



Structural changes in the global financial system and the transmission of financial conditions

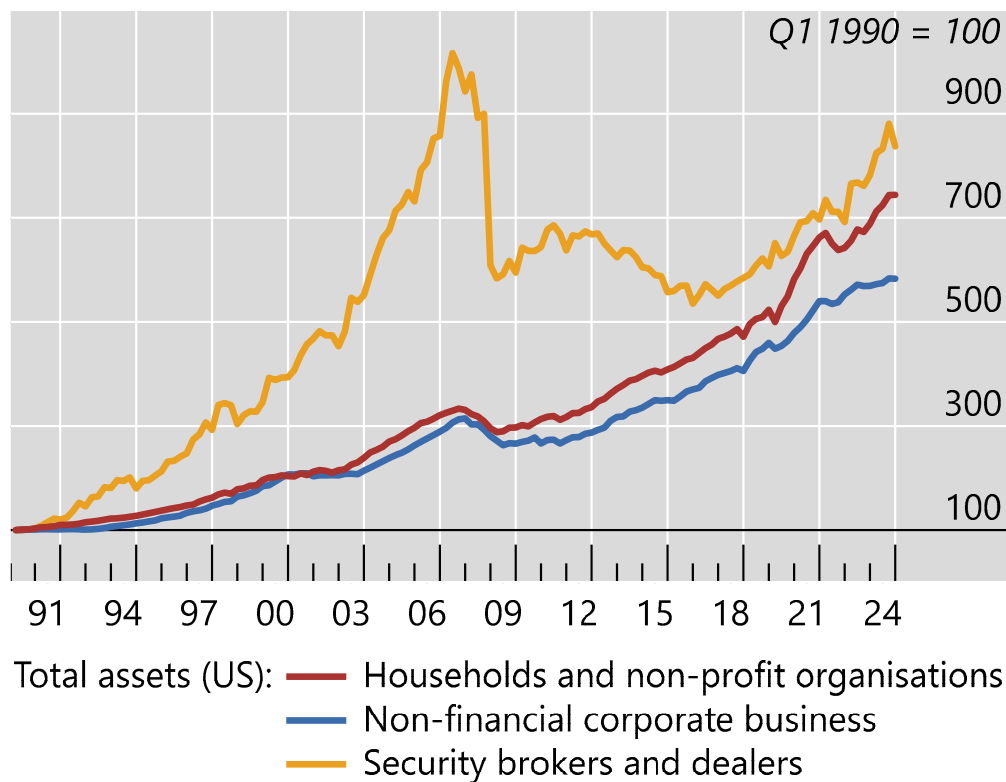
Hyun Song Shin*, Economic Adviser and Head of the Monetary and Economic Department

4th Annual Lecture in honour of Charles Goodhart

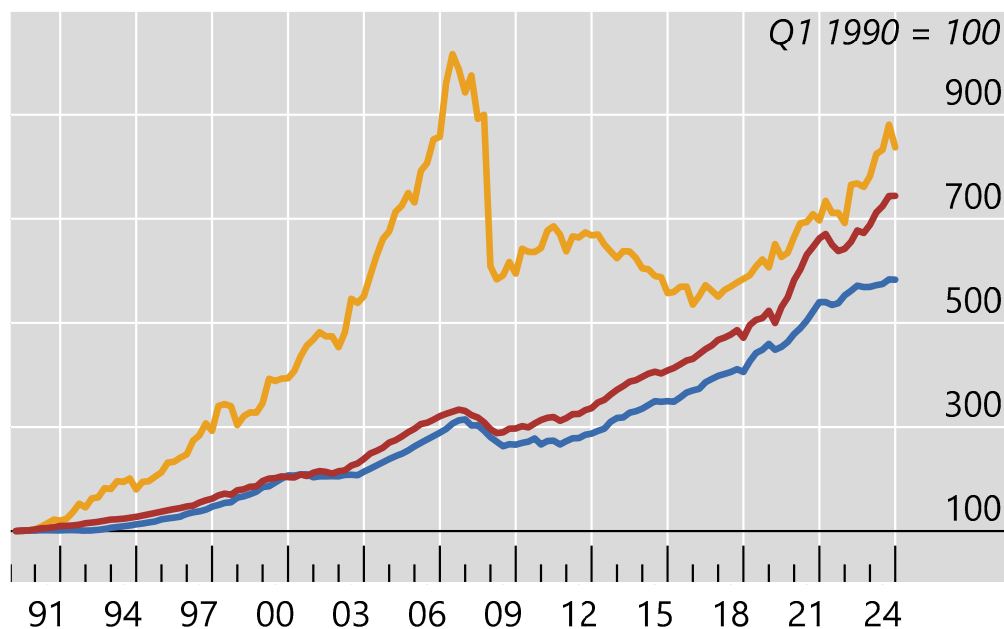
London School of Economics, 19 May 2025

* The views expressed are mine and not necessarily those of the BIS.

Broker-dealer balance sheets have smaller heft in the financial system post-GFC, as market-based intermediation has migrated elsewhere

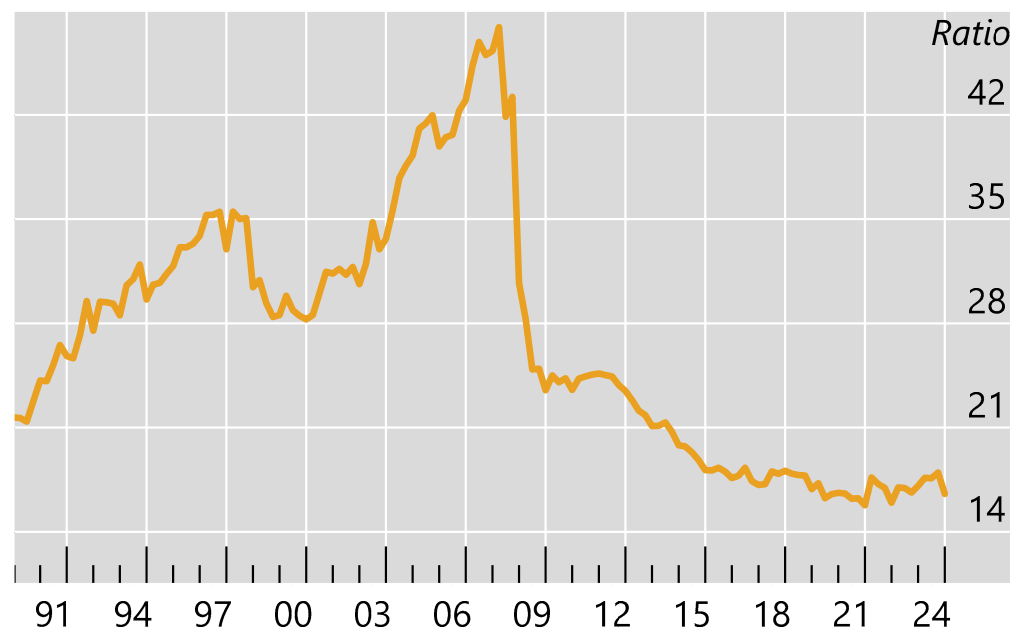


Broker-dealer balance sheets have smaller heft in the financial system post-GFC, as market-based intermediation has migrated elsewhere



Total assets (US):

- Households and non-profit organisations
- Non-financial corporate business
- Security brokers and dealers



Leverage (asset / equity) (US):

- Security brokers and dealers

Structural changes in the financial system after the Great Financial Crisis

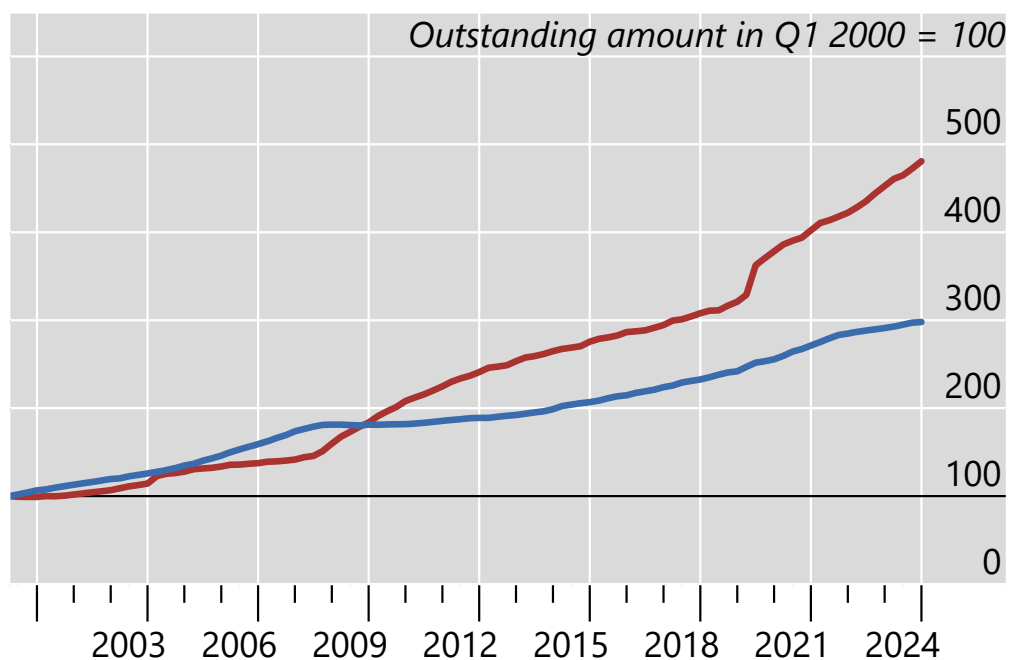
- Before the GFC:
 - Focus on **private sector claims** (mortgages, corporate bonds)
 - **Banks and broker dealers** warehoused claims (either on-balance sheet or in associated special purpose vehicles)
 - Lesson (*): leverage and asset growth of ***regulated entities*** could track overall exposures and risks; incorporated in financial stability monitoring frameworks

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 - Lesson (*): leverage and asset growth of ***regulated entities*** could track overall exposures and risks; incorporated in financial stability monitoring frameworks
- After the GFC:
 - Focus on **sovereign bonds** rather than mortgages; stress impacts real economy through the yield curve (eg mortgage rates, spreads and exchange rates)
 - Not sufficient to track balance sheets of regulated entities; need to unlearn lesson (*)

Credit to government has outpaced the credit to the private sector...

AU, CA, EA, GB, JP and US



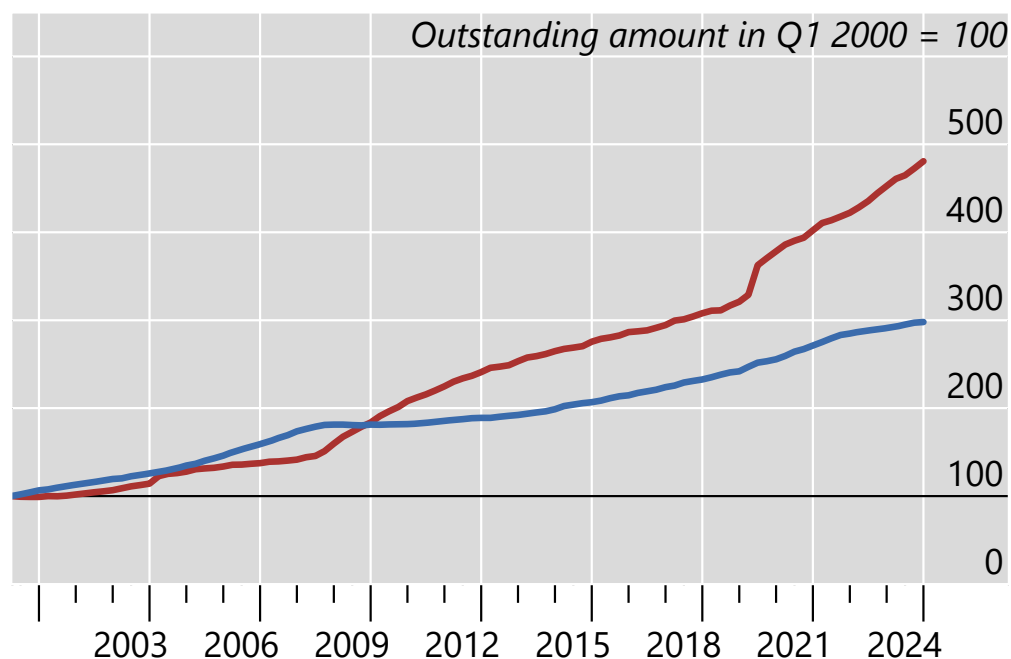
AU, CA, EA, GB, JP and US (GDP-PPP weighted average):

— Credit to private non-financial sector

— General government debt

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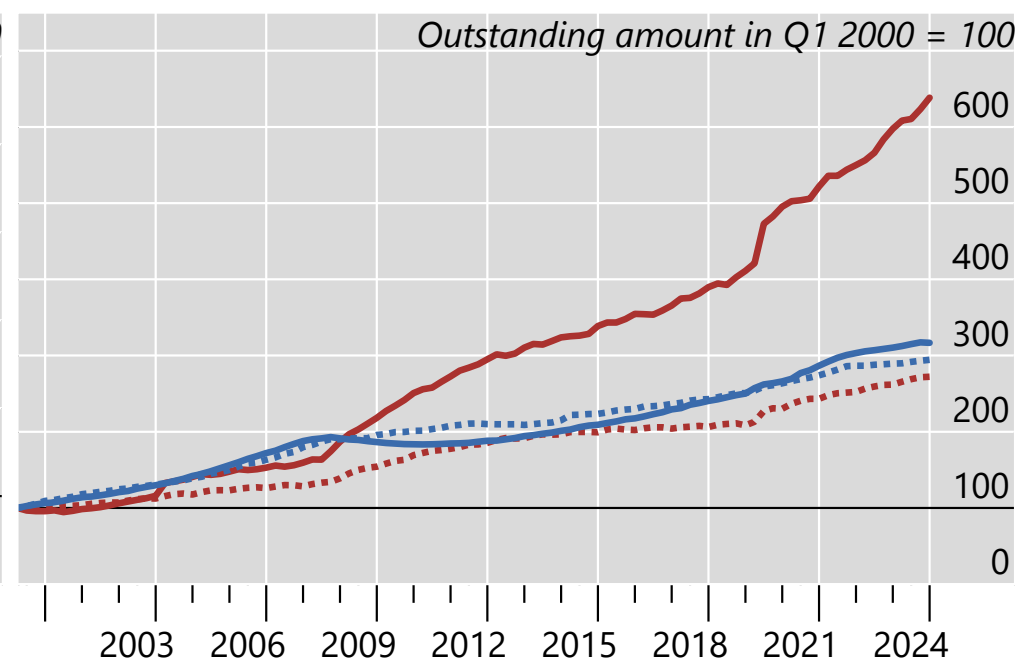


AU, CA, EA, GB, JP and US (GDP-PPP weighted average):

— Credit to private non-financial sector

— General government debt

United States and euro area



Credit to private non-financial sector: General government debt:

— United States

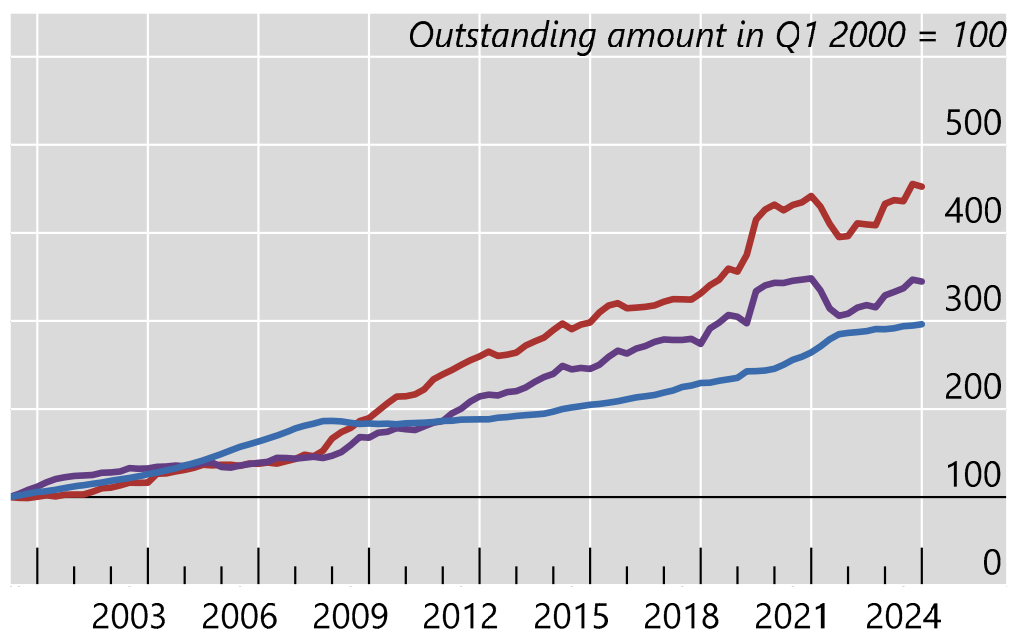
.... Euro area

—

....

...and from loans to bonds

AU, CA, EA, GB, JP and US

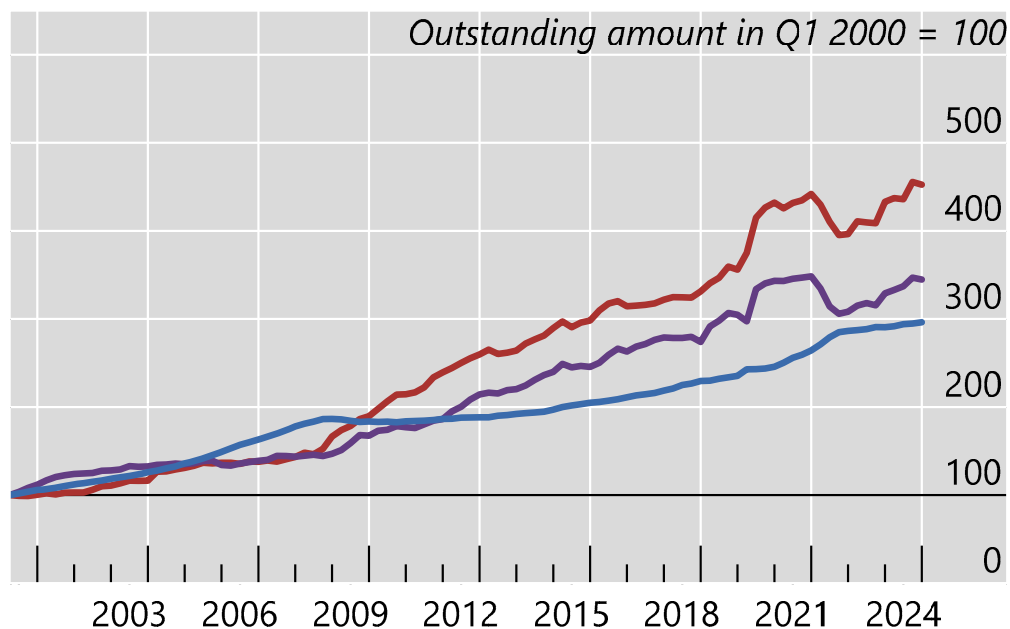


AU, CA, EA, GB, JP and US (GDP-PPP weighted average):

- Loans
- Debt securities, government
- Debt securities, non-financial corporations

...and from loans to bonds

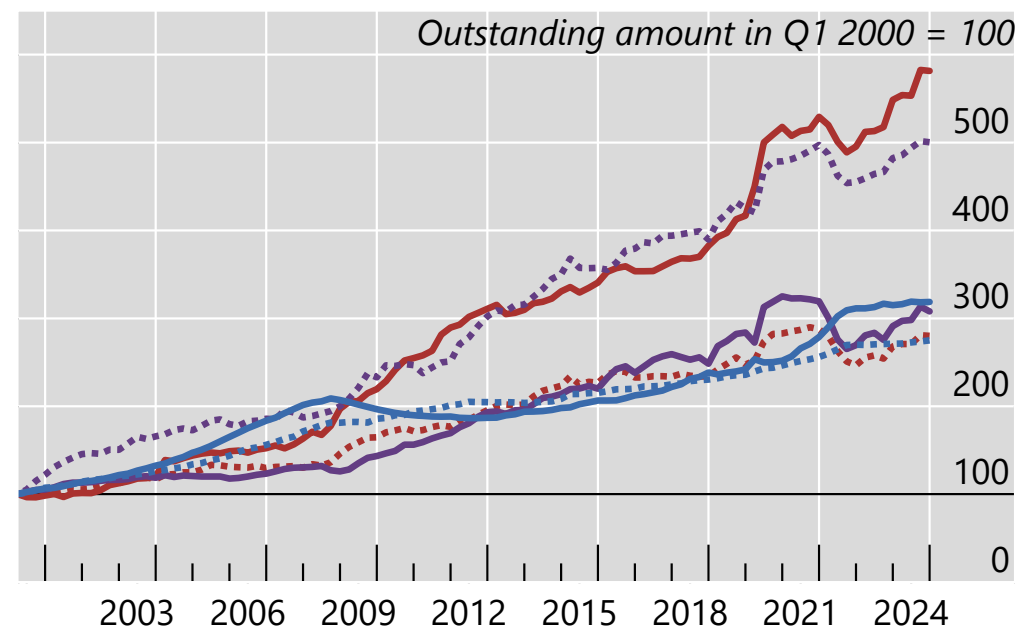
AU, CA, EA, GB, JP and US



AU, CA, EA, GB, JP and US (GDP-PPP weighted average):

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United States and euro area

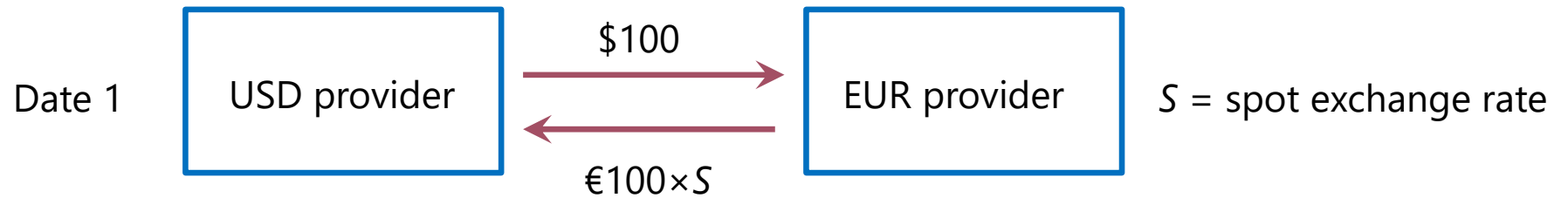


- Loans: — United States, Euro area
- Debt securities, government: — United States, Euro area
- Debt securities, non-financial corporations: — United States, Euro area

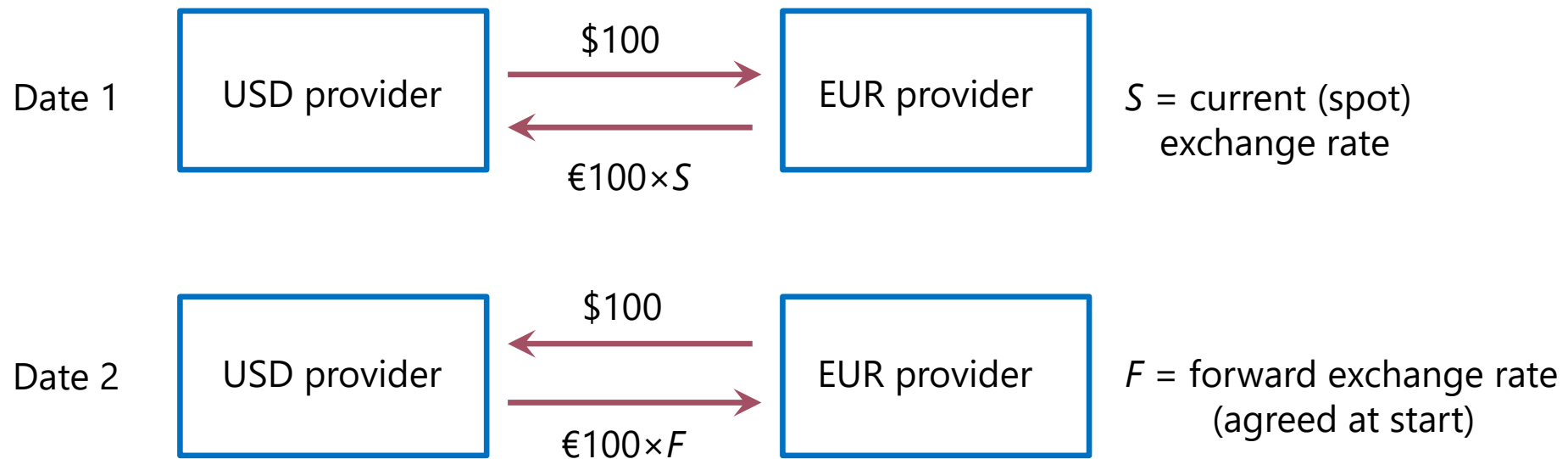


Role of FX swaps in the global financial system

At the contracting date of the FX swap, one party provides one currency in return for another at the current spot exchange rate...



...together with the promise to repay the full notional amounts at an agreed date in the future and at an agreed exchange rate (the *forward rate*)

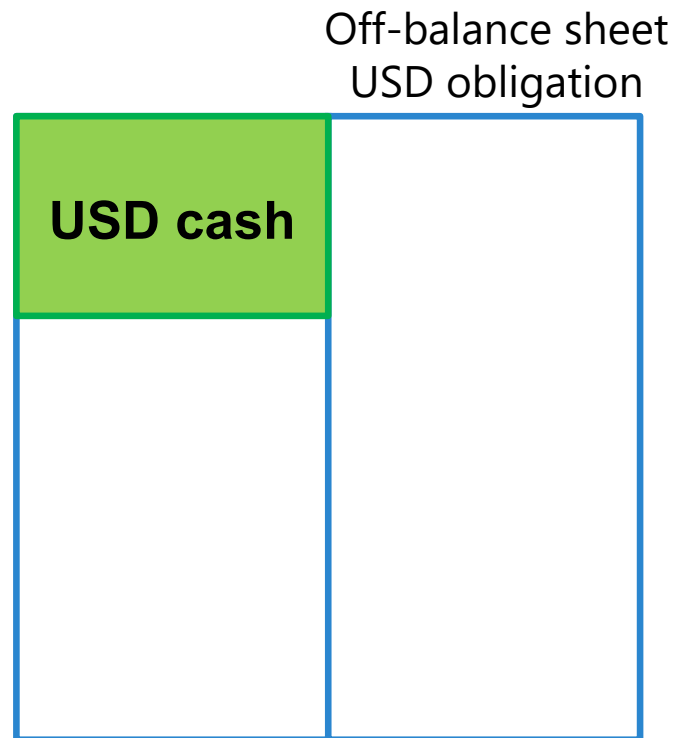


Accounting for FX swaps: initial balance sheet of a euro area investor

EUR cash	

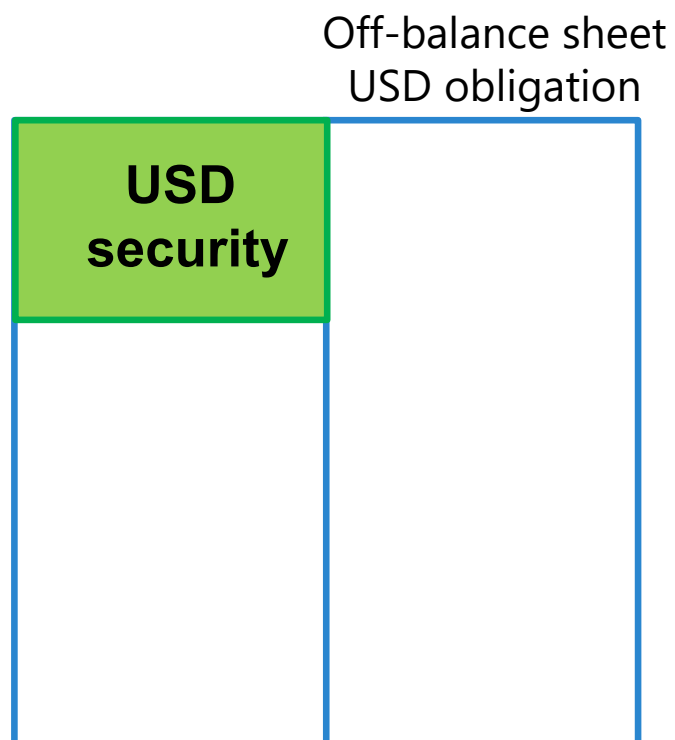
- Euro area investor starts with a deposit balance in EUR

Accounting for FX swaps: balance sheet after FX swap



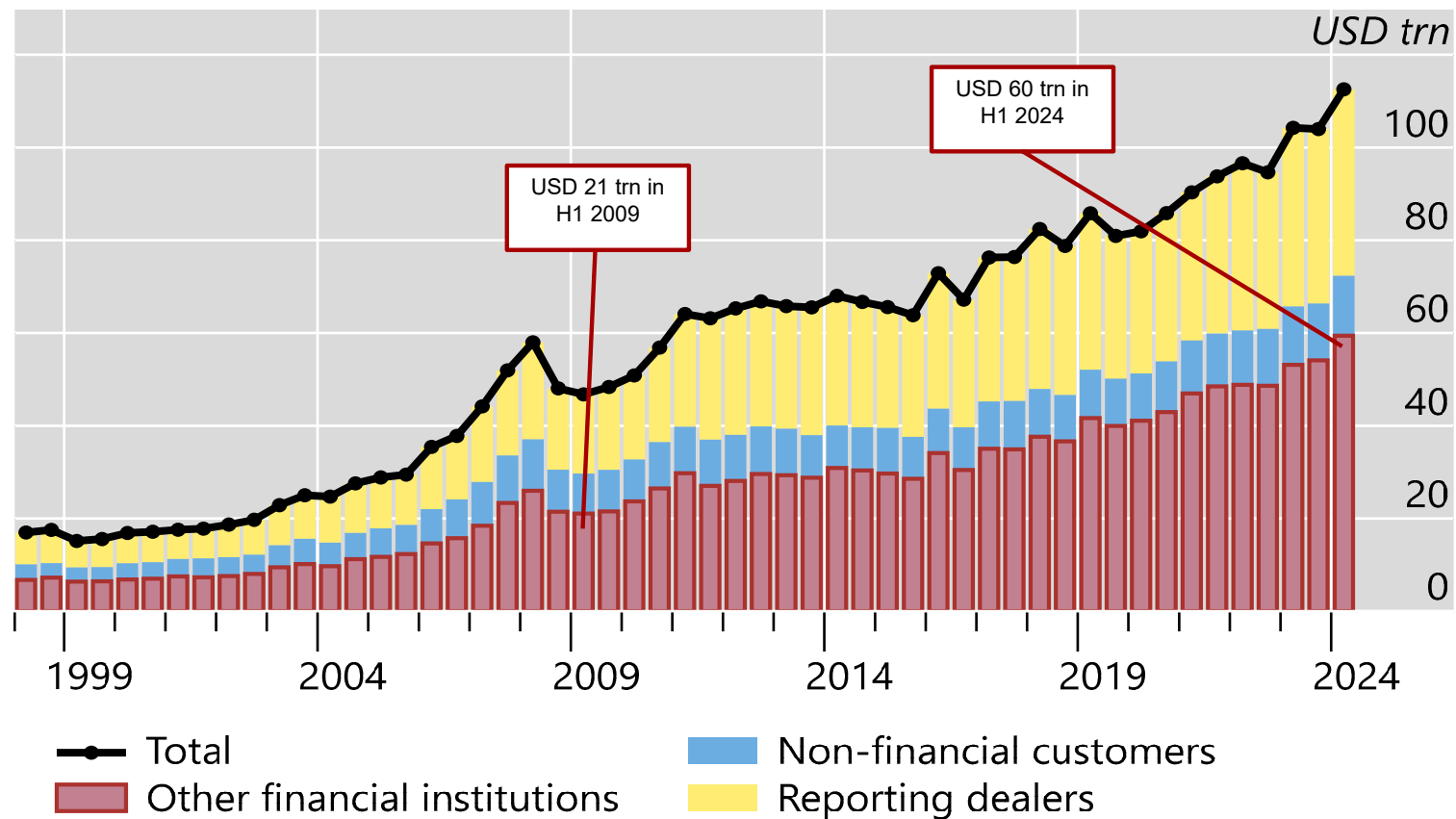
- After the FX swap, the investor holds USD deposits
- Money is fungible across currencies, in this sense
- Investor has an off-balance sheet obligation to repay USD at maturity of FX swap
- Although investor borrows dollars by pledging euros, balance sheet does not show this as debt

Accounting for FX swaps: balance sheet after purchase of USD security

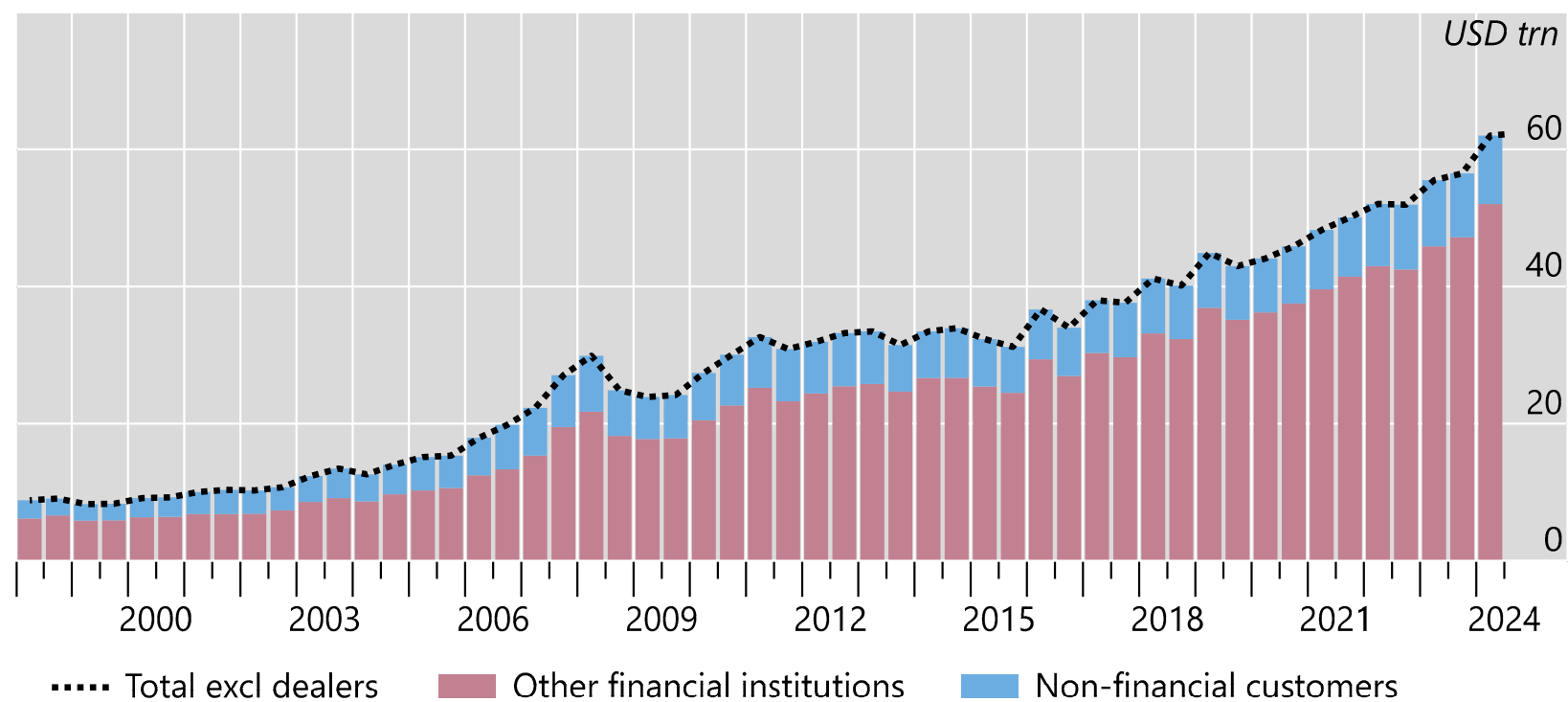


- Investor purchases a security denominated in dollars
- There is no currency mismatch
- But there is typically a maturity mismatch, as the dollar security is long term, but FX swap is short term

Outstanding FX swaps stand at \$113 trillion, with the largest and fastest growing component being the “other financial institutions” segment; this portion has tripled since 2009

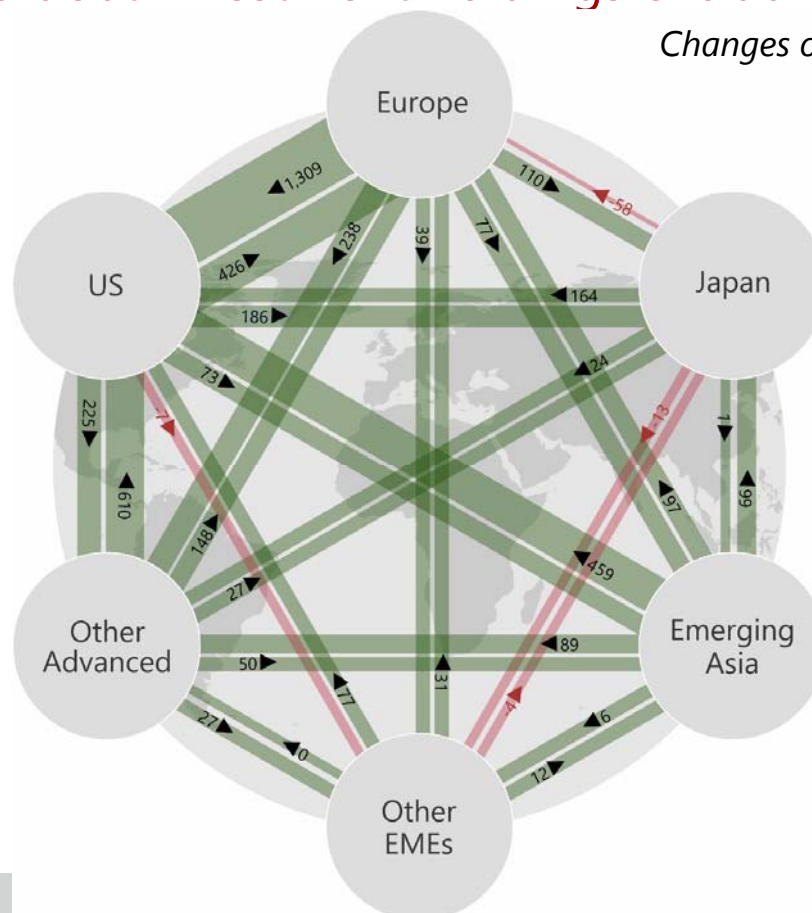


US dollar swaps account for most of the outstanding customer total

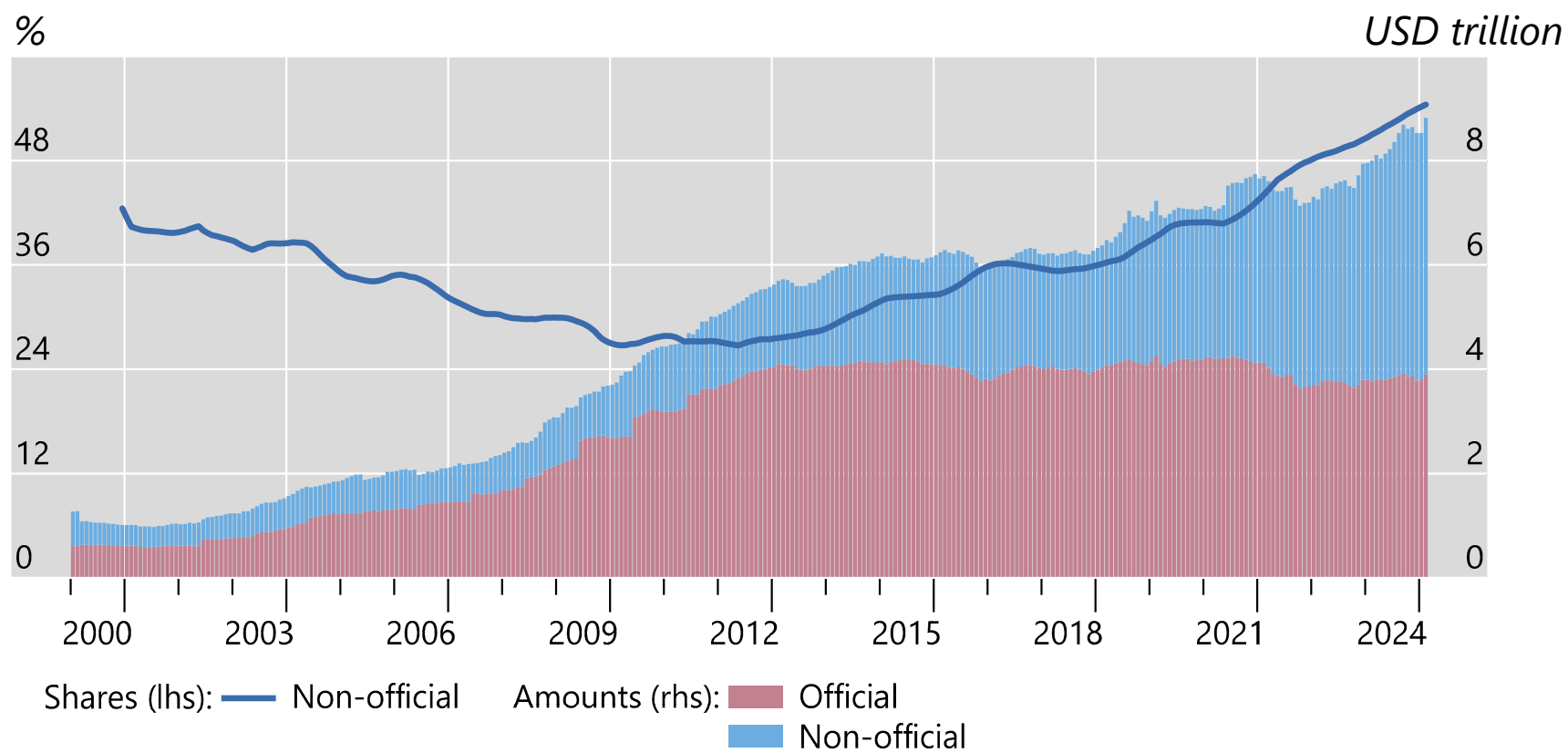


Global cross-border bond holdings by private investors; international portfolio debt investment holdings excluding official reserves

Changes over 2015–23, USD bn



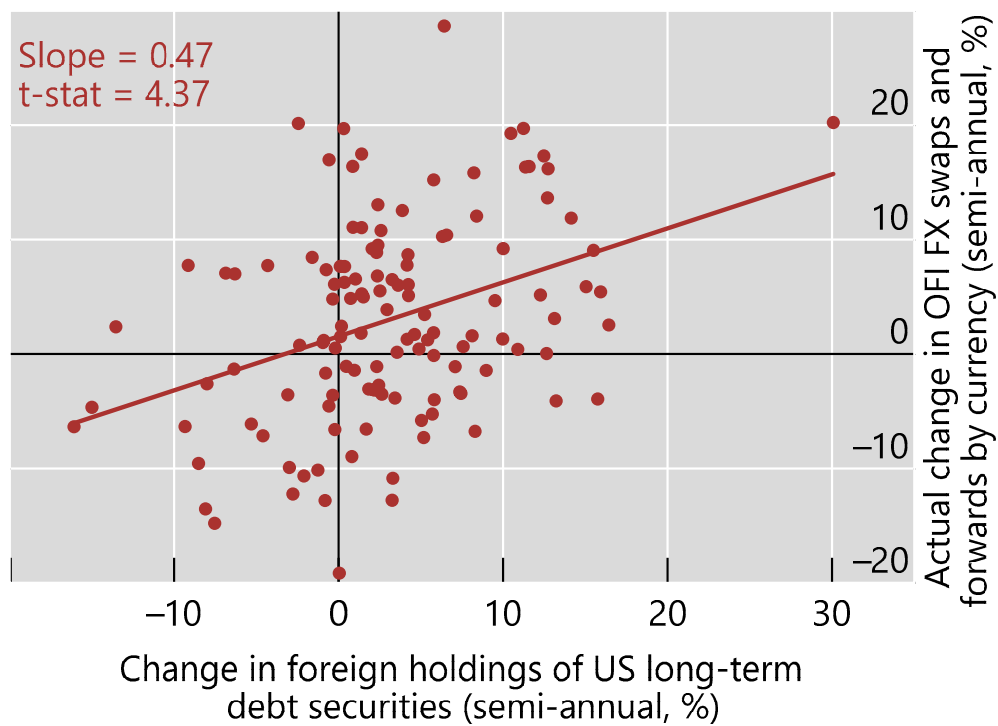
Foreign holders of US Treasuries



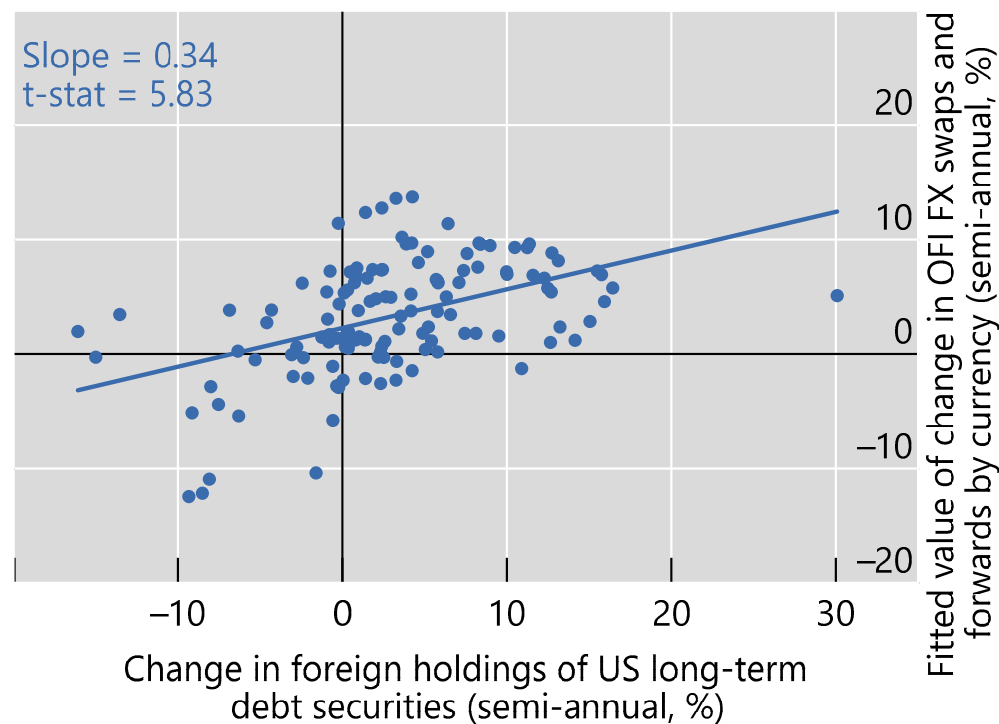
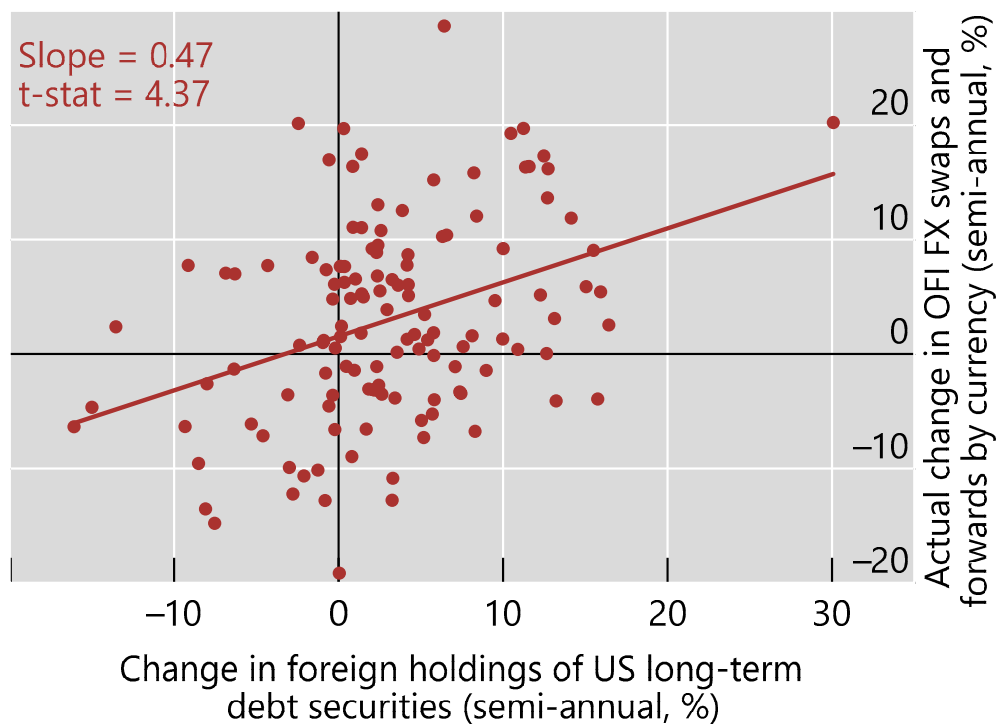
FX swaps shed light on portfolio capital flows into the United States



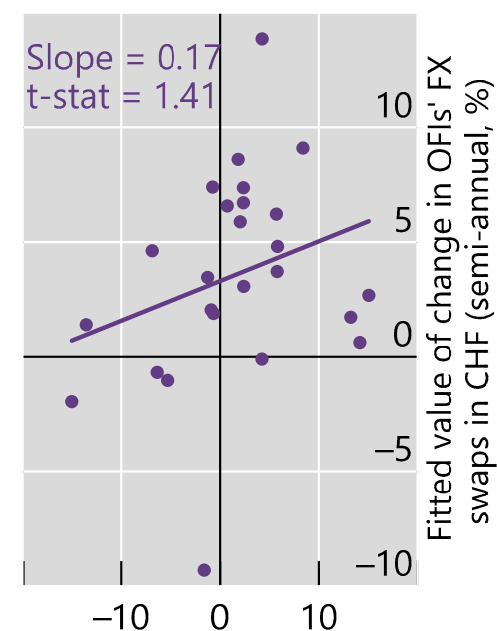
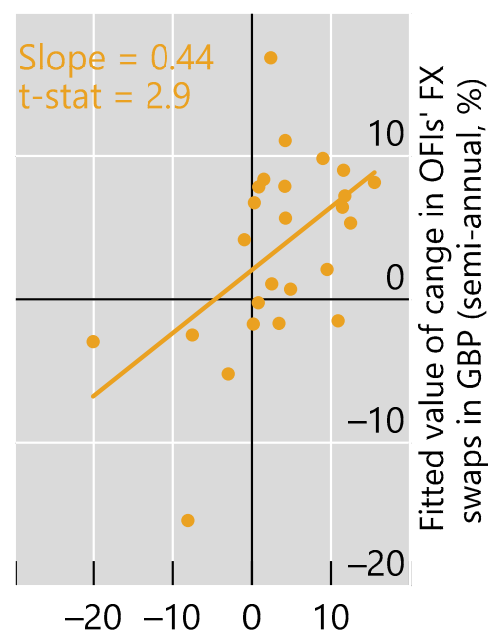
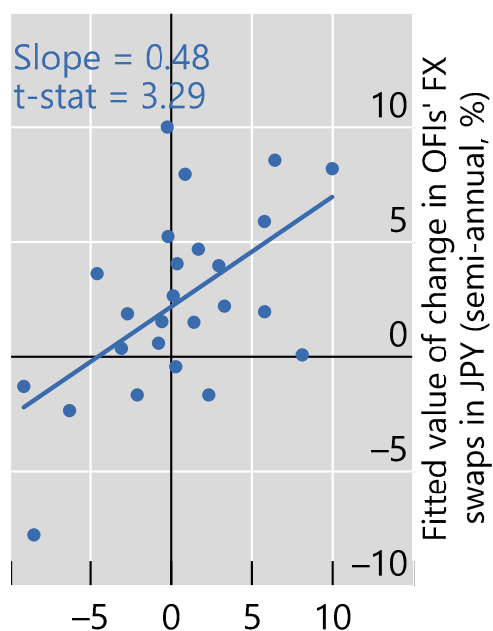
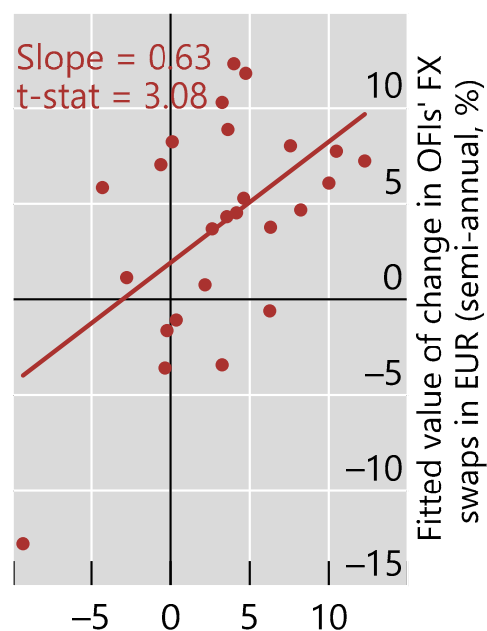
FX hedging and portfolio inflows into US debt securities (Nenova, Schrimpf and Shin (forthcoming))



FX hedging and portfolio inflows into US debt securities (Nenova, Schrimpf and Shin (forthcoming))



Similar relationships hold for bilateral portfolio flows



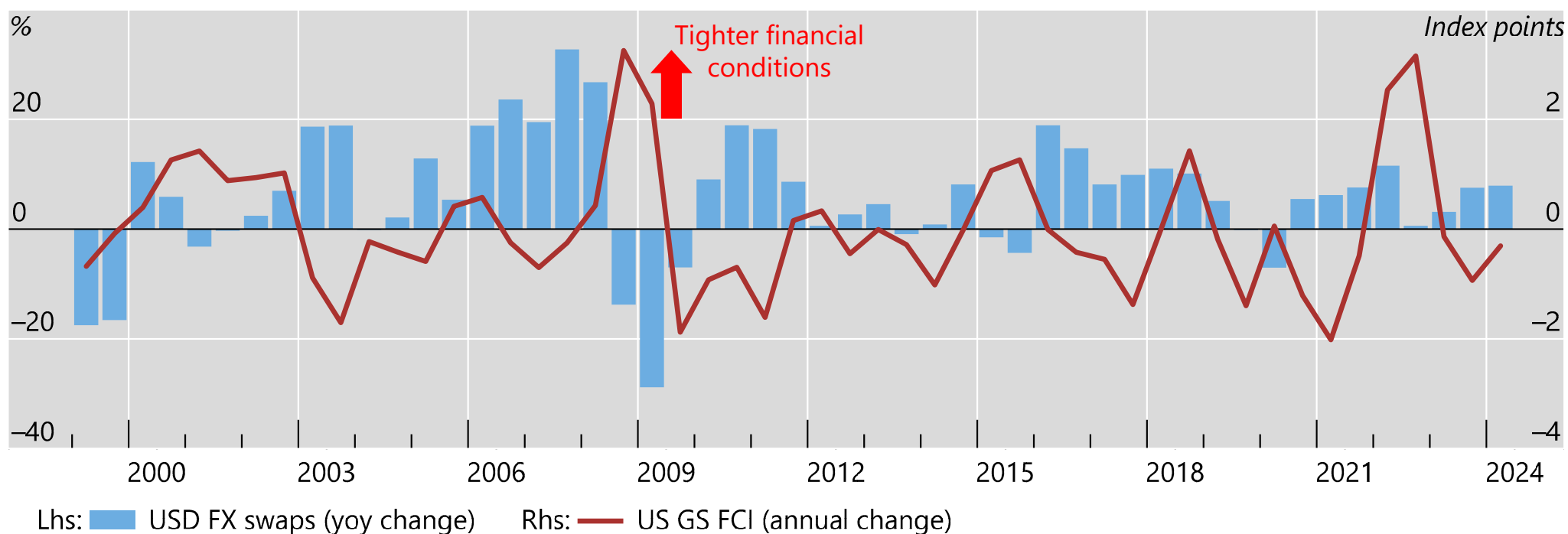
Change in EA holdings of US long-term debt securities (semi-annual, %)

Change in Japanese holdings of US long-term debt securities (semi-annual, %)

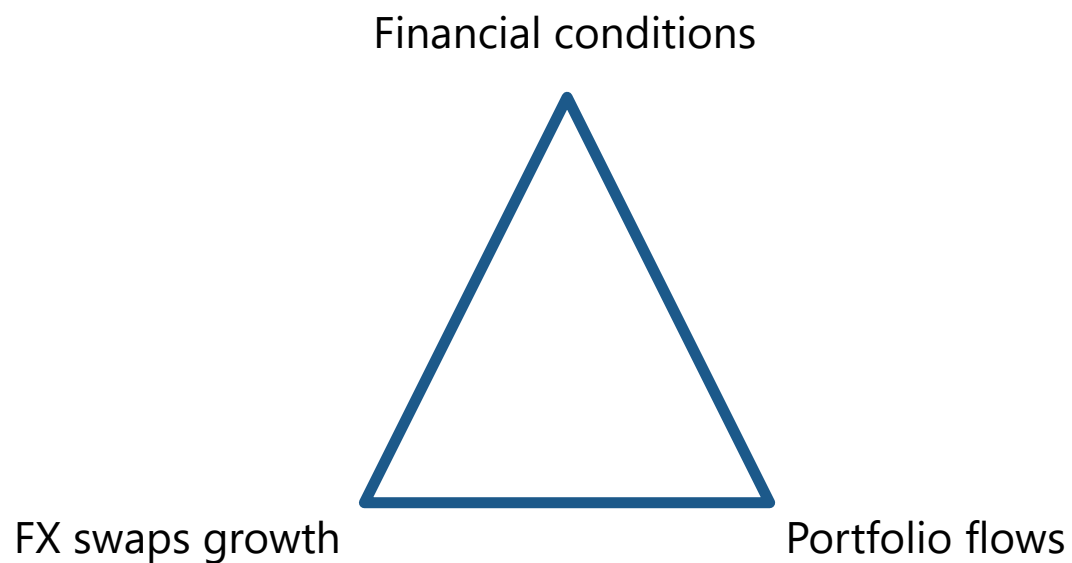
Change in UK holdings of US long-term debt securities (semi-annual, %)

Change in Swiss holdings of US long-term debt securities (semi-annual, %)

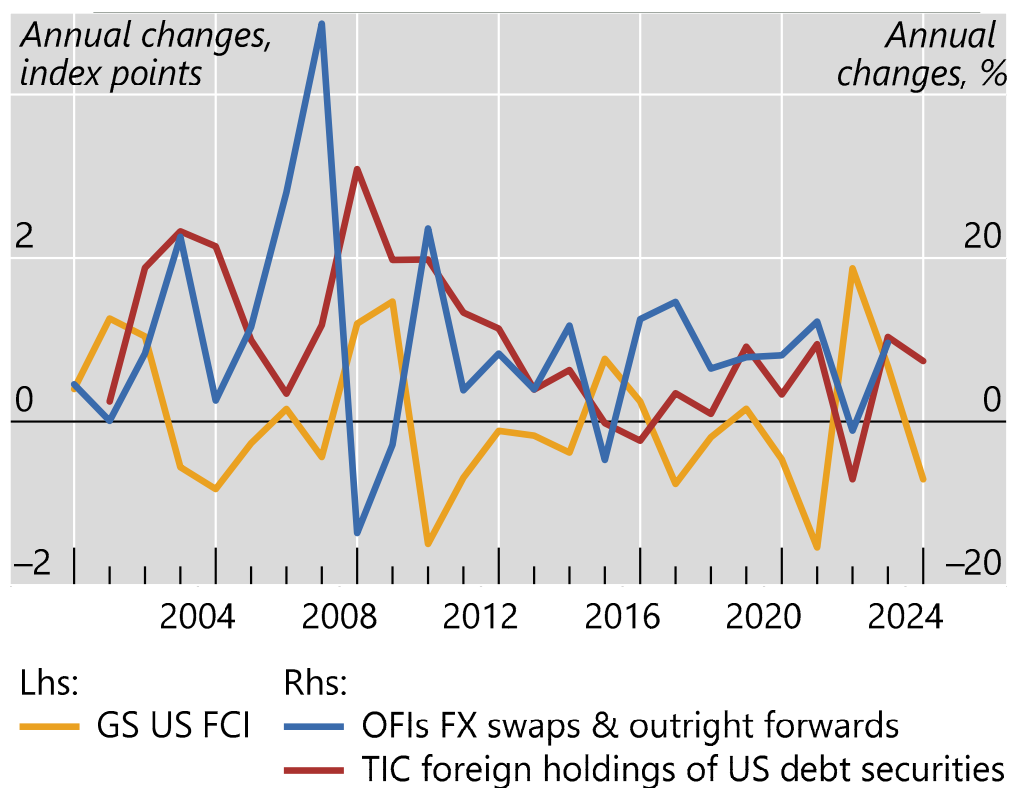
Through the impact on portfolio flows, growth of FX swaps tends to loosen US financial conditions, as measured by the GS financial conditions index



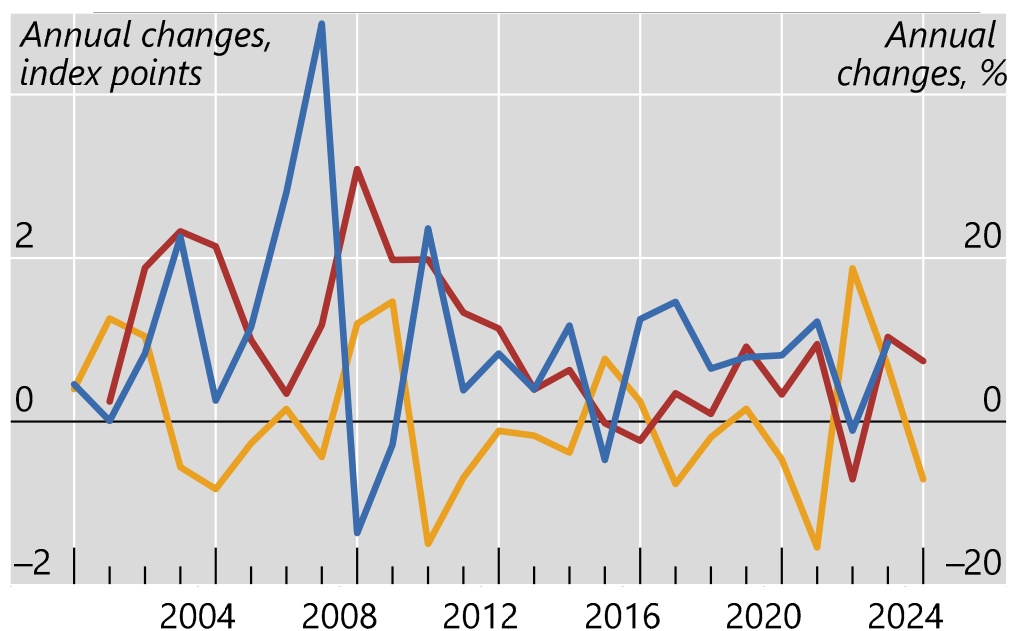
There is, therefore, a triangle between FX swaps growth, portfolio flows and financial conditions



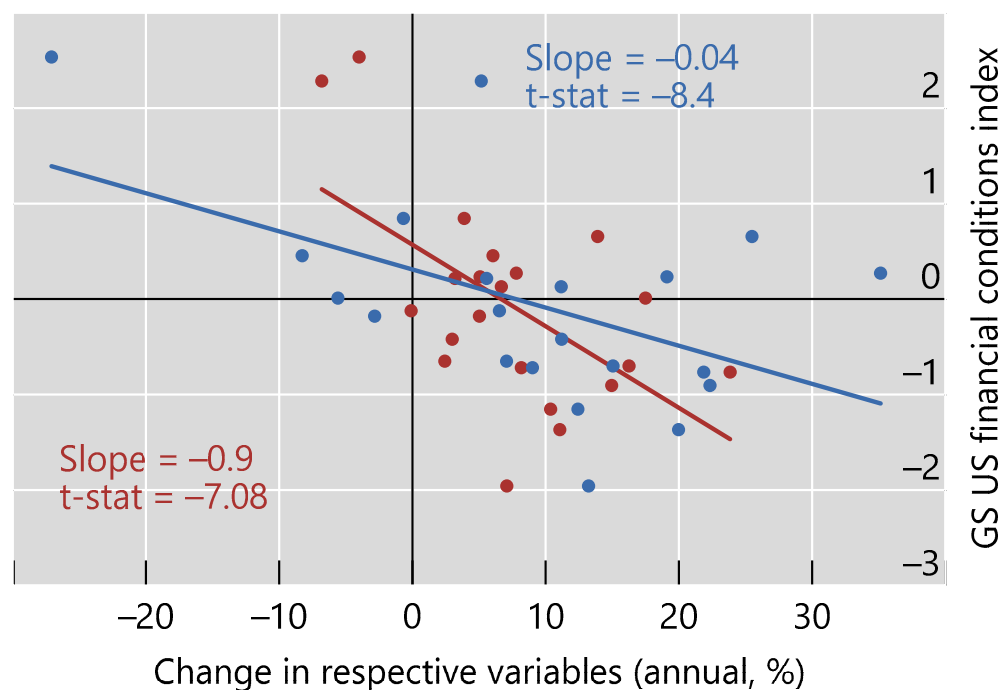
The triangle between financial conditions, portfolio flows and FX swaps shows up in the data



The triangle between financial conditions, portfolio flows and FX swaps shows up in the data

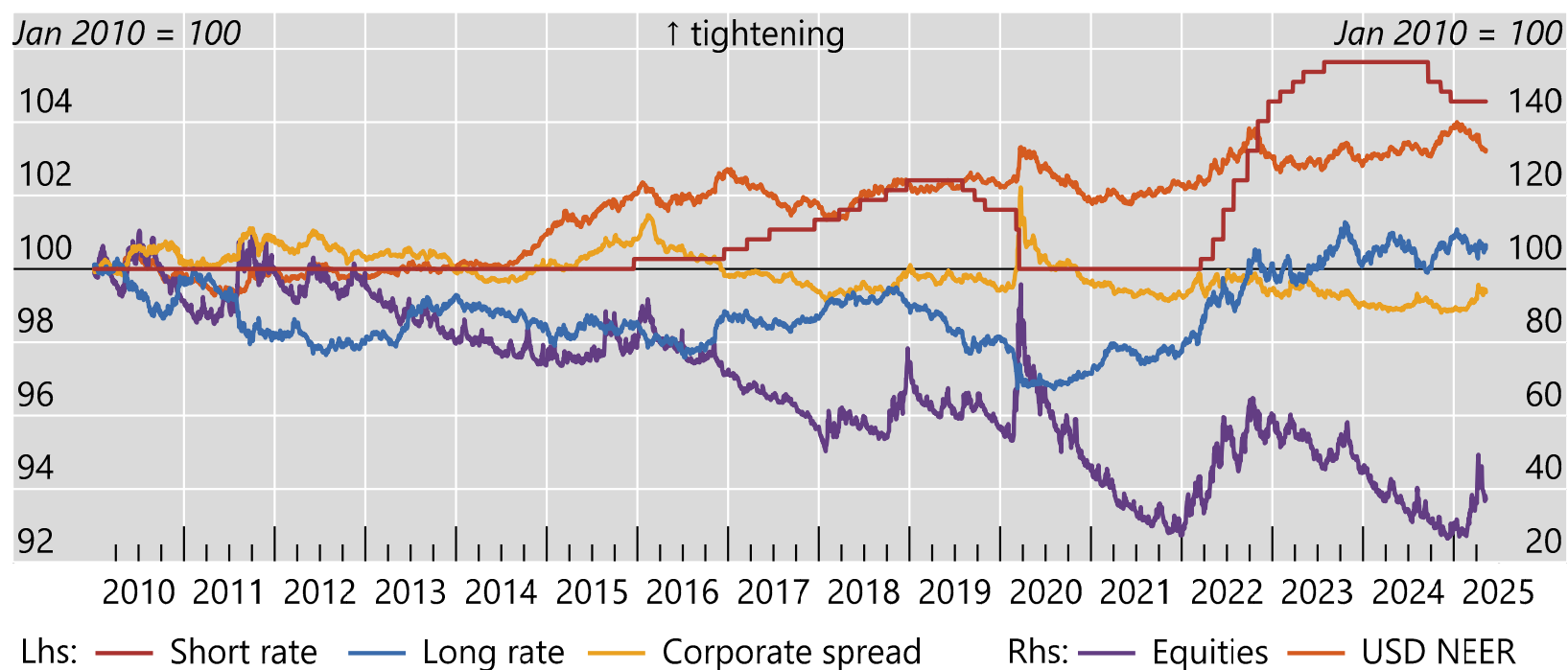


Lhs: GS US FCI
 Rhs: OFIs FX swaps & outright forwards
 TIC foreign holdings of US debt securities



• OFIs FX swaps & outright forwards
 • TIC foreign holdings of US debt securities

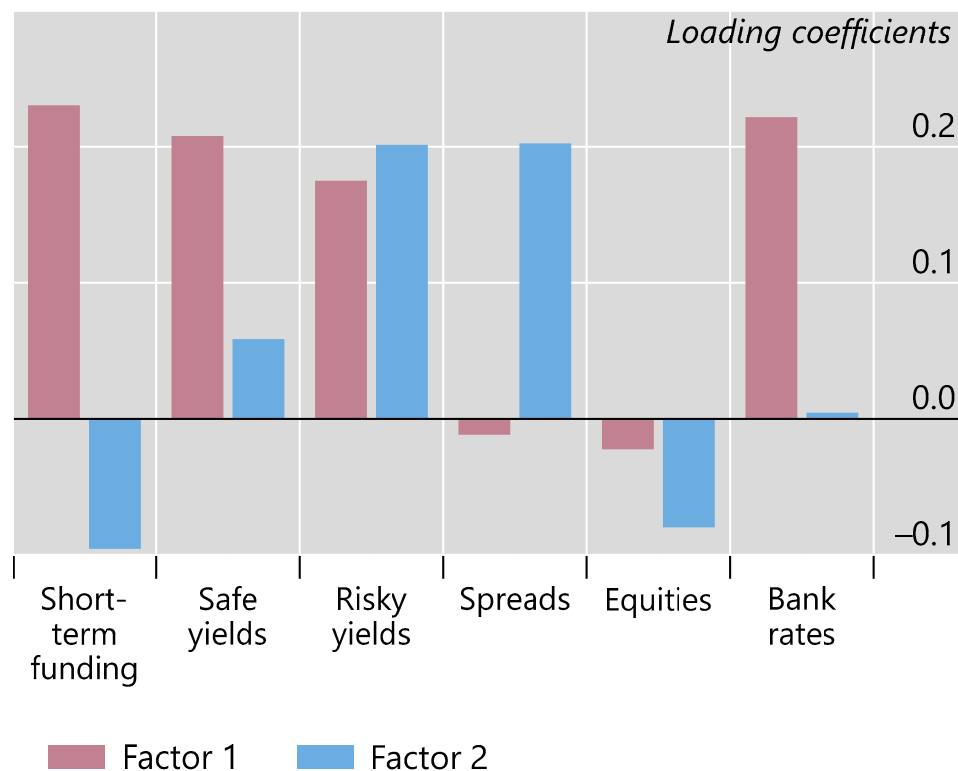
Components of the GS US financial conditions index show divergence in recent years



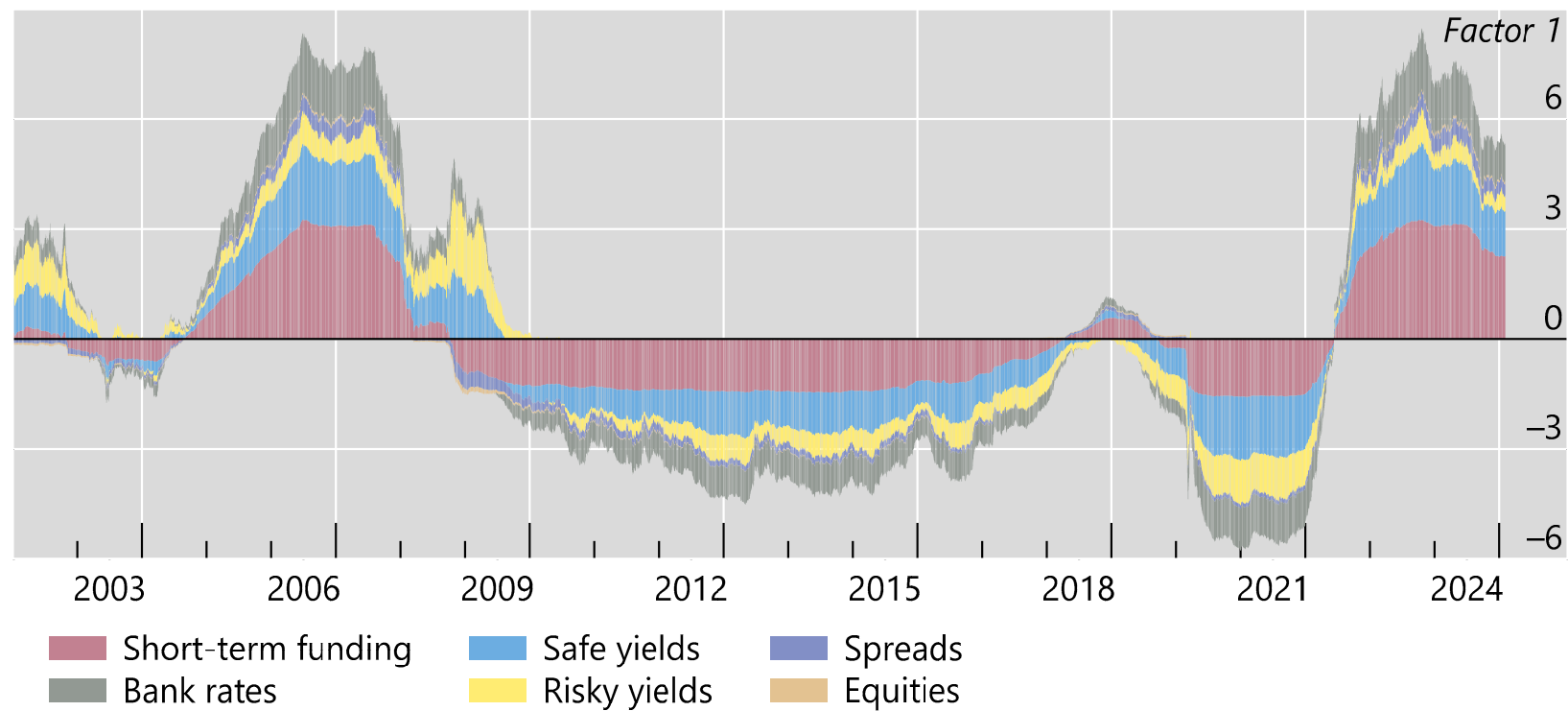
BIS dynamic factor model of financial conditions (Lombardi, Manea and Schrimpf (forthcoming))

- Extracting factor structure from 44 series
- Two factors explain about 70% of the total variance
- Factor 1 (F_1) loads on the level of yields
- Factor 2 (F_2) on spreads and riskier components

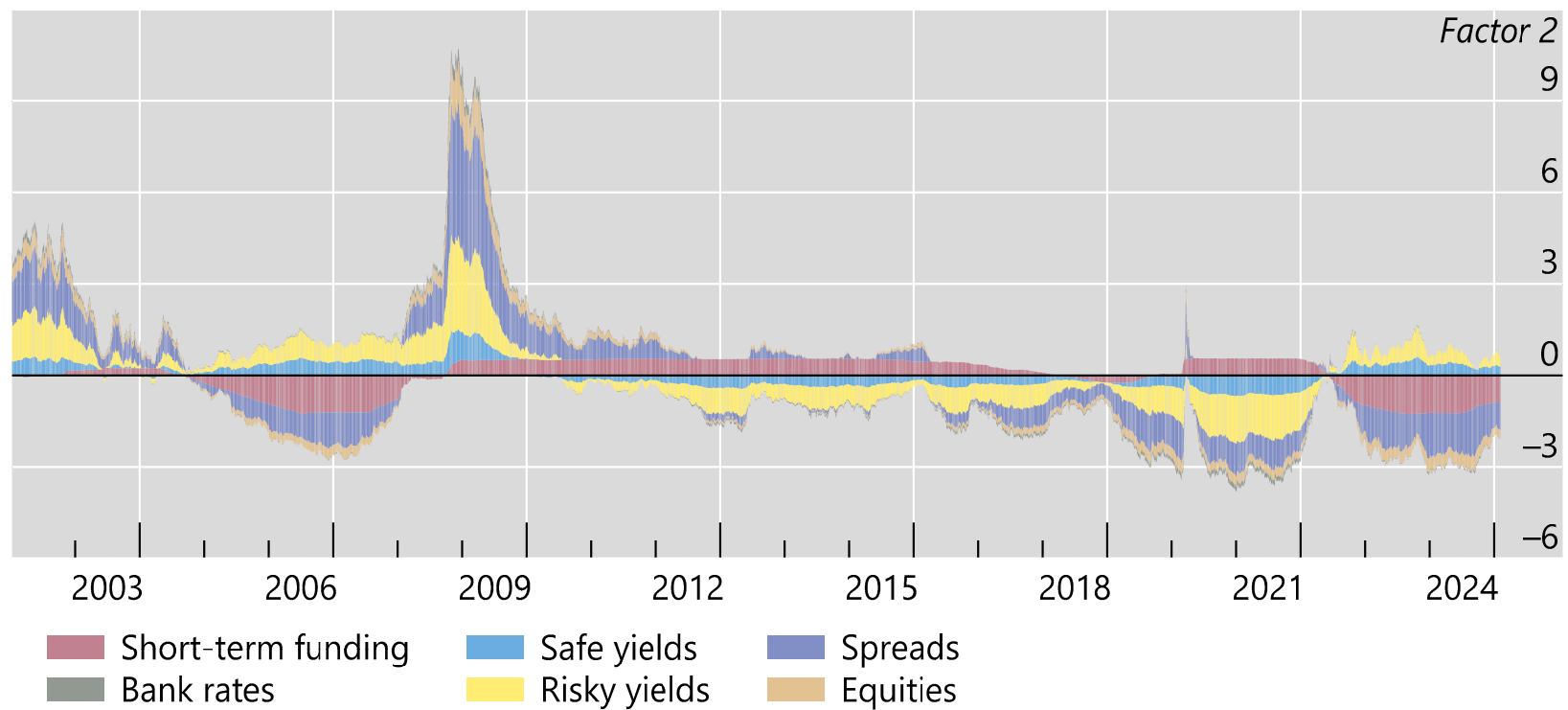
Average factor loadings



The factor structure of the BIS FCI: decomposition of factor 1



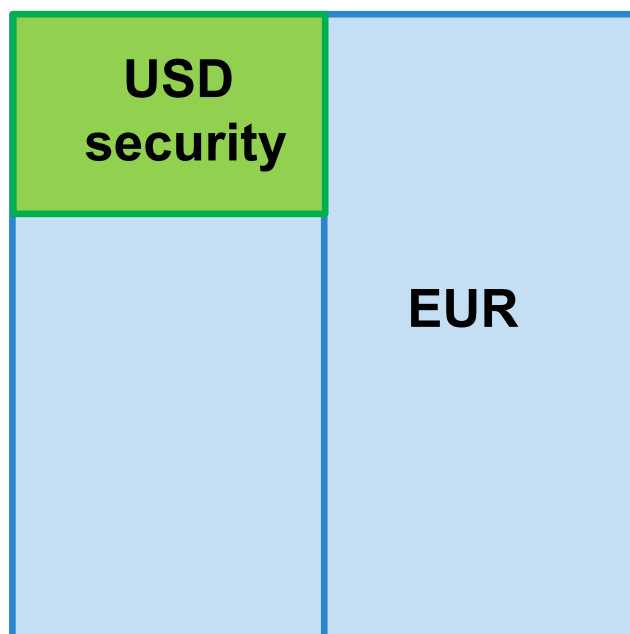
The factor structure of the BIS FCI: decomposition of factor 2





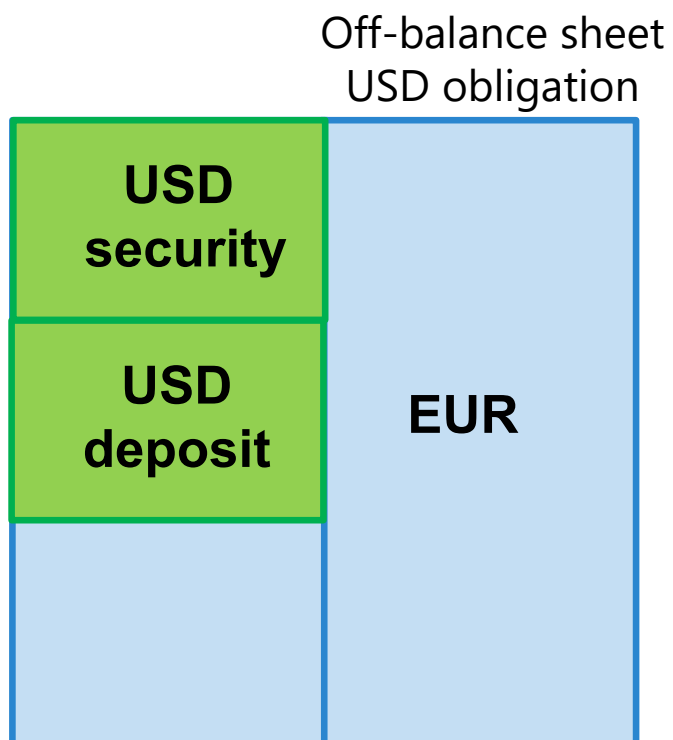
FX swaps and exchange rates

Ex post hedging: example of unhedged USD security holdings



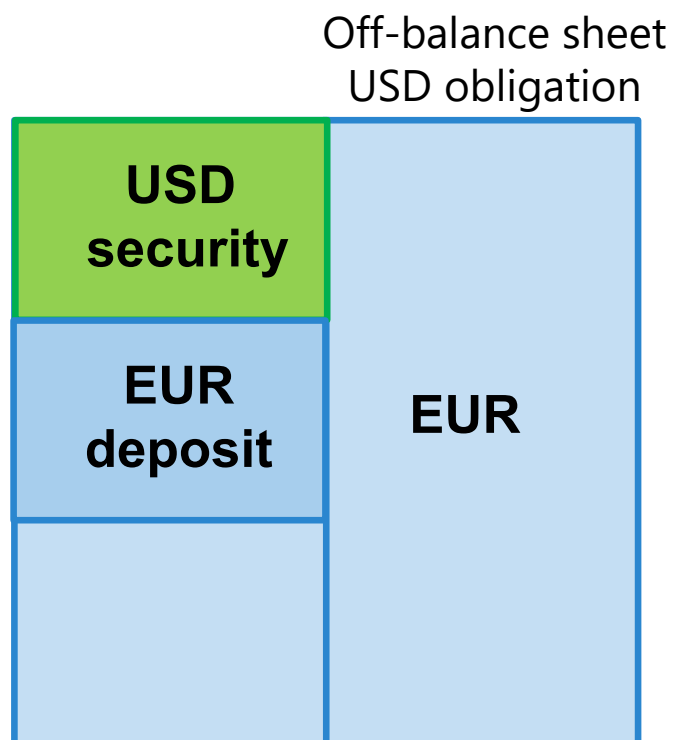
- EUR-based investor holds USD securities unhedged

Ex post hedging of unhedged USD security holdings



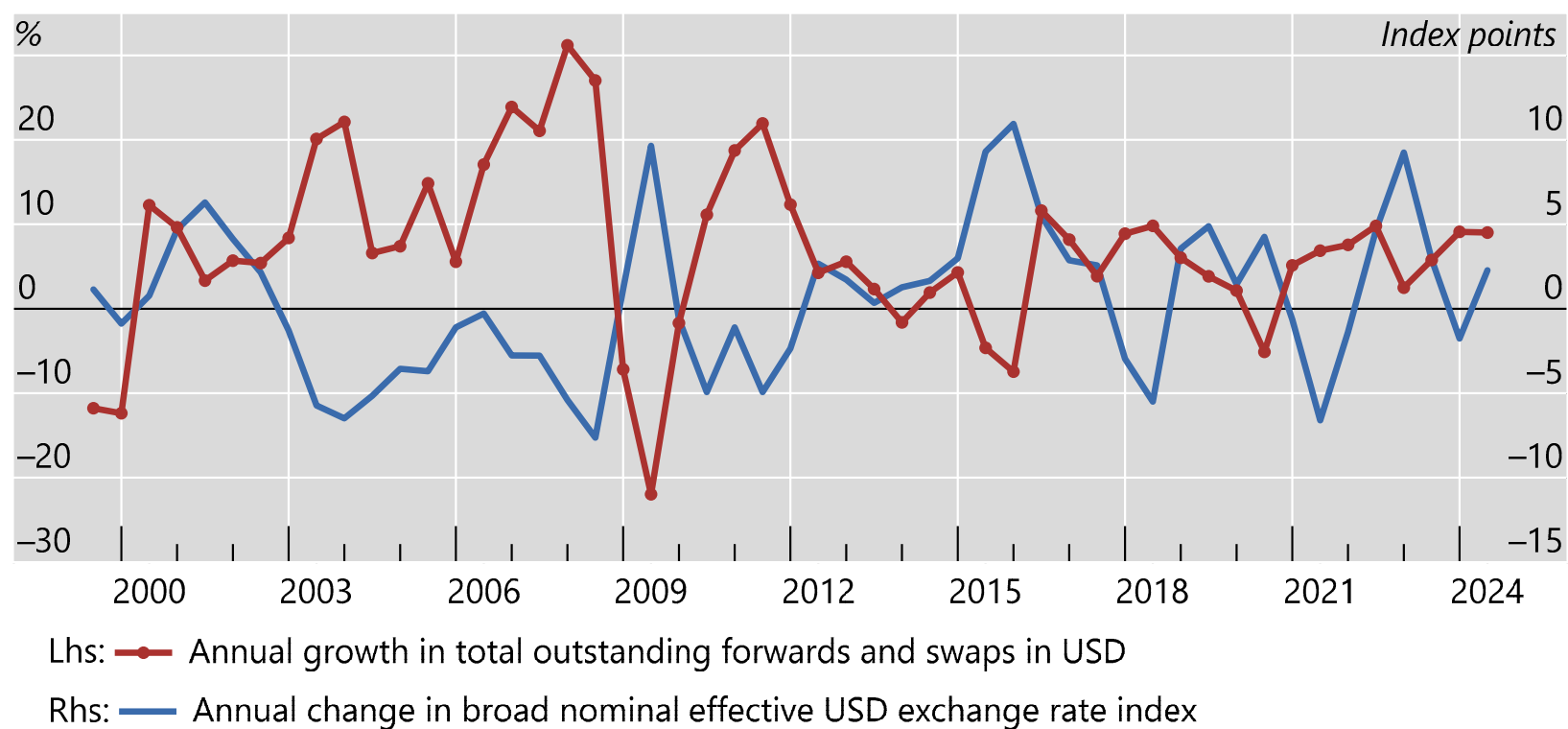
- EUR-based investor enters FX swap to borrow USD
- Acquires USD deposit
- Has off-balance sheet obligation to repay USD

Ex post hedging of unhedged USD security holdings

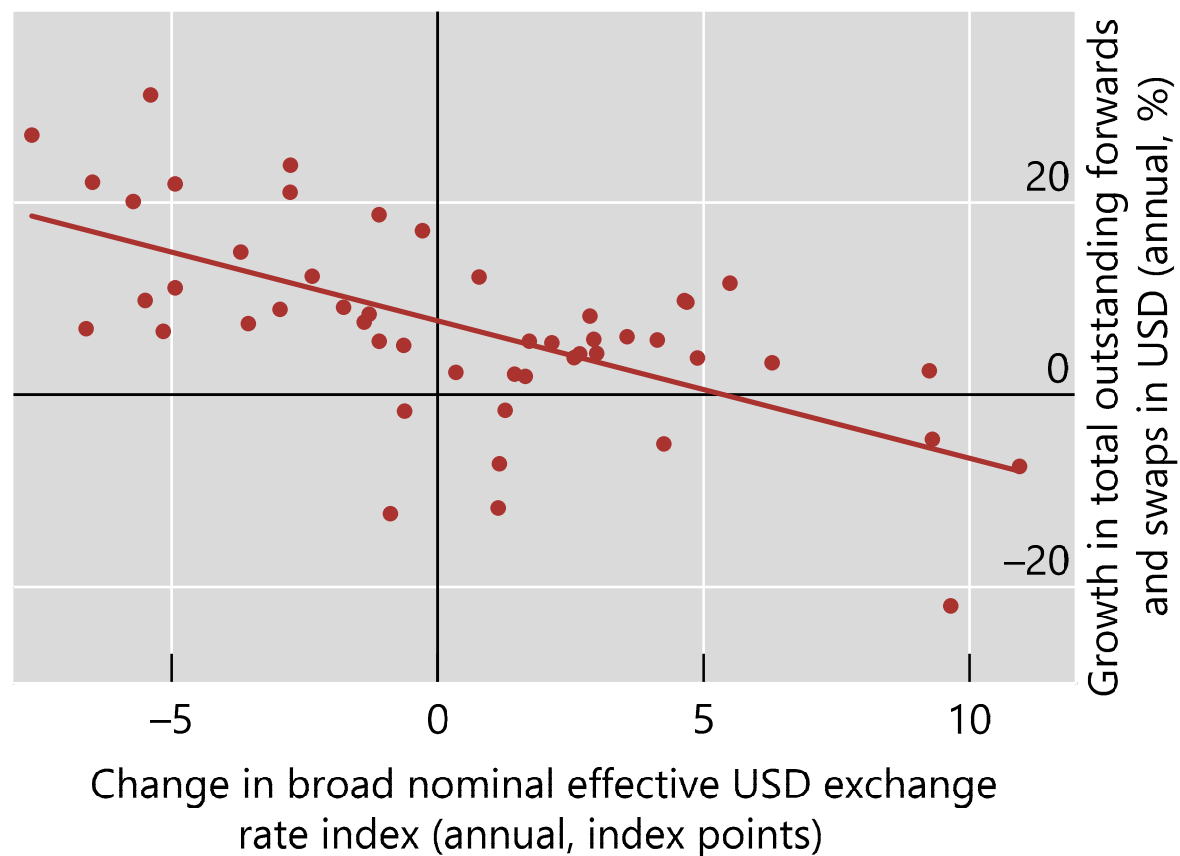


- EUR-based investor can sell the USD on the spot market to acquire EUR
- Spot dollar sales impact EUR/USD exchange rate
- Off-balance sheet USD obligation offsets currency risk of USD securities holding

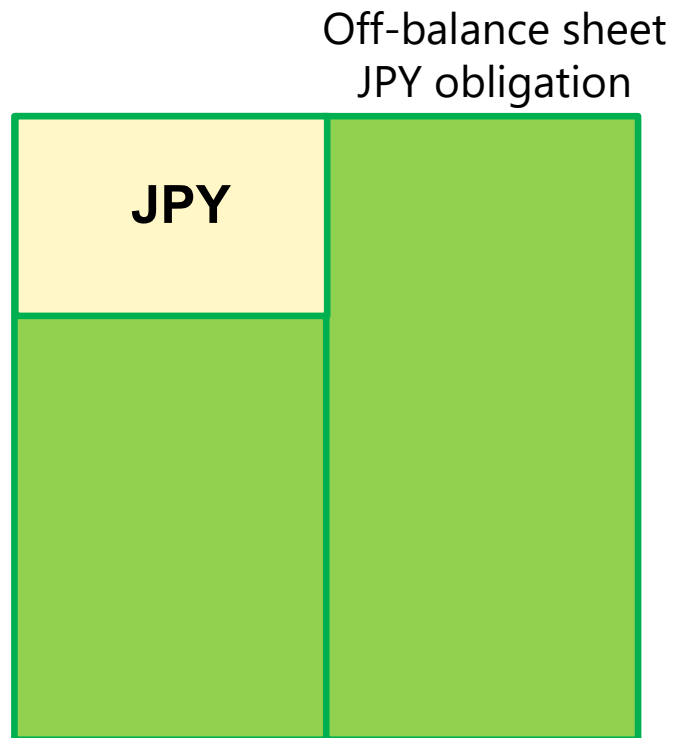
Annual growth of outstanding FX swaps in dollars is negatively related to the appreciation of the broad dollar exchange rate



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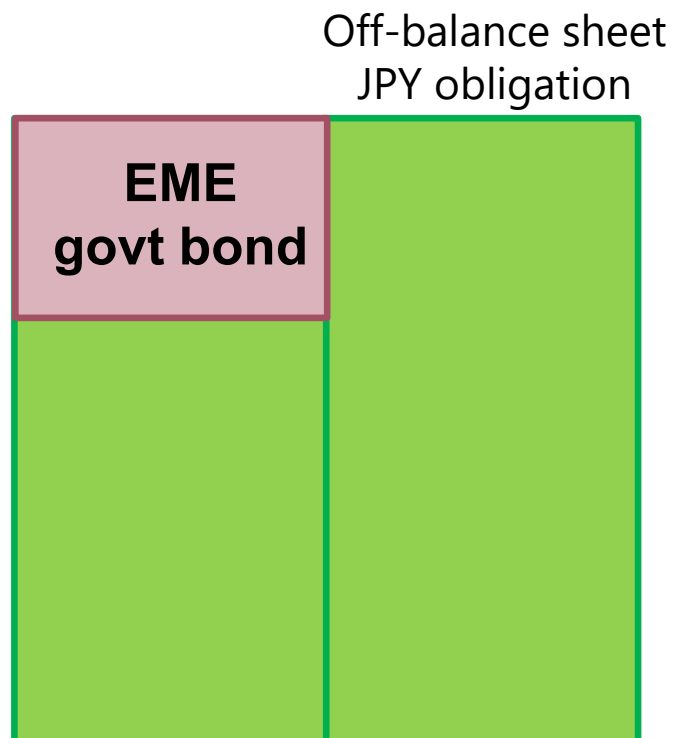


Carry trade example



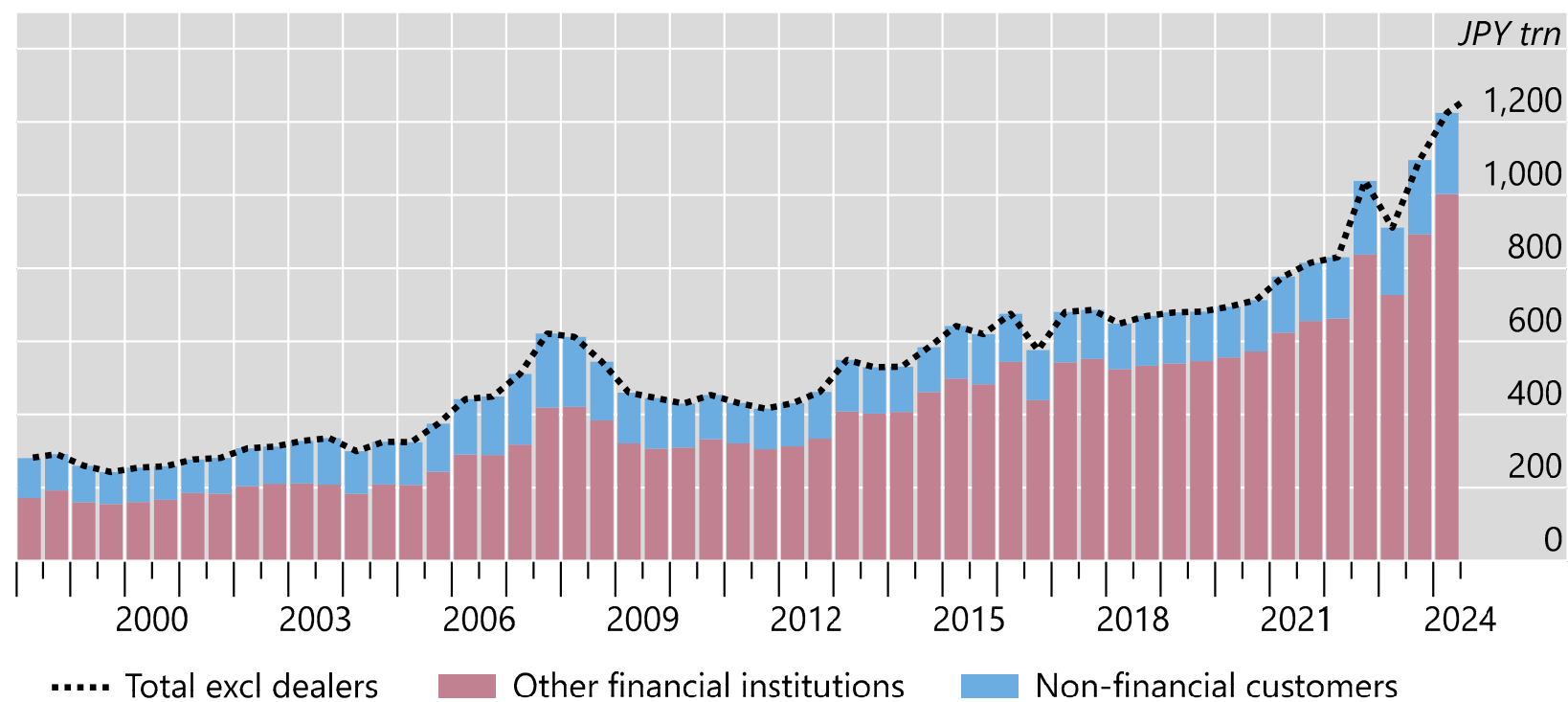
- Investor enters FX swap to borrow JPY by pledging USD as collateral

Carry trade example

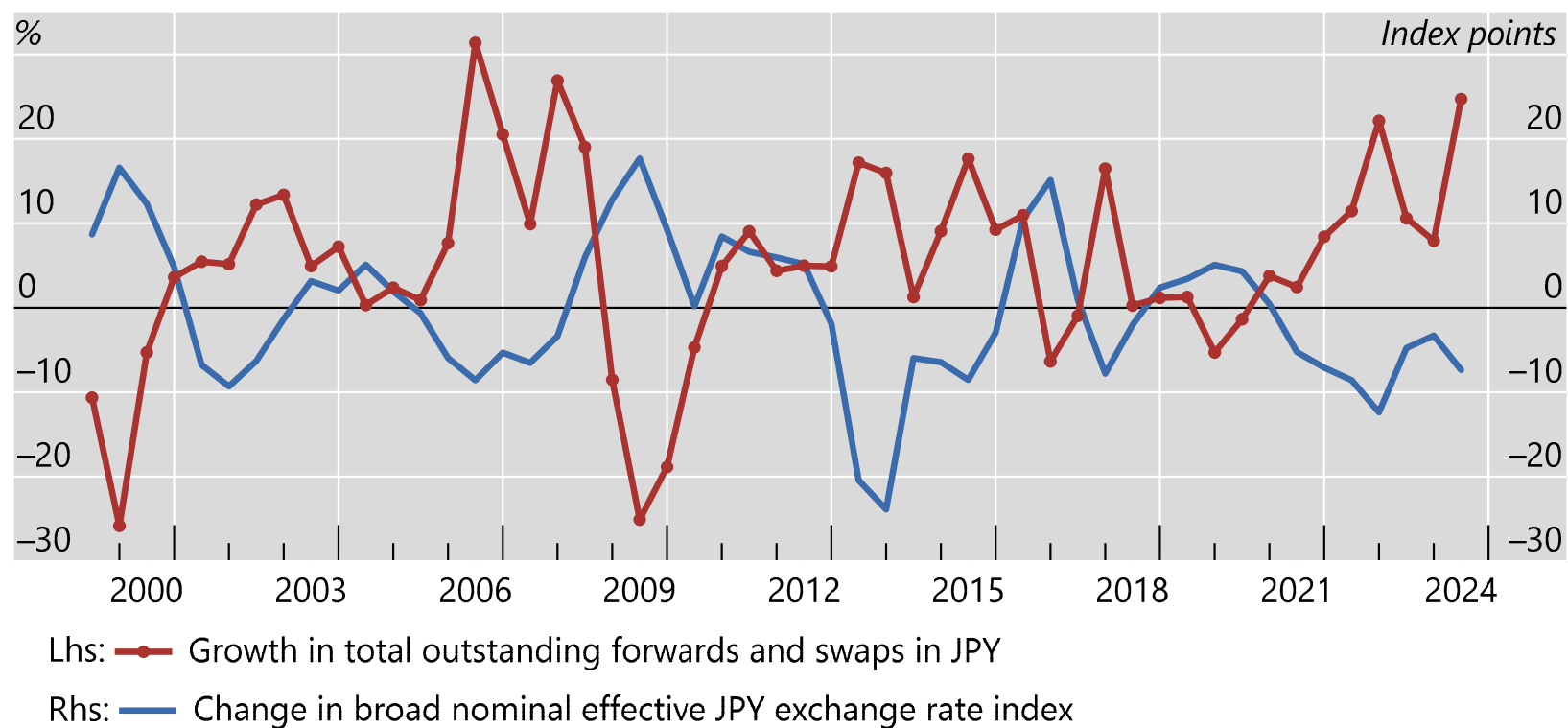


- Investor enters FX swap to borrow JPY by pledging USD as collateral
- Investor can sell JPY on spot market and acquire EME currency
- Investor purchases govt bond in that currency, constructing a carry trade portfolio

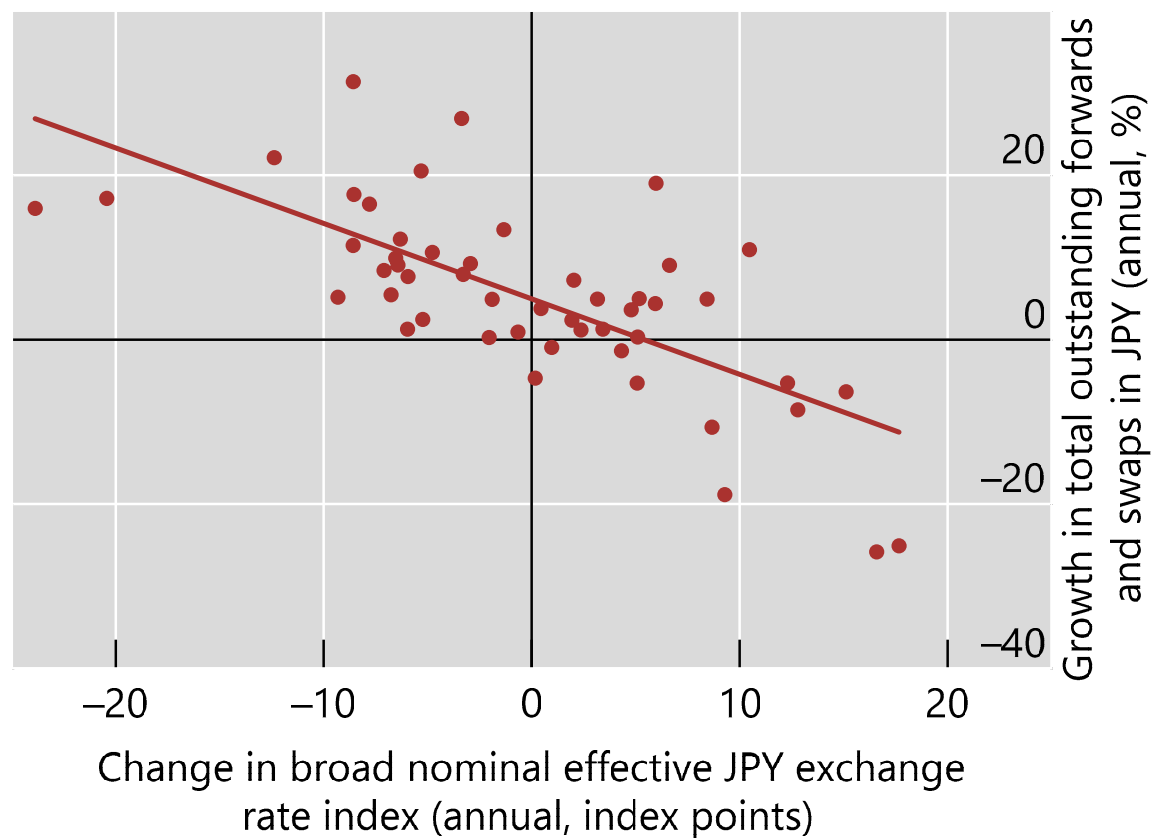
Outstanding FX swaps with JPY on one side



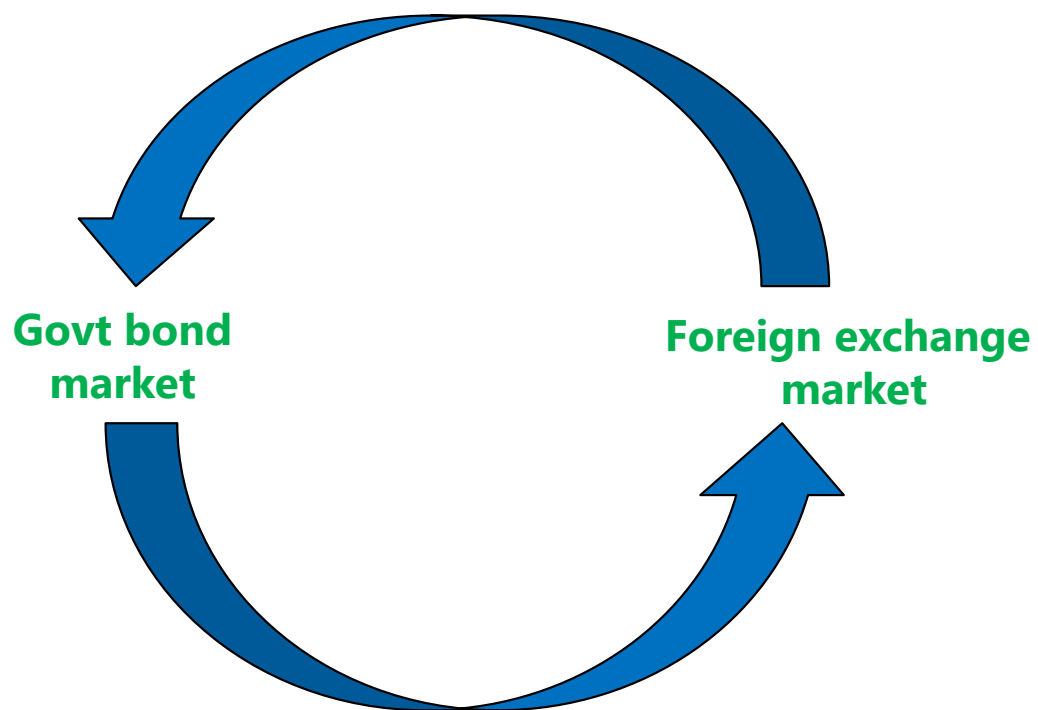
Annual growth of outstanding FX swaps in yen is negatively related to the appreciation of the broad yen exchange rate



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Government bond and foreign exchange markets are closely intertwined



FX swaps market is the linchpin that connects the government bond and foreign exchange markets

