons: Even if hedging limits currency mismatches, liquidity problems can still arise due to maturity mismatches in foreign currency

Baba, N, and I Shim (2010). Policy responses to dislocations in the FX swap 1 market: the experience of Korea, *BIS Quarterly Review*, June.

Baba, N and I Shim (2014). Dislocations in the Won-Dollar Swap Markets during the crisis of 2007-2009. Int. J. Fin. Econ. 19: 279–302 (2014)

# Summary: experiences with hedging in FX markets

- *Private sector, as well as central banks, can play an important role in supplying foreign currency hedges in EMEs* and stabilizing markets during periods of stress. For the CLP and COP (not shown) FX markets, private non-bank financial investors (pension funds and, in Chile, also insurance companies) have been major providers of hedges in FX derivatives markets. In Chile, pension funds have in some cases stabilised markets during episodes of stress and local currency depreciation by repatriating offshore investments in foreign currency.
- Use of nondeliverable forward or futures instrument stabilizes the financial position of debtors in foreign currency by compensating them during periods of depreciation.
- A key feature of the nondeliverable or futures contracts is that payouts are made in local currency during currency depreciation episodes. This stabilizes the financial of the counterparty facing depreciation risks. At the same time, payment is in local currency when supplier of USD hedges is experiencing capital gains from their foreign asset holdings and there is no direct drain on foreign assets of provider of hedge.
- FX derivatives market experiences not always benign.
  - In contrast to the examples cited above, pension funds could take positions speculating against the local currency if they are not required to hedge their currency exposures.
  - During 2007-2008 crisis some emerging market firms took derivative positions that bet on domestic currency appreciation. Depreciation pressures and the sudden interruption of foreign currency inflows as a result of the crisis produced losses on these positions, threatening the financial position of otherwise solvent firms.

# Extra slides

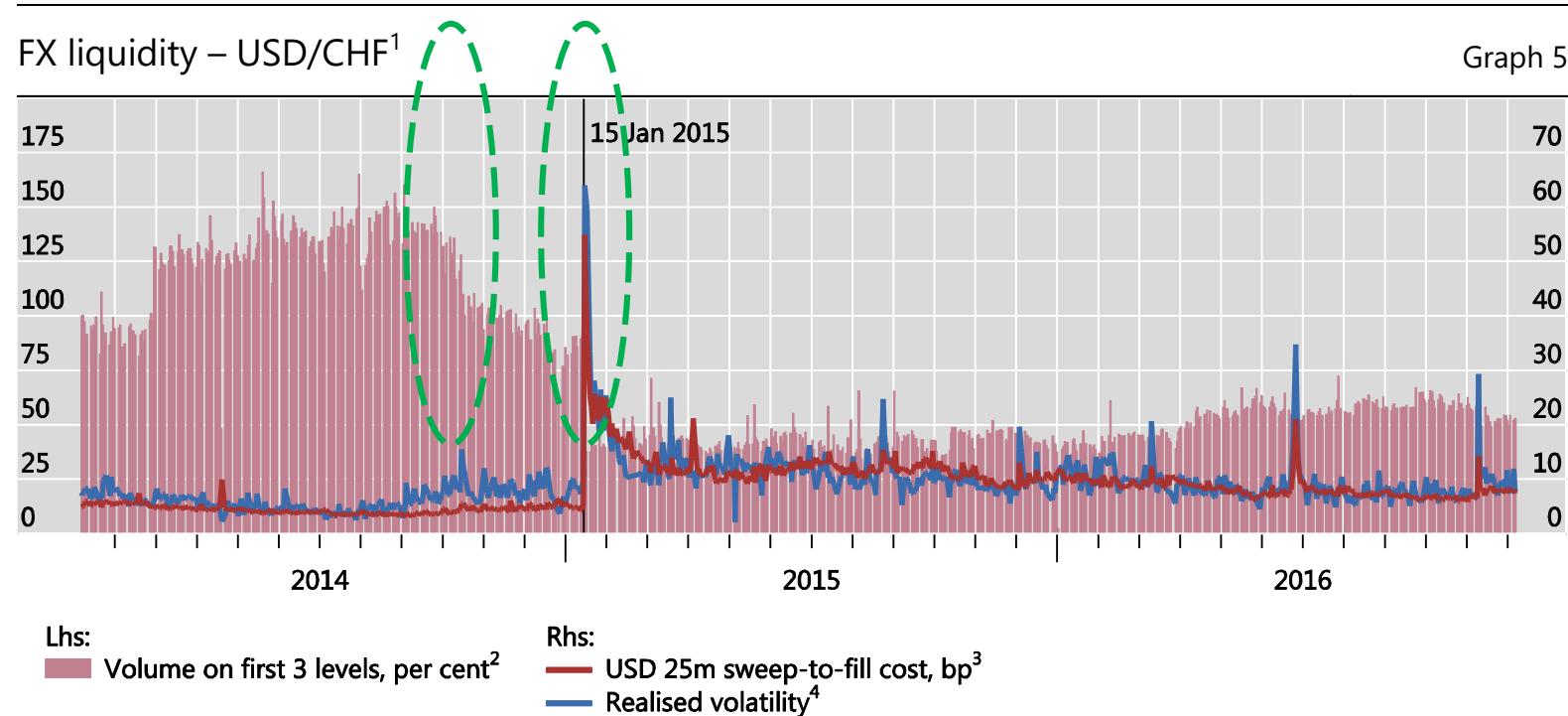
# Possible future liquidity shock scenario?

- GFC resulted in capital, leverage and proprietary trading regulation intended to discourage risk-taking. Other factors have also reduced risk tolerance, eg penalties in response to scandals; changes in the types of market participants.
- Possible effects of lower risk tolerance:
- Reduce bank FX dealers ability or willingness to engage in type of liquidity provision that results in warehousing risk, reducing their participation in FX markets;
- In general post GFC regulation seen as FX liquidity reducing
- Question: could reduced liquidity from banks contribute to future stress in FX markets.
- Have seen episodes of persistent declines in FX market liquidity, eg in aftermath of full float of CHF in January 2015.

No recent crises from global FX markets but occasional liquidity shocks in FX market segments with persistent effects: 2015 EUR/CHF float.

- Graph: three liquidity metrics for USD/CHF, based on electronic trading venues data: market volume, bid-ask spread (here a sweep-to-fill cost for \$25 million), and daily realised volatility of returns.
- A market where the weighted average bid-ask spread does not increase much with trade size is said to be “deep”.
- 15 Jan 2015 full EUR/CHF float. On day of float (i) Market turnover halved and remained well below pre-float levels up to late 2016. (ii) The estimated \$25 million bid-ask spread spiked to around 55 bp, while daily realised volatility rose to around 60%. (iii) Both metrics have remained above pre-float levels since. The increased volatility after the CHF float had a significant impact on spreads.
- *Bottom line. Significant and persistent reduction in liquidity indicators observed after the CHF float of January 2015, and even earlier. Saw reduction in turnover for an extended period as well. More formal analysis could possibly uncover drivers of such changes and possible risks to market sentiment and liquidity.*

## Three market liquidity indicators before full EUR/CHF float



<sup>1</sup> Daily averages based on data from 08:00 to 18:00 GMT. <sup>2</sup> Estimate of aggregated volume on the first three levels on interbank electronic trading venues (primary and secondary), indexed to 100% on 6 January 2014. <sup>3</sup> Estimated spread between volume-weighted average price, on the bid and offer side of the order book, on primary interbank electronic trading venues. <sup>4</sup> Figures multiplied by 1,000. Estimated daily realised volatility based on the standard deviation of five minutes returns, based on primary interbank electronic venue data.

Sources: BNP Paribas; primary and secondary electronic trading venues.

Source: BIS (2017): Foreign exchange liquidity in the Americas, BIS Papers 90. Report submitted by a study group established by the BIS CCA Consultative Group of Directors of Operations (CGDO) and chaired by Susan McLaughlin, Federal Reserve Bank of New York.

## Reliance on international bonds, not banks

### **Share of international banks in \$ credits**

Rise pre-GFC from 50% to 60%

Falls post-GFC

***Tripling of \$ bonds issued by non-banks outside the US: now \$6 trillion from just over \$2 trillion in 2007***

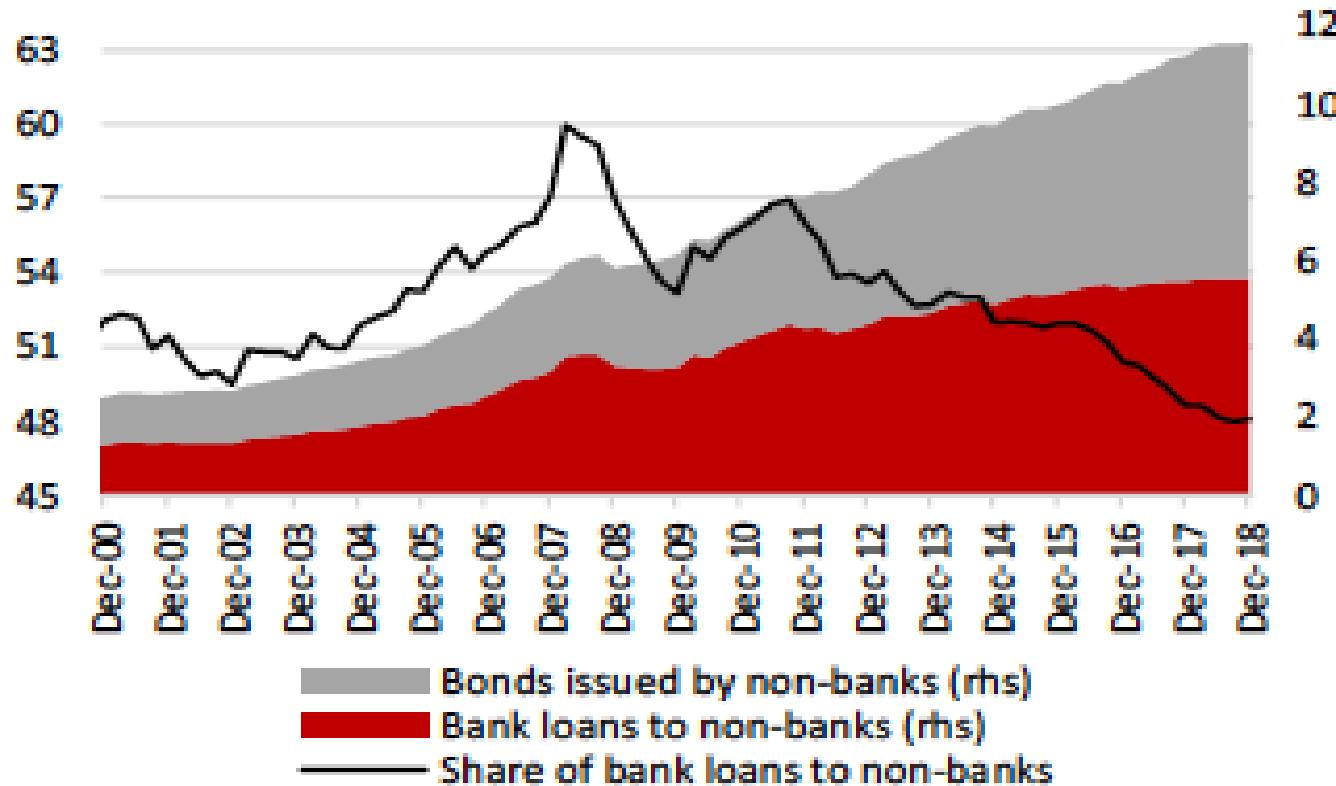
Average yield in global bond market now 1.7%

**World long-term rates, not short rates, key for global spillovers** (Clark et al (2018))

Local banks: EME companies with \$ debts cut their local bank deposits when global liquidity tightens (Turner (2014))

A recipient EME with greater macro-financial vulnerabilities most affected by spillovers (Mehotra et al (2019))

**US-dollar denominated credit to non-banks outside the USA**  
(lhs: per cent; rhs: USD trillions)



Last observation: Dec-18

Source: BIS, Global Liquidity Indicators

# Bond finance: worries and policies

**At least four worries** (See OECD (2019), Tran (2019))

*Maturity of bonds* rises – investors face greater risk from higher rates

*Credit quality* on non-financial corporate bonds deteriorates

*Structured products.* Rise in floating-rate leveraged loans. Outstanding in US and Europe exceeds \$2 trillion, above 2007 peak. Packaged into CLOs. Covenants diluted (OECD (2019))

*Liquidity illusion.* Instant access funds with a daily price but illiquid underlying assets

## Policies

Macroprudential policies do not address maturity mismatches and leverage in non-banks (Mizen et al (2018), Tran (2019))