



BANK FOR INTERNATIONAL SETTLEMENTS

Consequences of ageing for international finance

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Bank for International Settlements

G20 Symposium: "For the Better Future: Demographic Changes and Macroeconomic Challenges"

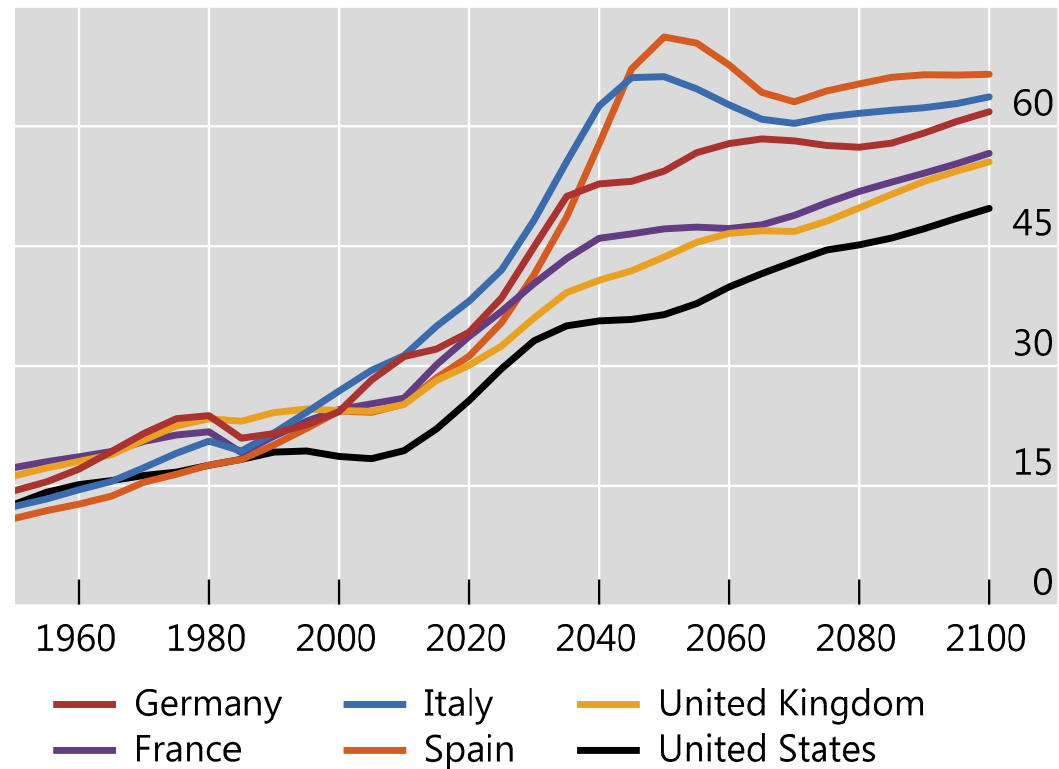
Tokyo, 17 January 2019

* The views expressed here are mine, not necessarily those of the Bank for International Settlements.



Old age dependency ratio

Ratio of population 65+ per 100 population 15-64¹

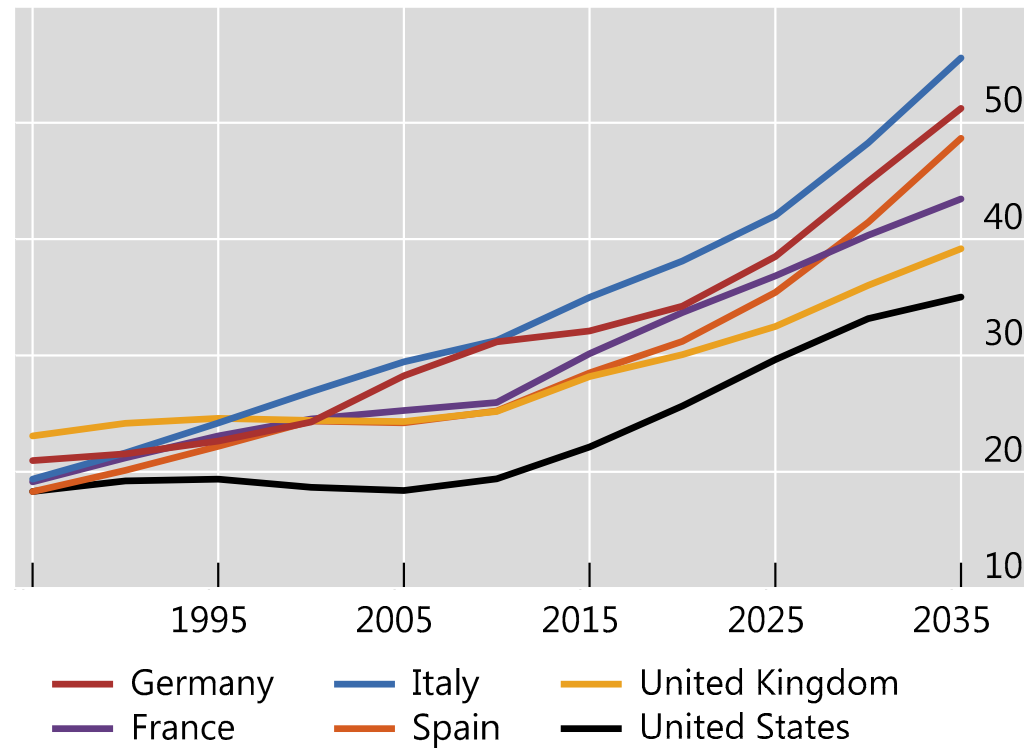


¹ Forecast based on the medium fertility variant, 2015 -2100

Source: United Nations

Old age dependency ratio

Ratio of population 65+ per 100 population 15-64¹

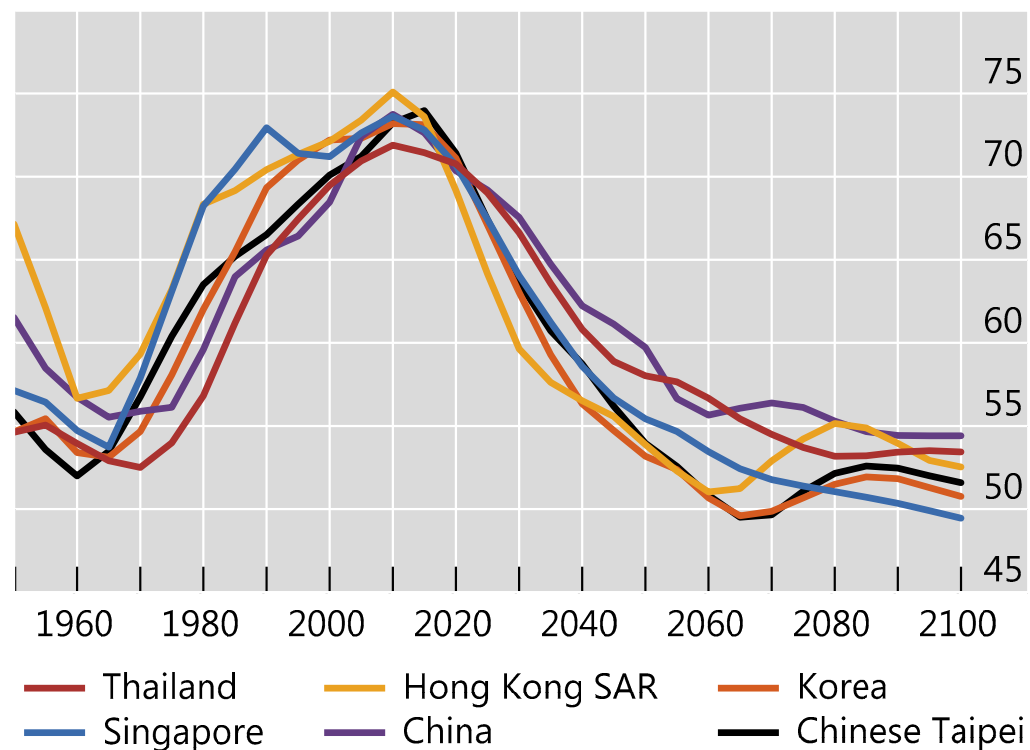


¹ Forecast based on the medium fertility variant, 2015 -2100

Source: United Nations

Working age population¹

As a percentage of total population, %

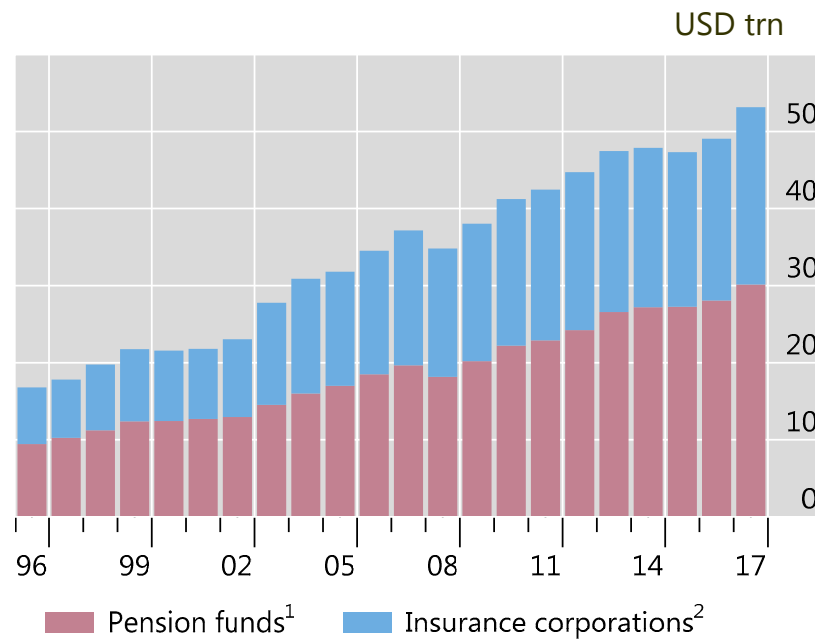


¹ Calculated as population 15 to 65, as a share of total population.

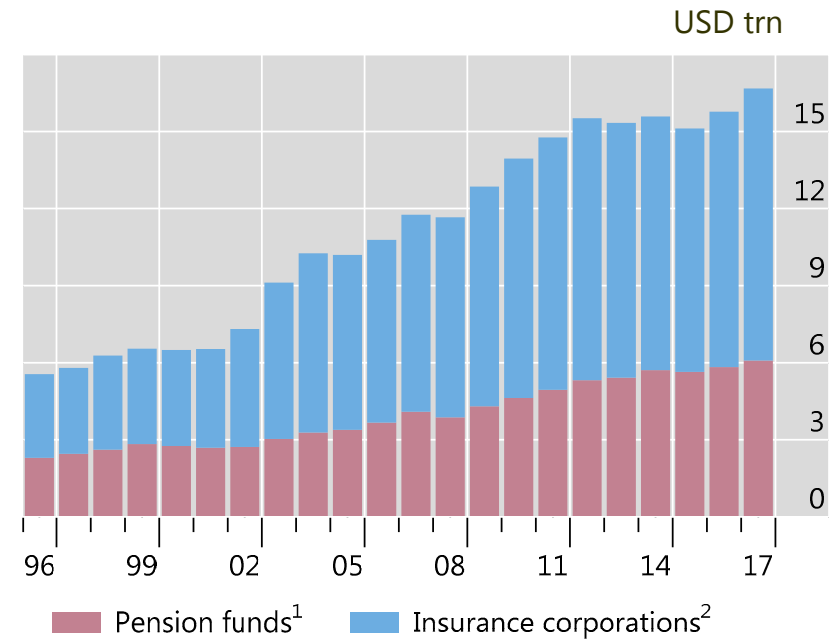
Source: United Nations.

Pension funds and insurance corporations

Financial assets



Debt securities

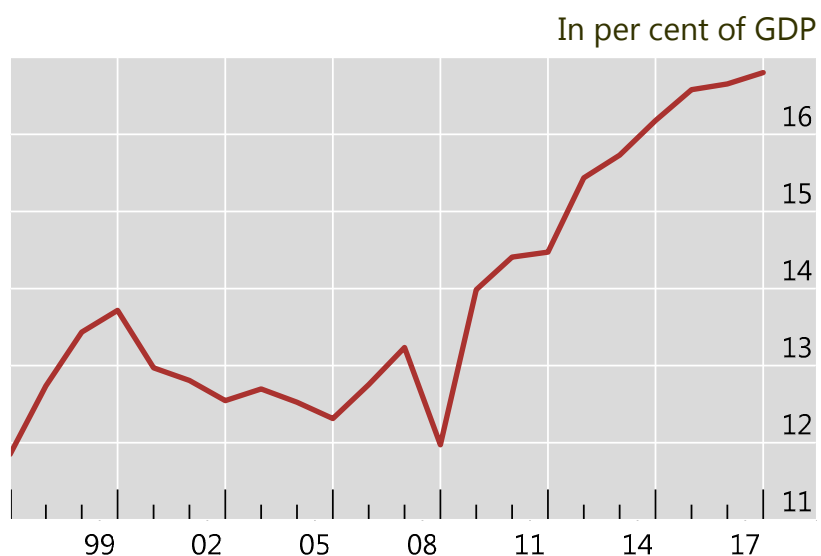


¹ AT, BE, CA, DE, DK, ES, FI, GB, HU, JP, NO, SE and US. ² AT, BE, CA, DE, DK, ES, FI, FR, GR, HU, JP, LU, NO, SE, and US.

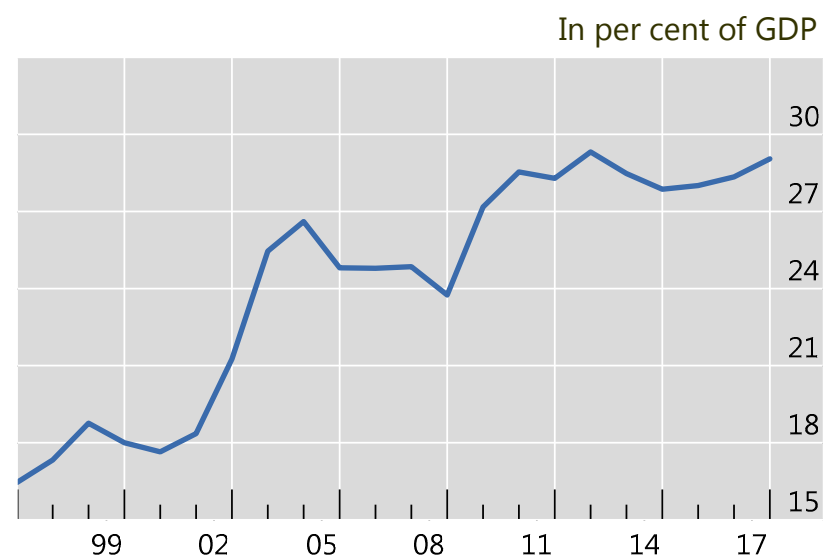
Source: OECD

Debt securities of pension funds and insurance corporations

Pension funds¹



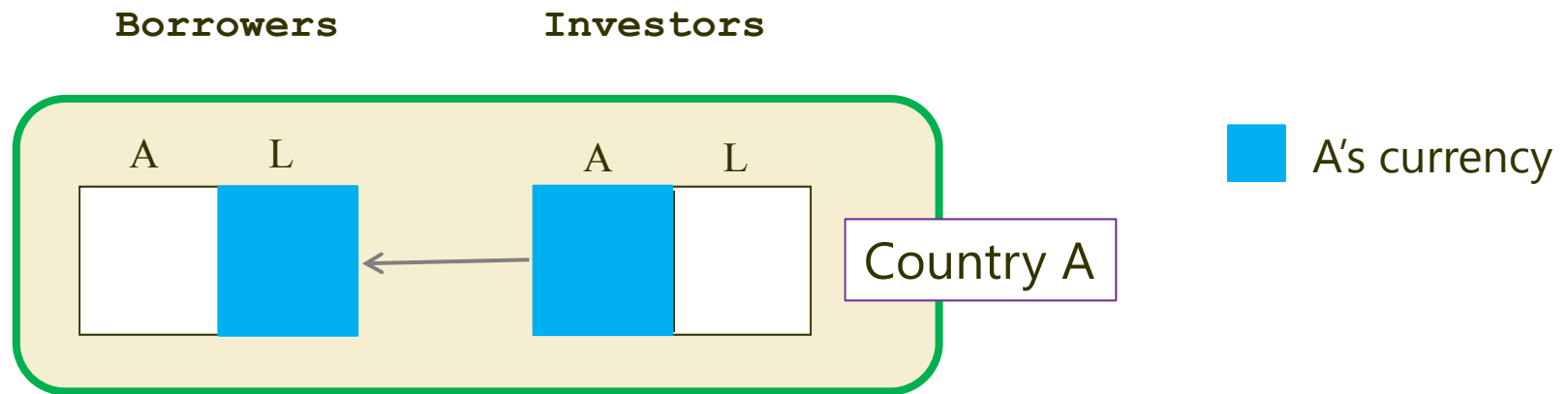
Insurance corporations²



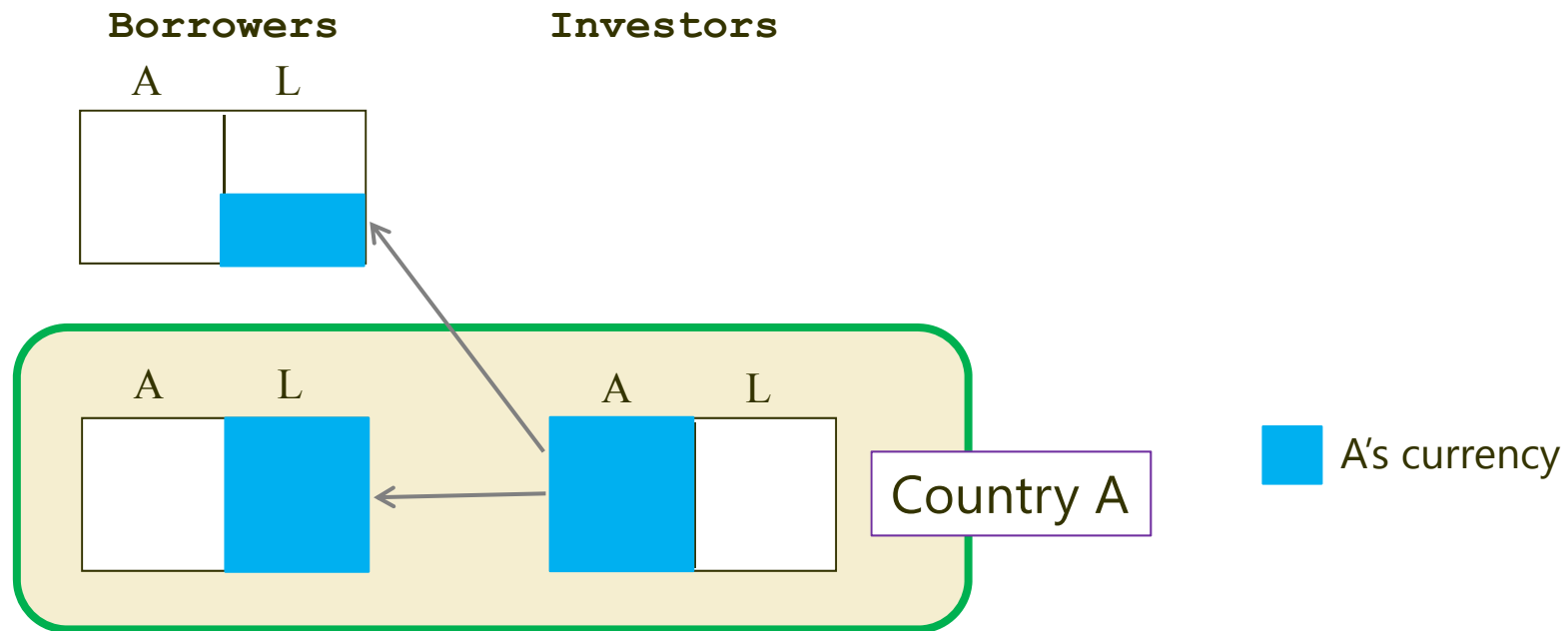
¹ AT, BE, CA, DE, DK, ES, FI, GB, HU, JP, NO, SE and US. ² AT, BE, CA, DE, DK, ES, FI, FR, GR, HU, JP, LU, NO, SE, and US.

Sources: IMF; OECD.

Currency denomination of portfolio assets

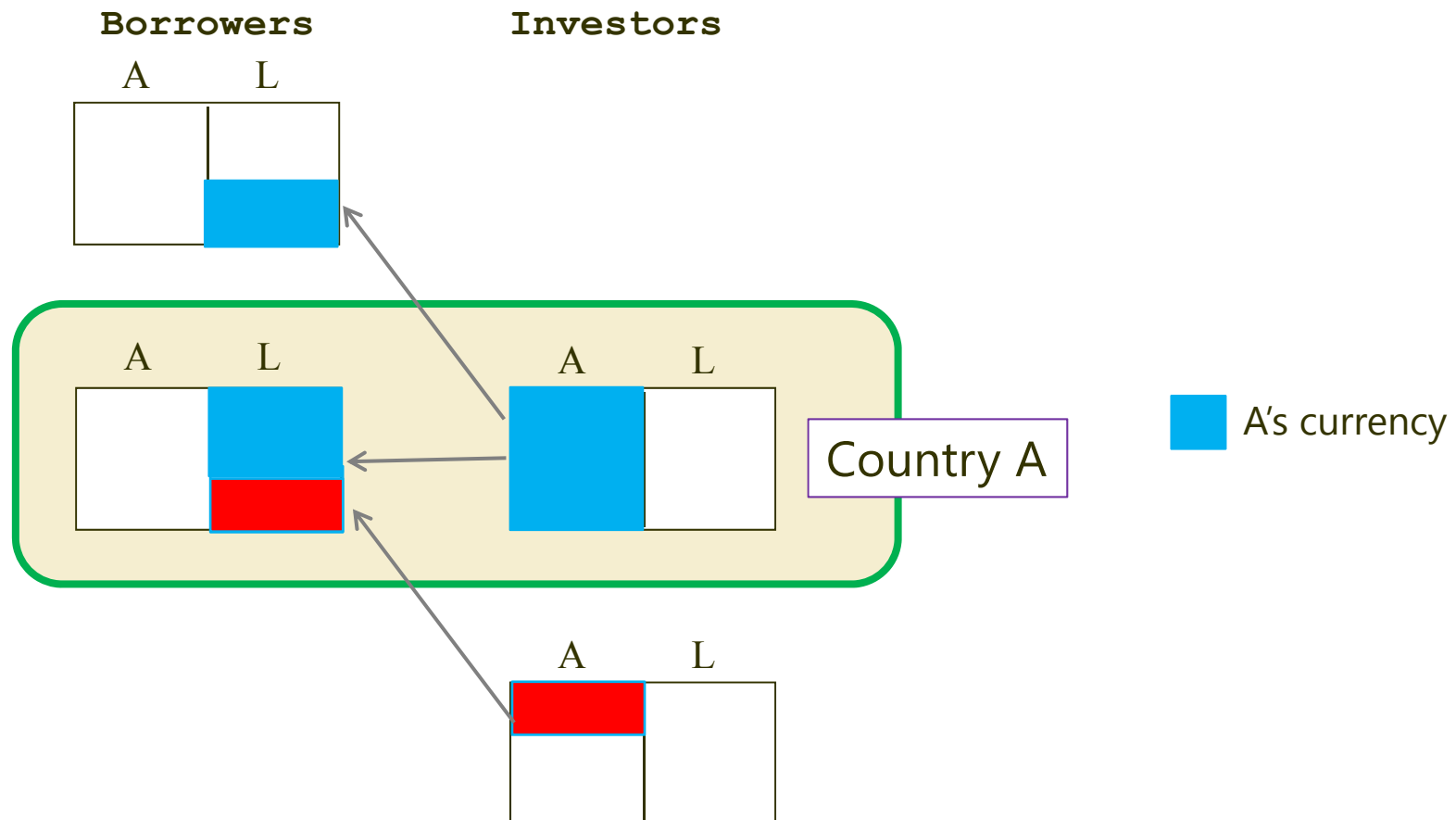


Finding 1: lenders tend to lend in their own currency

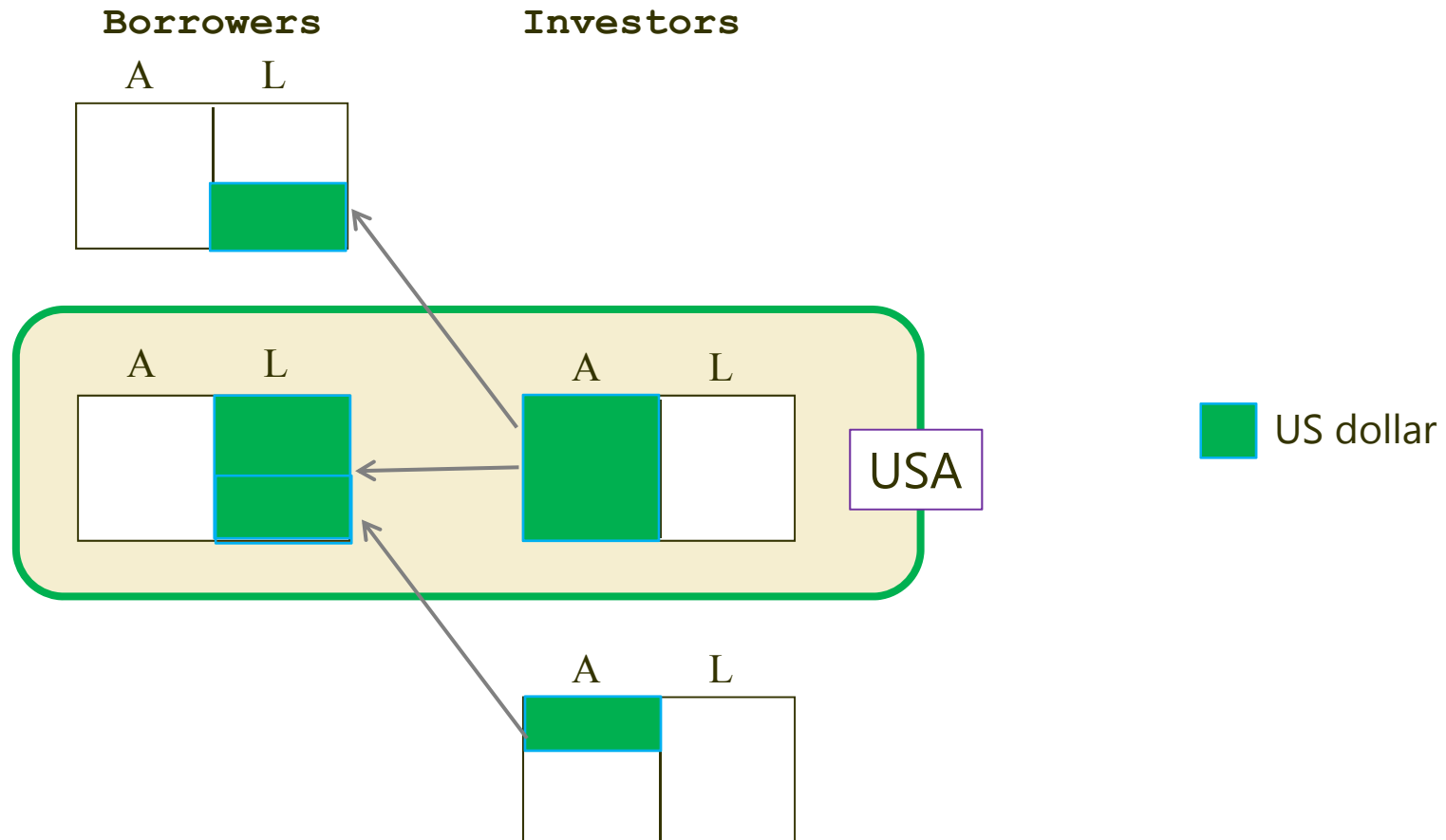


Maggiore, Neiman and Schreger (2018) "International currencies and capital allocation"
<https://scholar.harvard.edu/maggiore/publications/unpacking-global-capital-flows-micro-data-approach-macro-facts>

Finding 2: corporate borrowers are subject to "original sin"; when borrowing from abroad, they do so in foreign currency

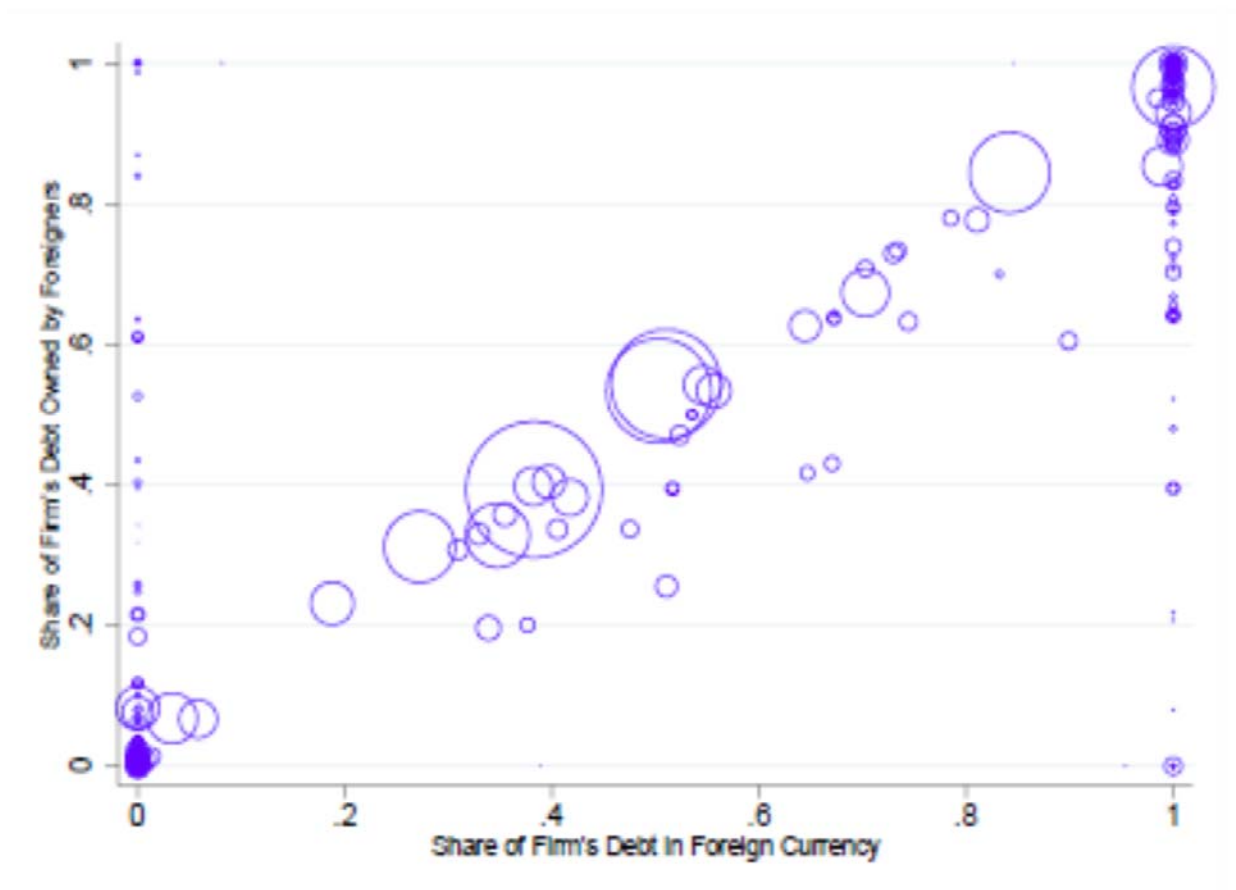


Finding 3: exception is the United States and the US dollar



Canadian corporate bond issuance

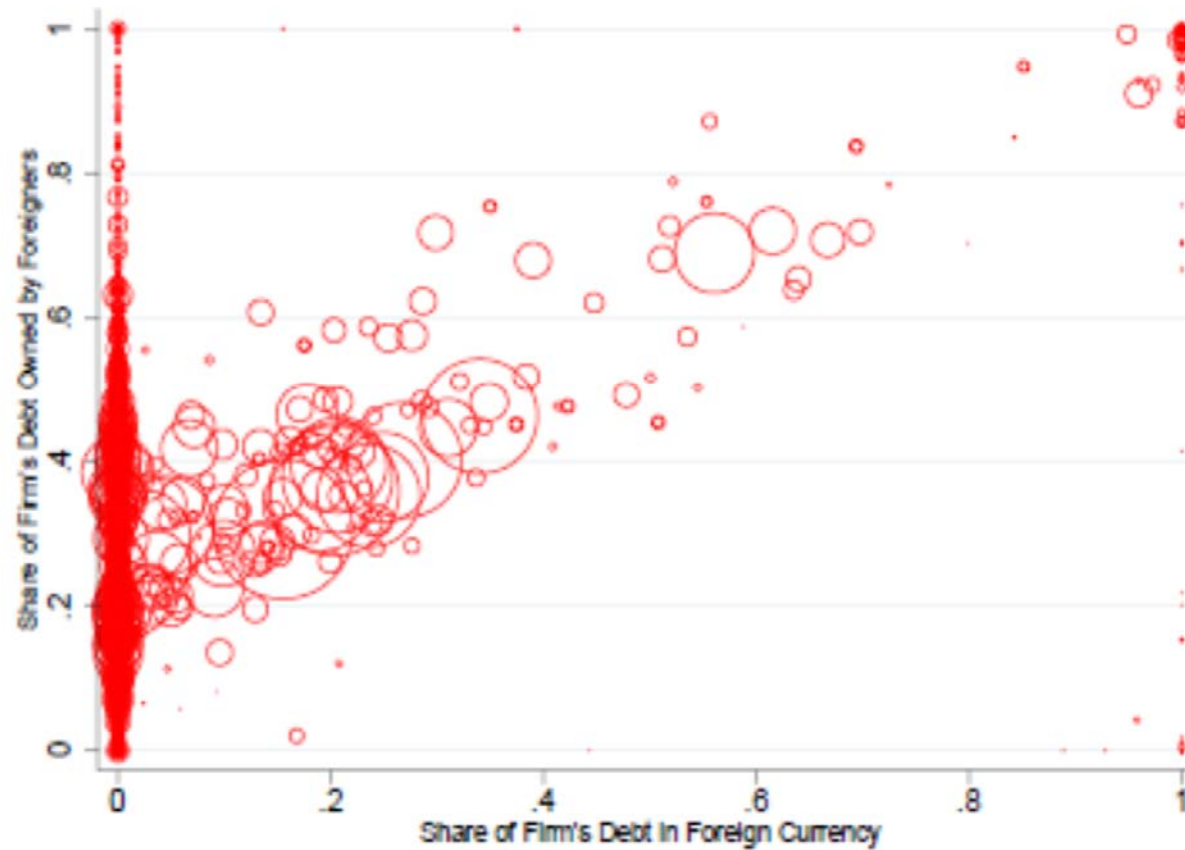
(a) CAN



Maggiore, Neiman and Schreger (2018)

US corporate bonds issuance

(d) USA



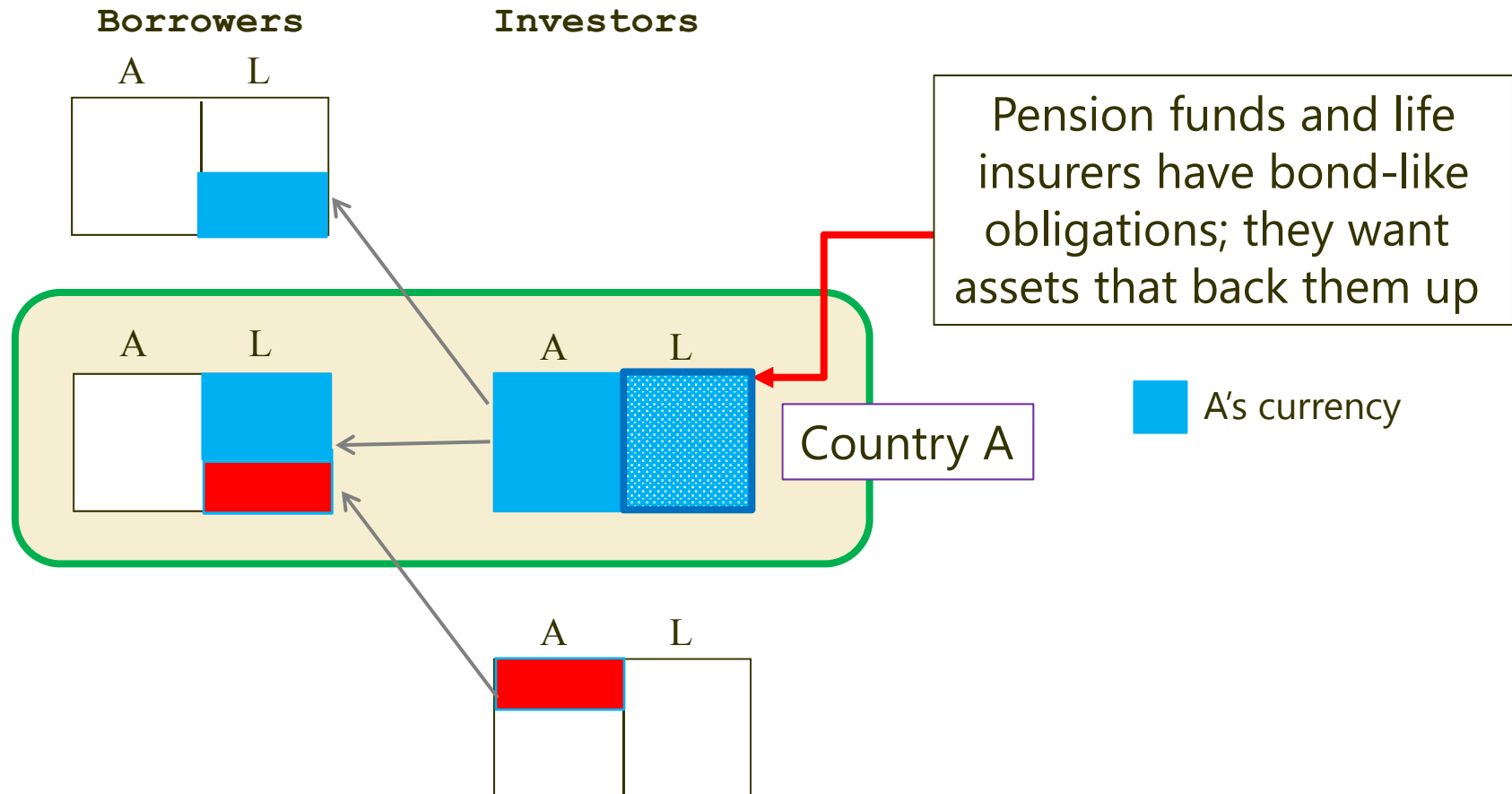
Maggiore, Neiman and Schreger (2018)



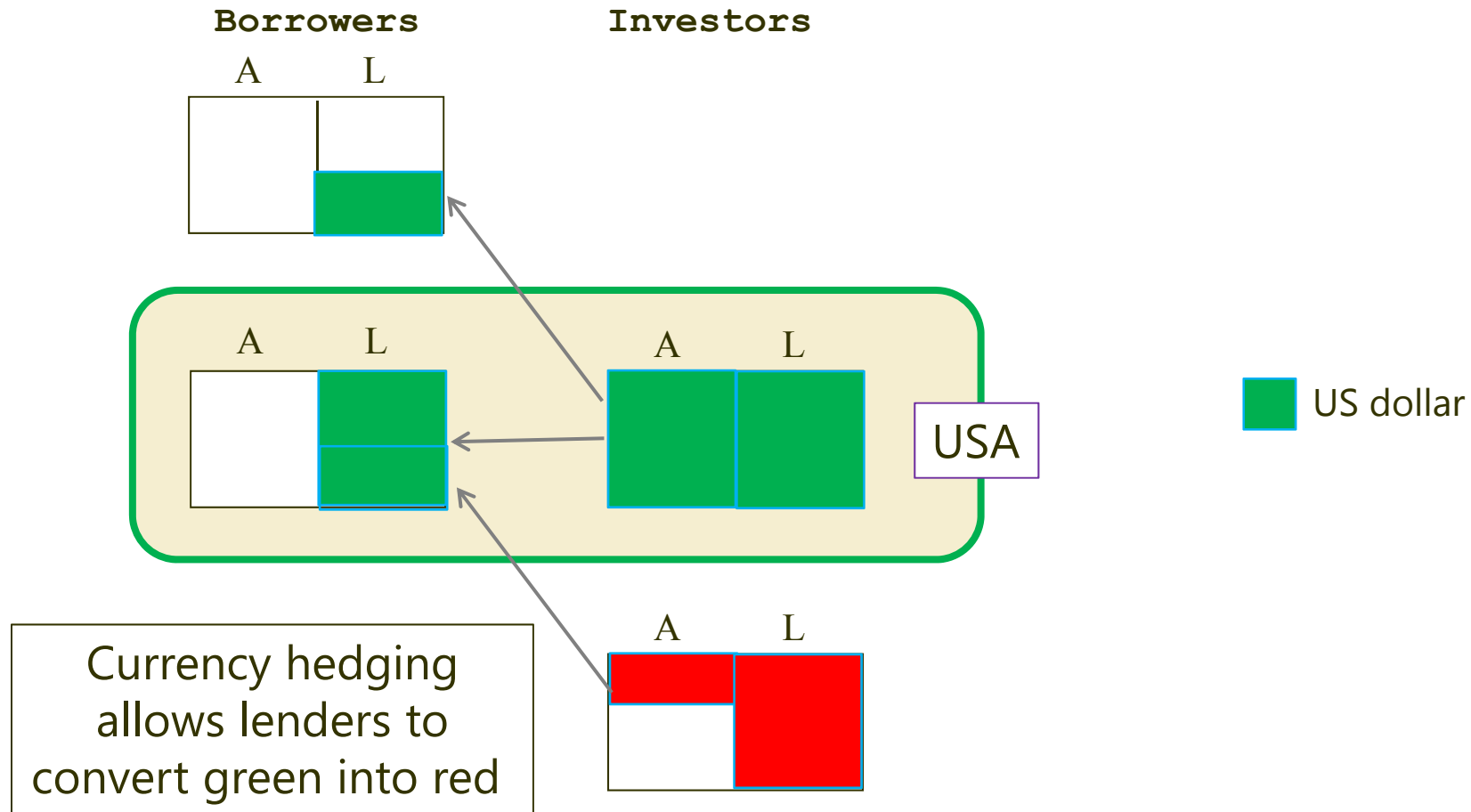
Possible mechanisms



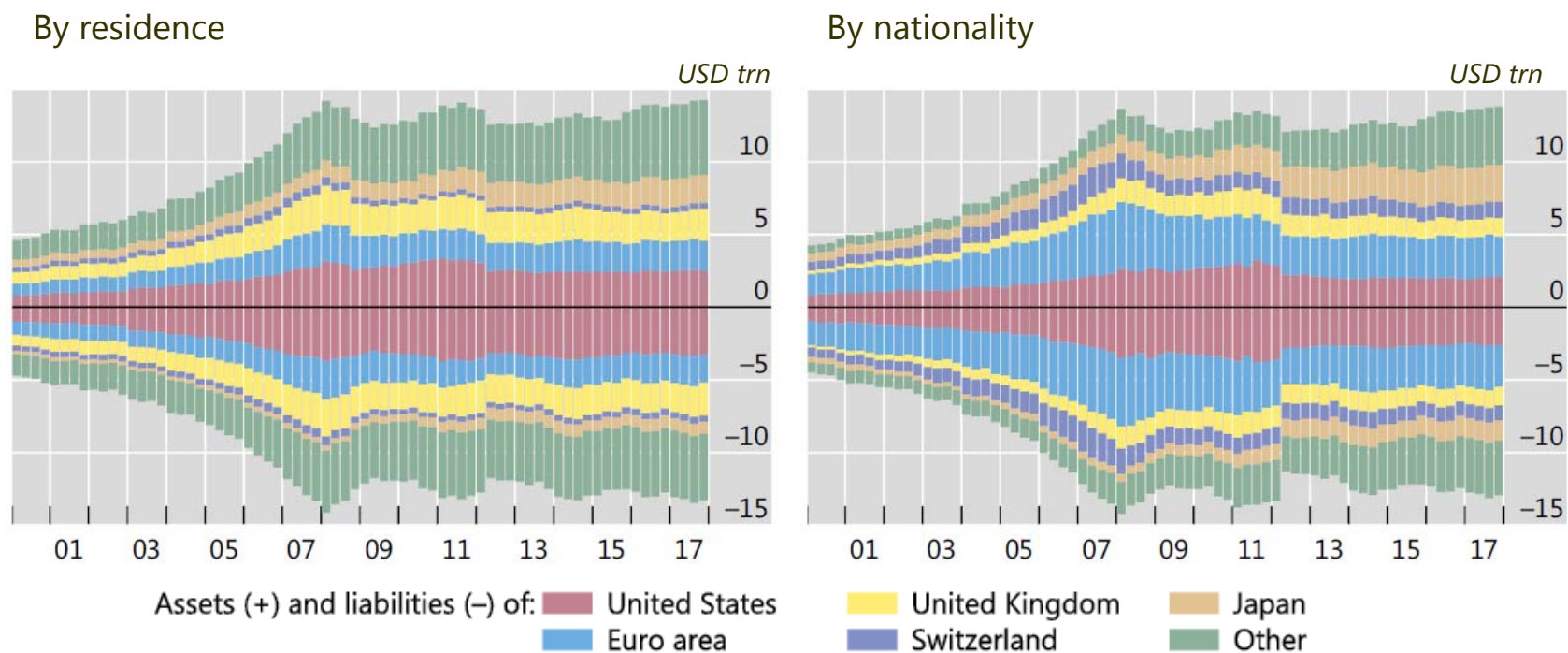
Liabilities side of lender's balance sheet looms into view



Banking sector facilitates currency hedging



US dollar-denominated cross-border bank claims are mostly to do with *non-US advanced economies*

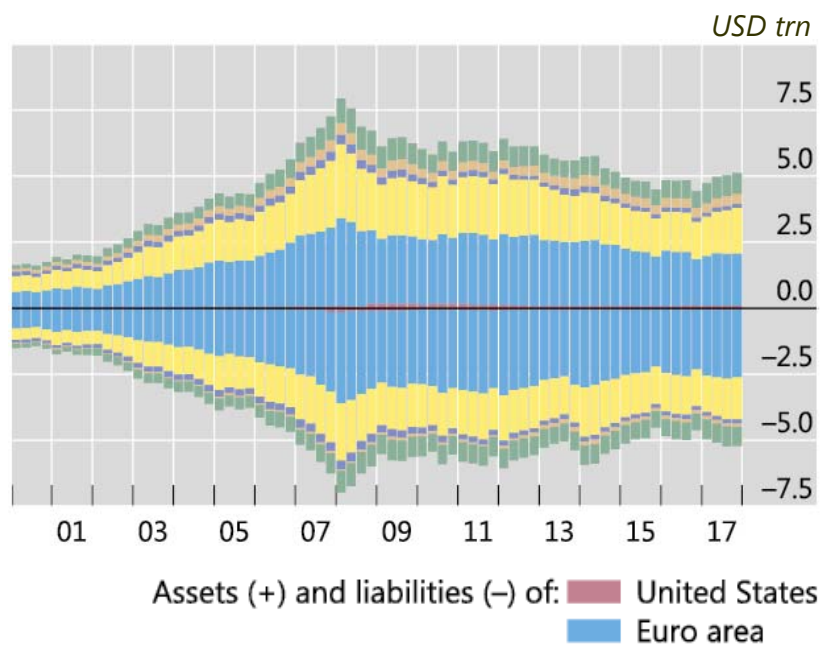


Source: BIS locational banking statistics.

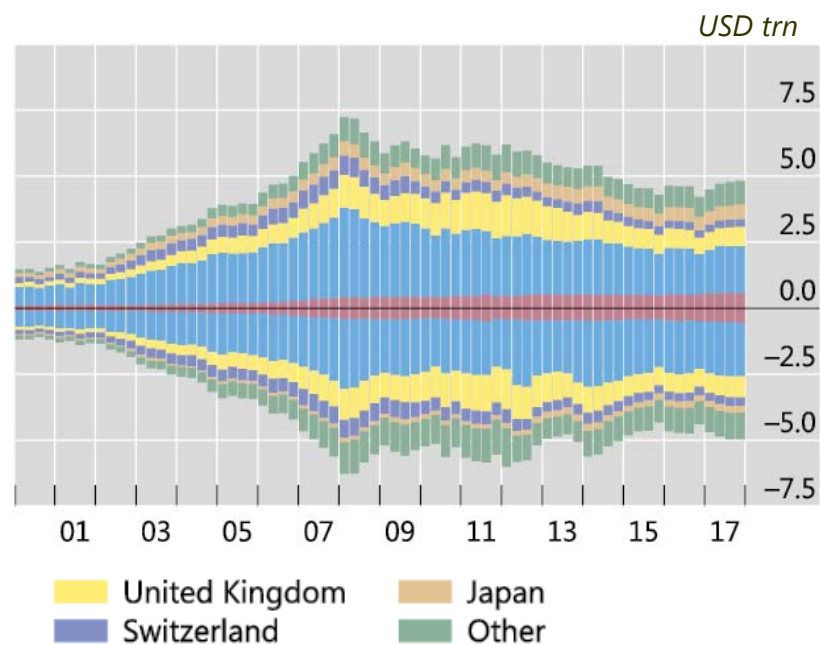
USD denominated cross border claims by residence and by nationality

Euro-denominated cross-border bank claims are mostly focused on the euro area

By residence



By nationality



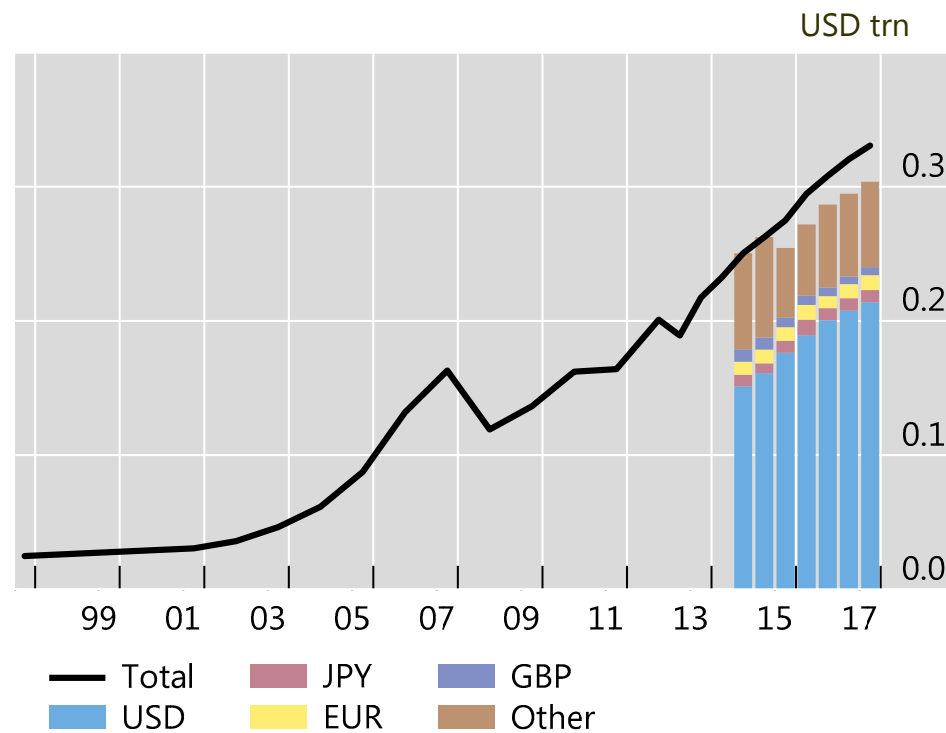
Source: BIS locational banking statistics.



Evidence on aggregates from CPIS



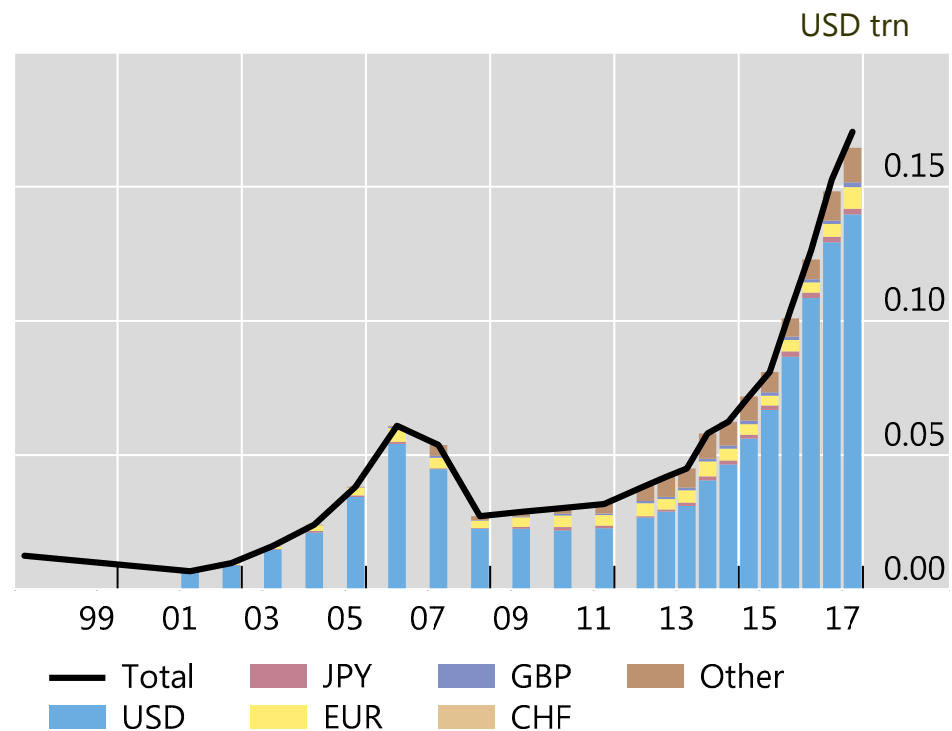
Canada: currency composition of international portfolio investment (debt)



Source: IMF CPIS.



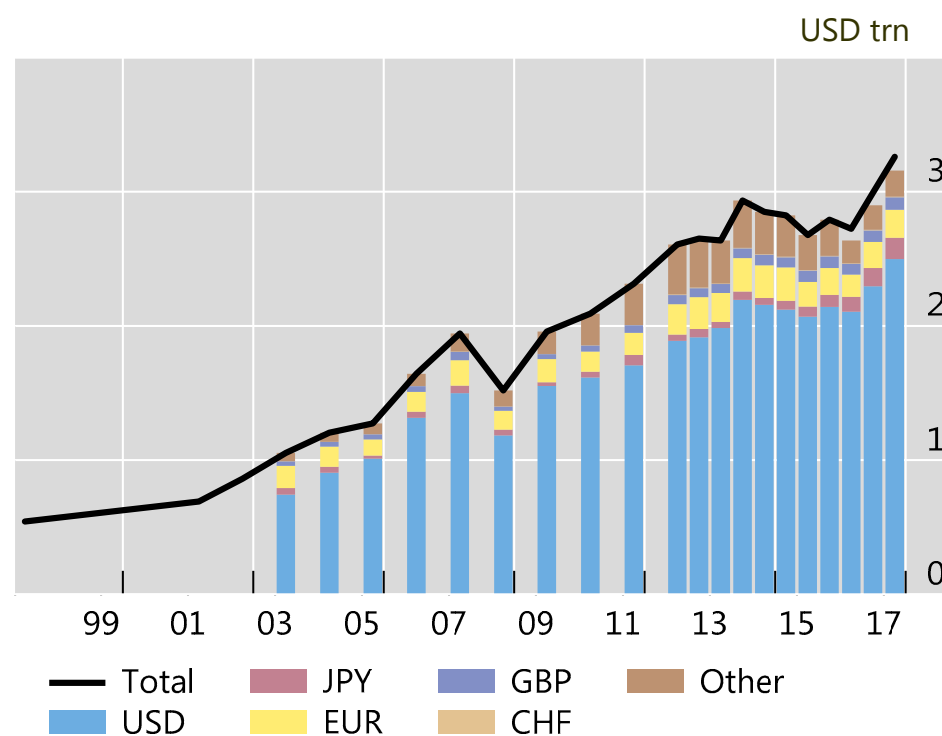
Korea: currency composition of international portfolio investment (debt)



Source: IMF CPIS.

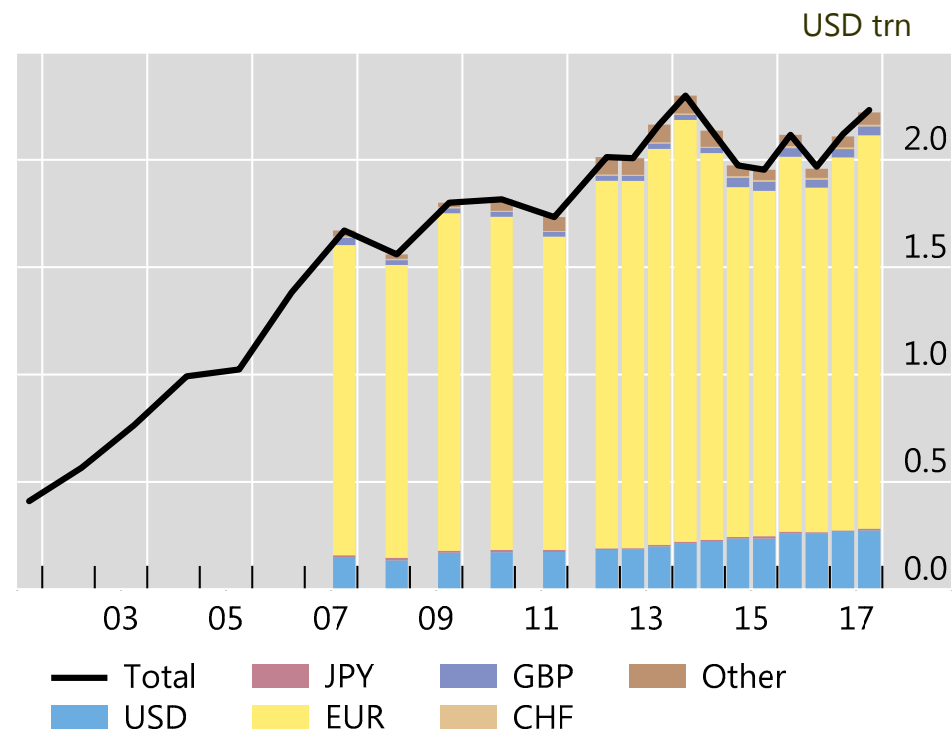


United States: currency composition of international portfolio investment (debt)



Source: IMF CPIS.

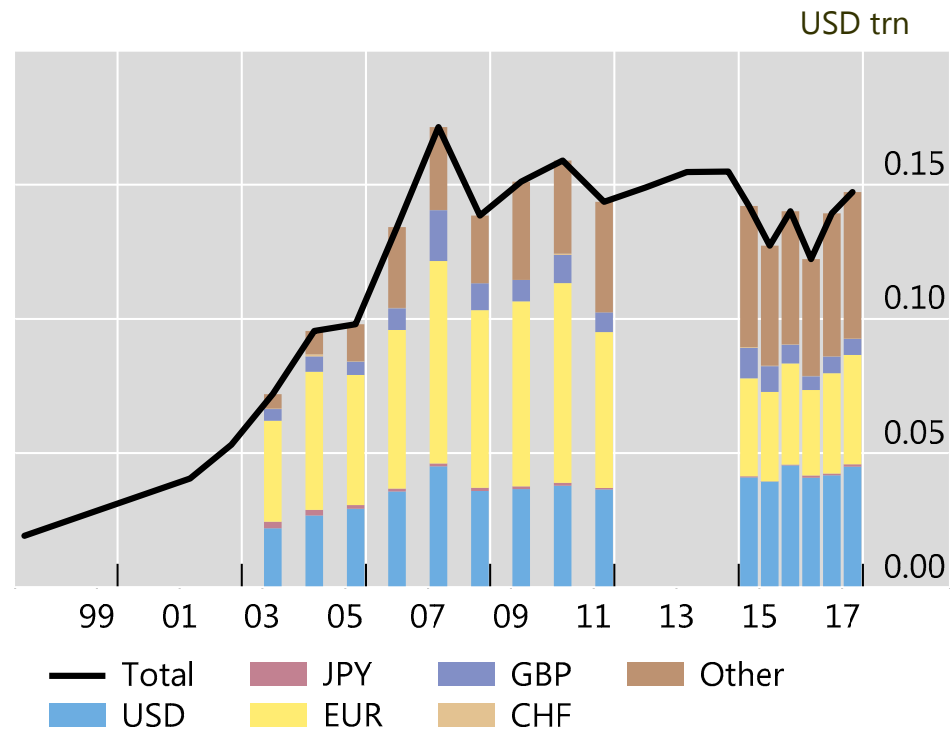
Germany: currency composition of international portfolio investment (debt)



Source: IMF CPIS.



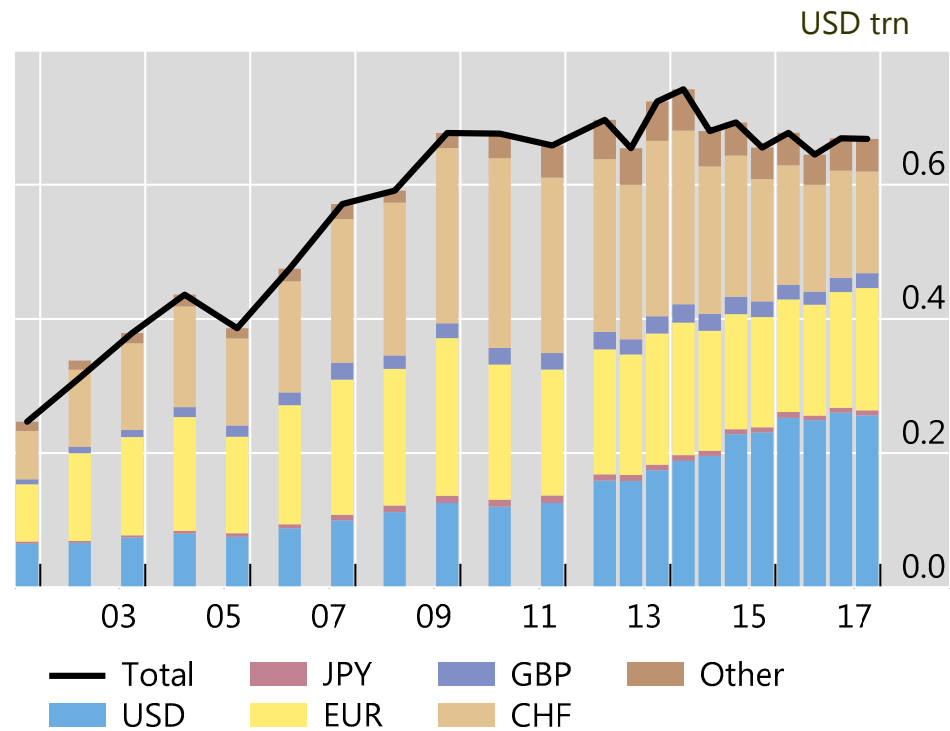
Sweden: currency composition of international portfolio investment (debt)



Source: IMF CPIS.



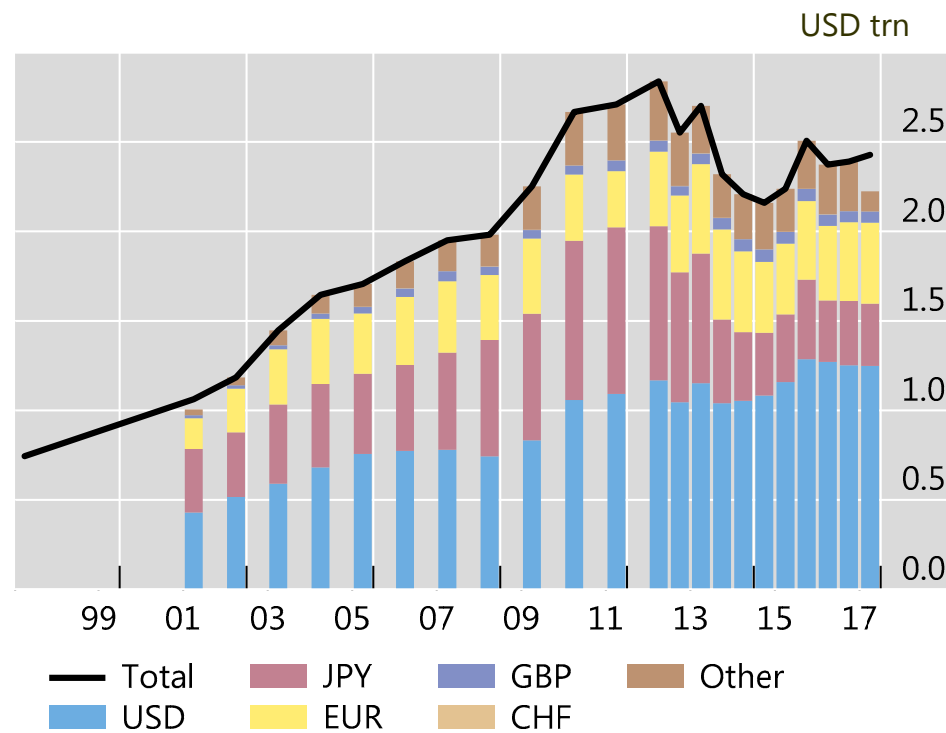
Switzerland: currency composition of international portfolio investment (debt)



Source: IMF CPIS.



Japan: currency composition of international portfolio investment (debt)



Source: IMF CPIS.



Determinants of bond currency denomination

- **Borrower's preferences**

- Cash flows
- Invoicing currency

- **Investor's (lender's) preferences**

- Domestic currency instruments to hedge bond-like obligations in domestic currency

- **Availability of hedging**

- Can meet domestic bond-like obligations while holding foreign currency assets

Considerations from hedging

- Slope of yield curve matters, as well as interest rate differential
 - EUR long-dated bonds give higher long-dated yields on a hedged basis for some investors
 - Hedging costs incurred at short rate; yields collected at long rate
 - EUR “Reverse Yankees” issued by US corporates in 2015-6
- Hedging cost incorporates balance sheet utilisation cost
 - Cross-currency basis (and failure of covered interest parity) matters for returns on a hedged basis
 - **Dollar funding is a key issue**

Deviations from covered interest parity

US dollar broad index and the cross-currency basis

Figure 1



The red line shows the Federal Reserve Board's US trade-weighted broad dollar index, with higher values indicating a stronger US dollar. The blue line is the simple average of the five-year cross currency basis swap spreads for AUD, CAD, CHF, DKK, EUR, GBP, JPY, NOK, NZD and SEK vis-à-vis the US dollar.

Avdjiev, Du, Koch and Shin (2017)

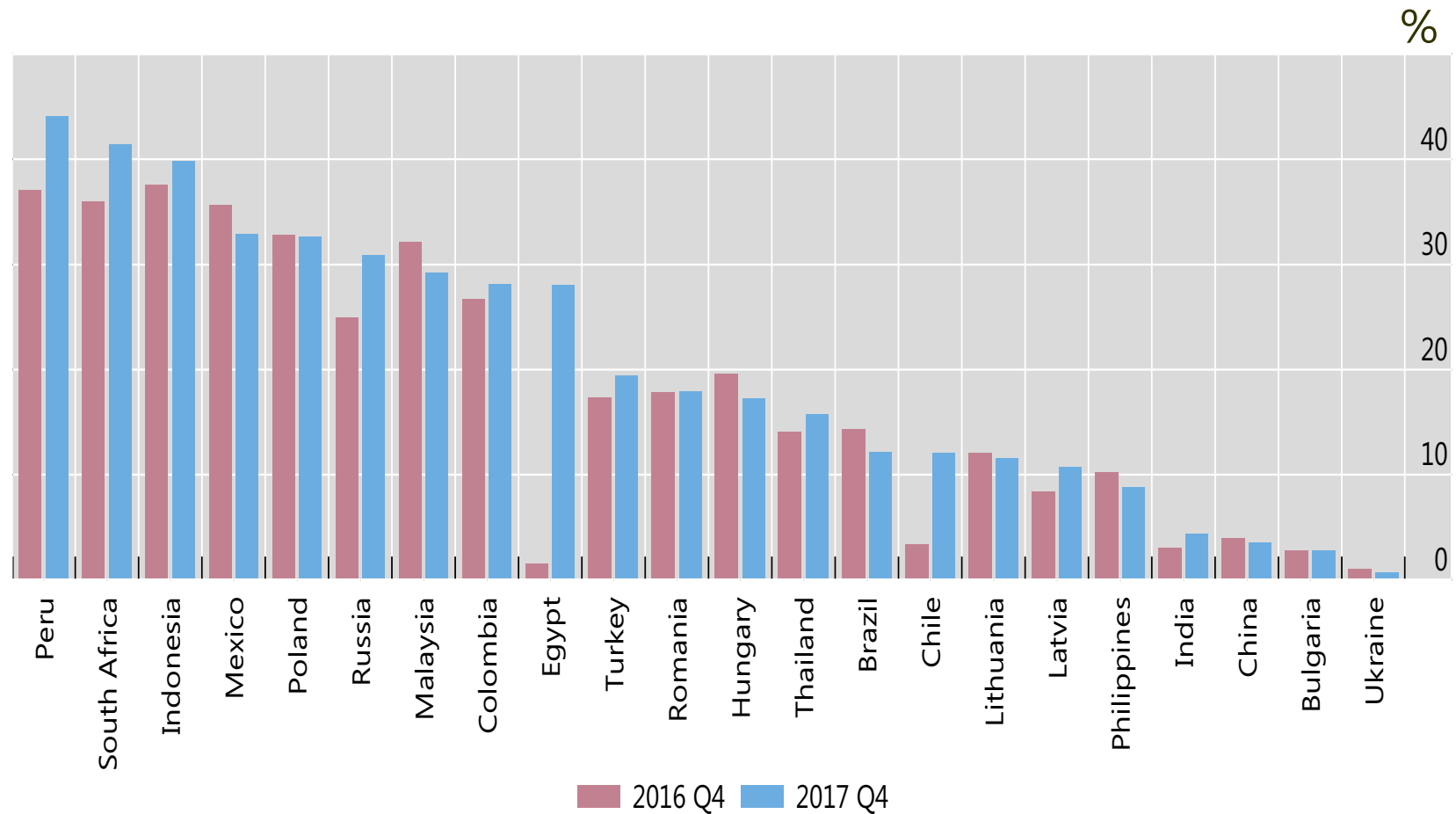


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Emerging market sovereign bonds



Non-resident holdings of EME local currency sovereign bonds

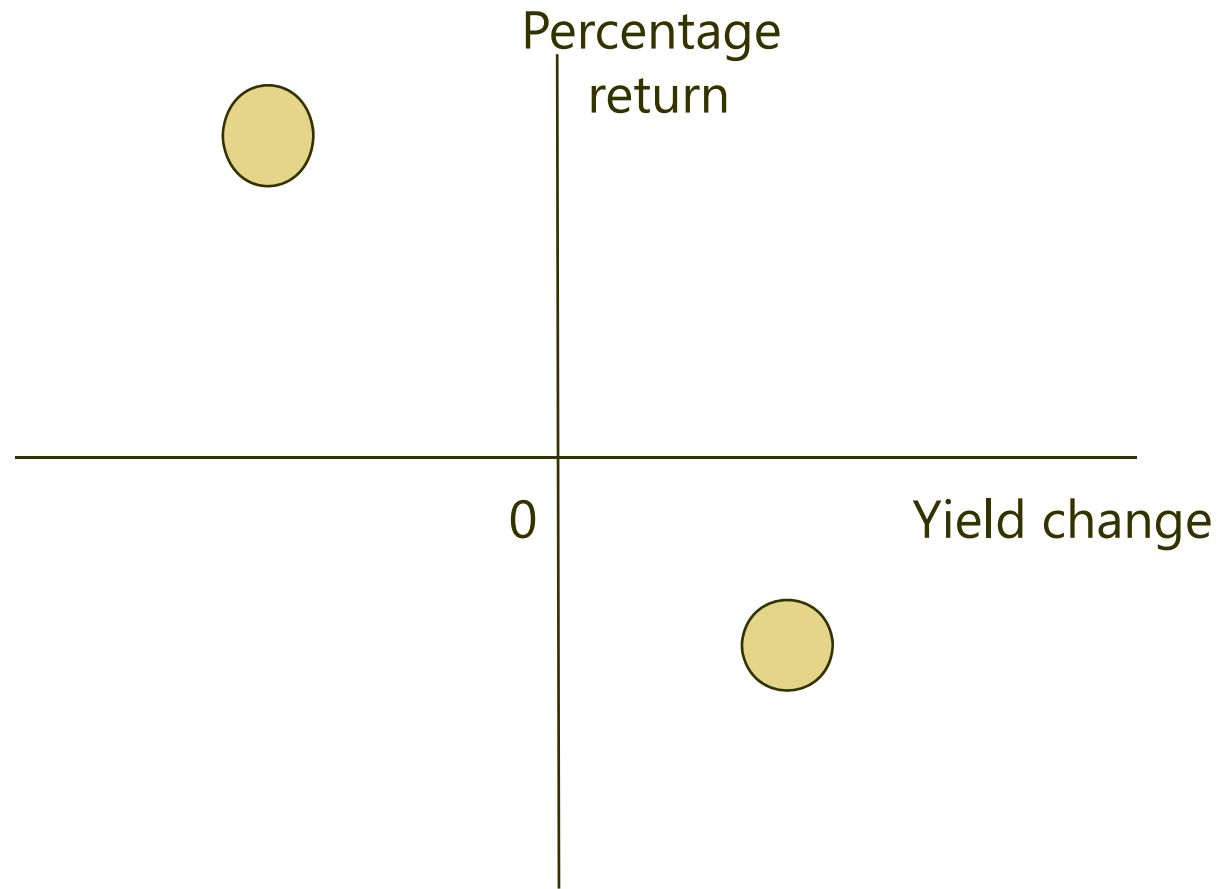


Source: World Bank

Two duration measures

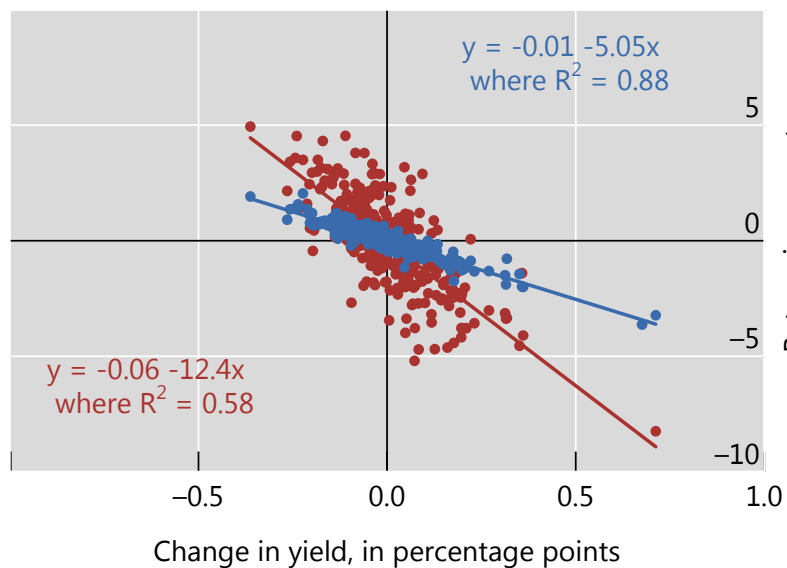
$$\text{Duration} = -\frac{dP/P}{dr}$$

- Compare duration measures with:
 - Percentage return in local currency terms
 - Percentage return in dollar terms



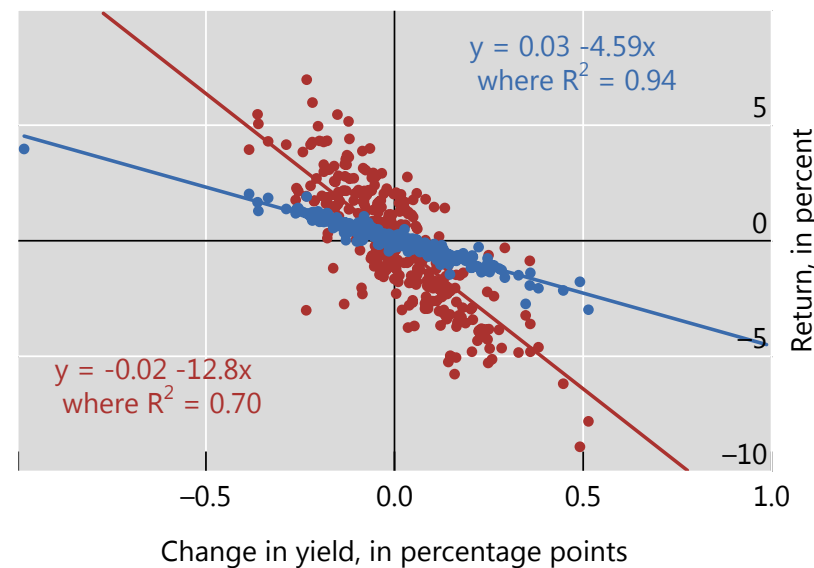
EMEs local currency sovereign bonds performance¹, January 2013 – October 2018

Mexico



• Local currency return

South Africa



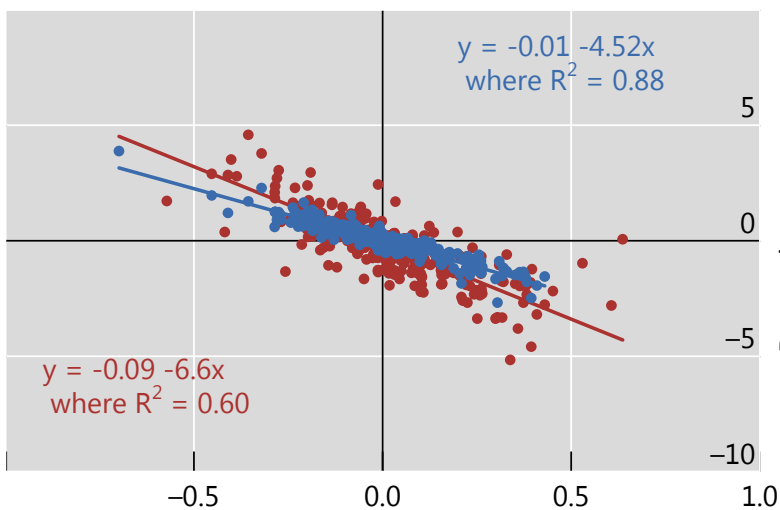
• US dollar return

¹Total return on bonds denominated in local currency as weekly change in JPMorgan GBI-EM principal return index in local currency and US dollar.

Sources: JPMorgan Chase; BIS calculations.

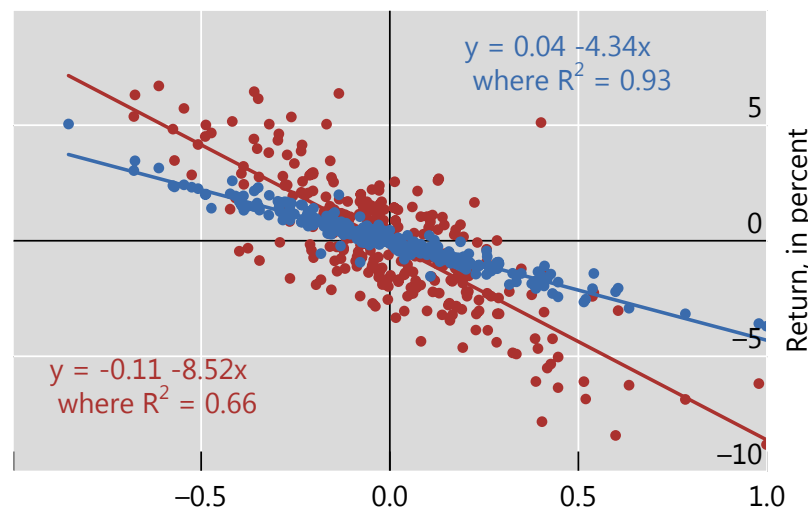
EMEs local currency sovereign bonds performance¹, January 2013 – October 2018

Indonesia



• US dollar return

Brazil



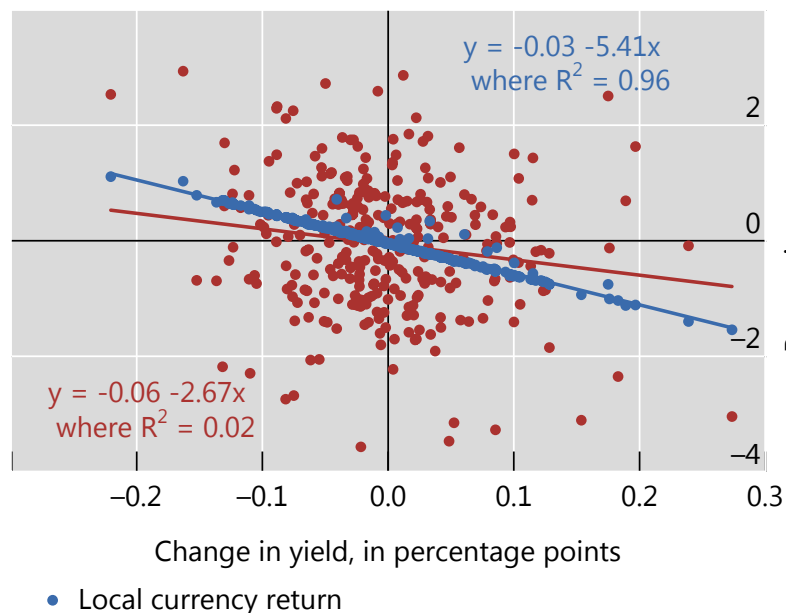
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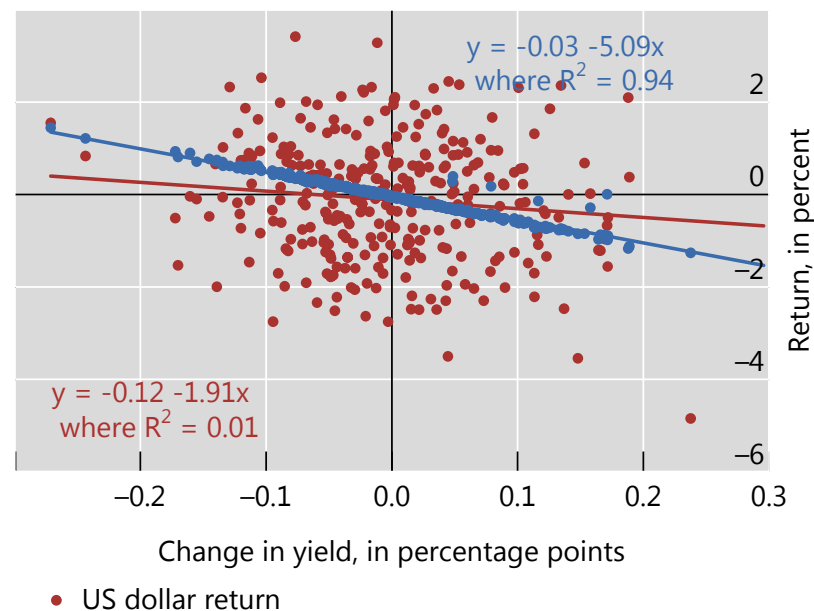
Sources: JPMorgan Chase; BIS calculations.

Advanced economies sovereign bond indices¹, January 2013 – October 2018

France



Sweden

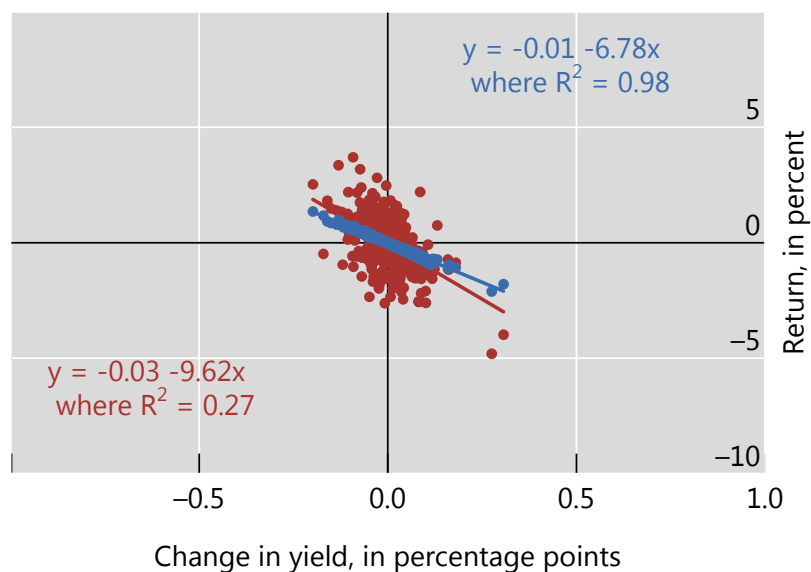


¹GBI Global Country 5 to 7 year maturity indices for the selected economies.

Sources: JPMorgan Chase; BIS calculations.

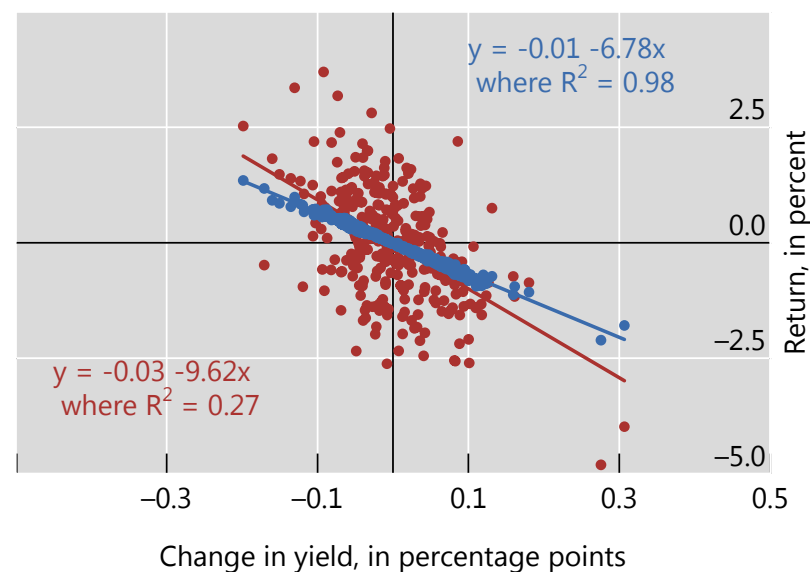
KRW sovereign bonds¹, January 2013 – October 2018

Korea



• Local currency return

Korea



• US dollar return

¹Total return on bonds denominated in local currency as weekly change in JPMorgan JADE Index principal return index in local currency and US dollar.

Sources: JPMorgan Chase; BIS calculations.

Some lessons

- **Lenders prefer bonds in domestic currency**
 - Pension funds, life insurance companies want bonds to service bond-like obligations in domestic currency
- **Borrowers are subject to “original sin”, old and new**
 - Corporates who borrow in dollars do so from foreigners
 - Sovereigns can borrow in local currency from foreigners but EMEs are subject to fluctuations in global risk appetite
- **International currencies**
 - USD retains primary role
 - Other global currencies nevertheless exert significant presence