

Annexes

BIS Statistics: Charts

The statistics published by the BIS are a unique source of information about the structure of and activity in the global financial system. BIS statistics are presented in graphical form in this annex and in tabular form in the *BIS Statistical Bulletin*, which is published concurrently with the *BIS Quarterly Review*. For introductions to the BIS statistics and a glossary of terms used in this annex, see the *BIS Statistical Bulletin*.

The data shown in the charts in this annex can be downloaded from the *BIS Quarterly Review* page on the BIS website (www.bis.org/publ/quarterly.htm). Data may have been revised or updated subsequent to the publication of this annex. For the latest data and to download additional data, see the statistics pages on the BIS website (www.bis.org/statistics/index.htm). A release calendar provides advance notice of publication dates (www.bis.org/statistics/relcal.htm).

A Locational banking statistics

A.1 Cross-border claims, by sector, currency and instrument.....	A4
A.2 Cross-border claims, by borrowing region.....	A5
A.3 Cross-border claims, by borrowing country	A6
A.4 Cross-border claims, by nationality of reporting bank and currency of denomination.....	A7
A.5 Cross-border liabilities of reporting banks.....	A8

B Consolidated banking statistics

B.1 Consolidated claims of reporting banks on advanced economies.....	A9
B.2 Consolidated claims of reporting banks on emerging market economies.....	A10

C Debt securities statistics

C.1 Global debt securities markets.....	A11
C.2 Total debt securities, by sector of issuer	A11
C.3 Net issuance of international debt securities	A12
C.4 International debt securities issued by financial and non-financial corporations.....	A12

D Derivatives statistics

D.1 Exchange-traded derivatives.....	A13
--------------------------------------	-----

D.2 Global OTC derivatives markets	A14
D.3 OTC foreign exchange derivatives.....	A14
D.4 OTC interest rate derivatives.....	A15
D.5 OTC equity-linked derivatives	A15
D.6 OTC commodity derivatives.....	A16
D.7 Credit default swaps.....	A16
D.8 Concentration in global OTC derivatives markets.....	A17

E Global liquidity indicators

E.1 Growth of international bank credit.....	A18
E.2 Global bank credit to the private non-financial sector, by residence of borrower	A19
E.3 Global credit to the non-financial sector, by currency	A20
E.4 US dollar-denominated credit to non-banks outside the United States	A21
E.5 Foreign currency credit to non-banks in EMEs	A21

F Statistics on total credit to the non-financial sector

F.1 Total credit to the non-financial sector (core debt)	A22
F.2 Total credit to the private non-financial sector (core debt)	A23
F.3 Bank credit to the private non-financial sector (core debt)	A24
F.4 Total credit to households (core debt).....	A25
F.5 Total credit to non-financial corporations (core debt).....	A26
F.6 Total credit to the government sector at market value (core debt)	A27
F.7 Total credit to the government sector at nominal value (core debt).....	A28

G Debt service ratios for the private non-financial sector

G.1 Debt service ratios of the private non-financial sector	A29
G.2 Debt service ratios of households	A30
G.3 Debt service ratios of non-financial corporations.....	A31

H Property price statistics

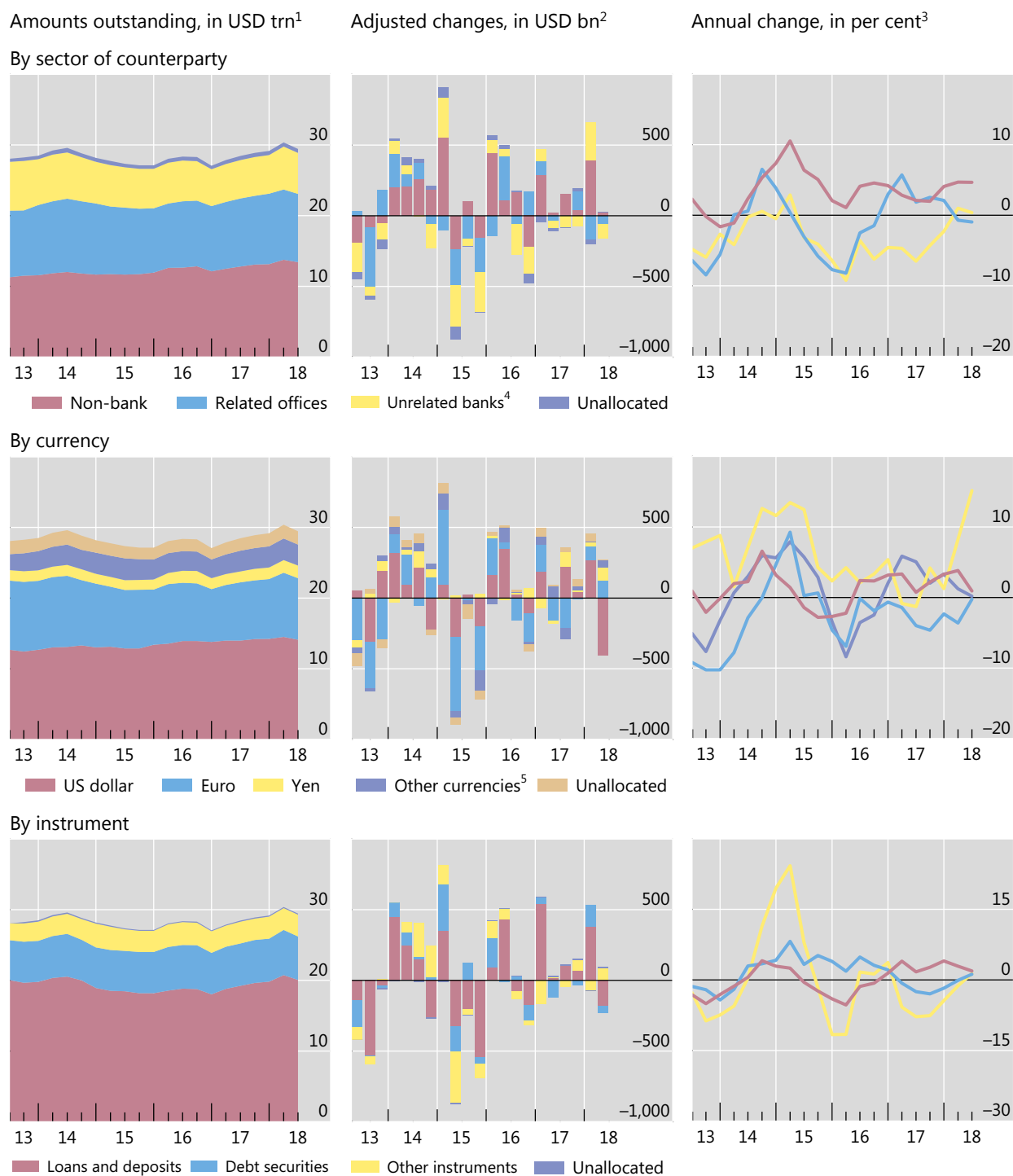
H.1 Real residential property prices	A32
--	-----

I	Effective and US dollar exchange rate statistics	
I.1	Real effective exchange rates	A33
I.2	US dollar exchange rates.....	A34
J	Credit-to-GDP gaps	
J.1	Credit-to-GDP gaps.....	A35
K	Consumer price indices	
K.1	Consumer prices	A36
L	Central bank policy rates	
L.1	Central bank policy or representative rates	A37

A Locational banking statistics

Cross-border claims, by sector, currency and instrument

Graph A.1



Further information on the BIS locational banking statistics is available at www.bis.org/statistics/bankstats.htm.

¹ At quarter-end. Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date. ² Quarterly changes in amounts outstanding, adjusted for the impact of exchange rate movements between quarter-ends and methodological breaks in the data. ³ Geometric mean of quarterly percentage adjusted changes. ⁴ Includes central banks and banks unallocated by subsector between intragroup and unrelated banks. ⁵ Other reported currencies, calculated as all currencies minus US dollar, euro, yen and unallocated currencies. The currency is known but reporting is incomplete.

Source: BIS locational banking statistics.

Cross-border claims, by borrowing region

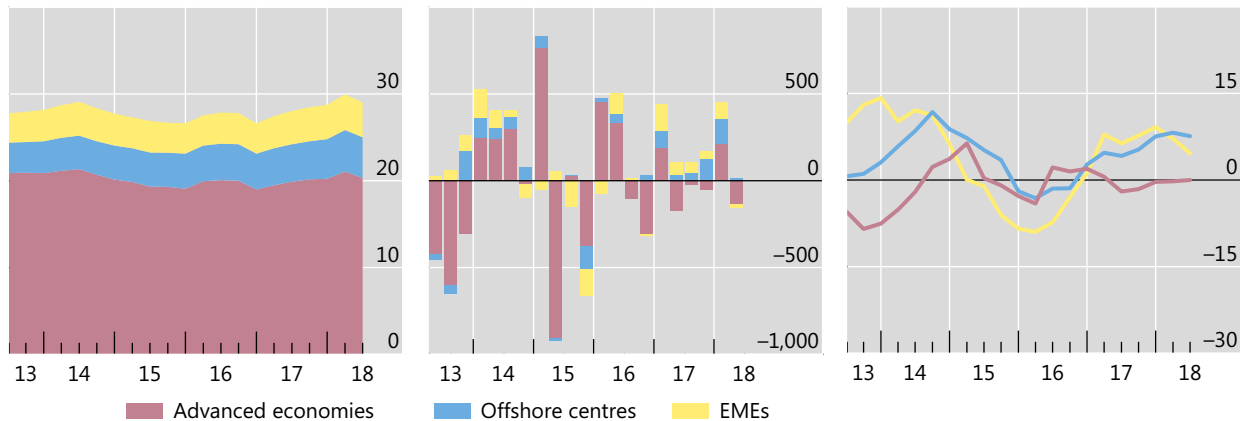
Graph A.2

Amounts outstanding, in USD trn¹

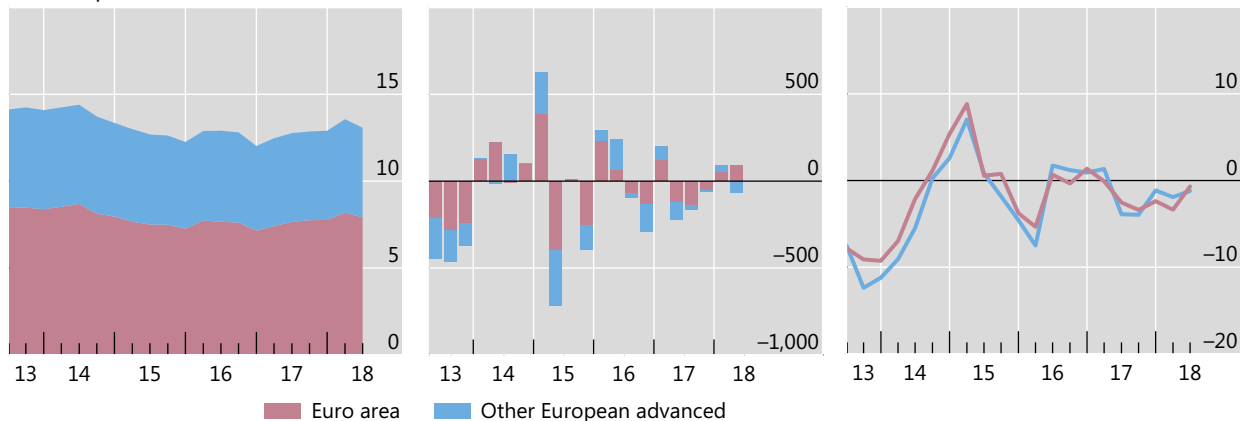
Adjusted changes, in USD bn²

Annual change, in per cent³

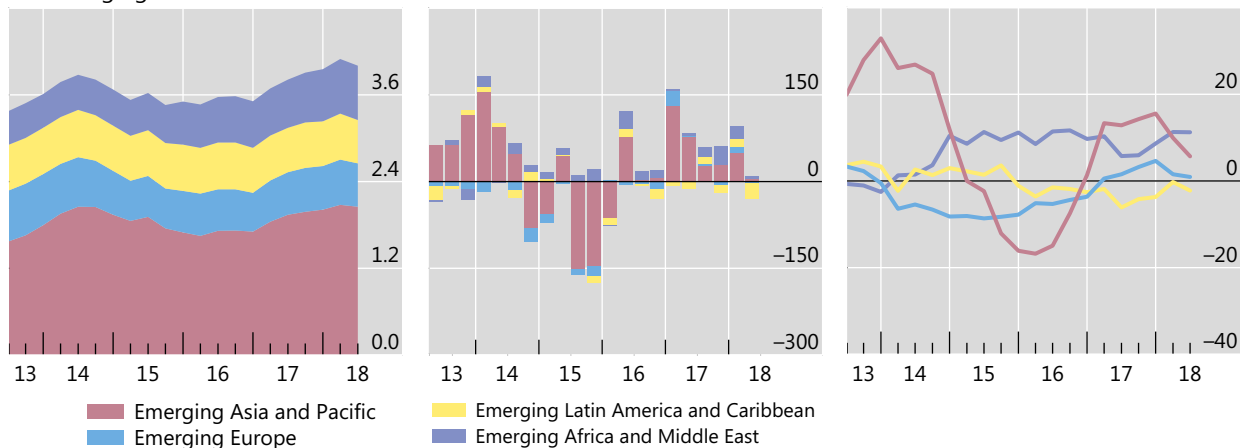
On all countries



On Europe



On emerging market economies



Further information on the BIS locational banking statistics is available at www.bis.org/statistics/bankstats.htm.

¹ At quarter-end. Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date. ² Quarterly changes in amounts outstanding, adjusted for the impact of exchange rate movements between quarter-ends and methodological breaks in the data. ³ Geometric mean of quarterly percentage adjusted changes.

Source: BIS locational banking statistics.

Cross-border claims, by borrowing country

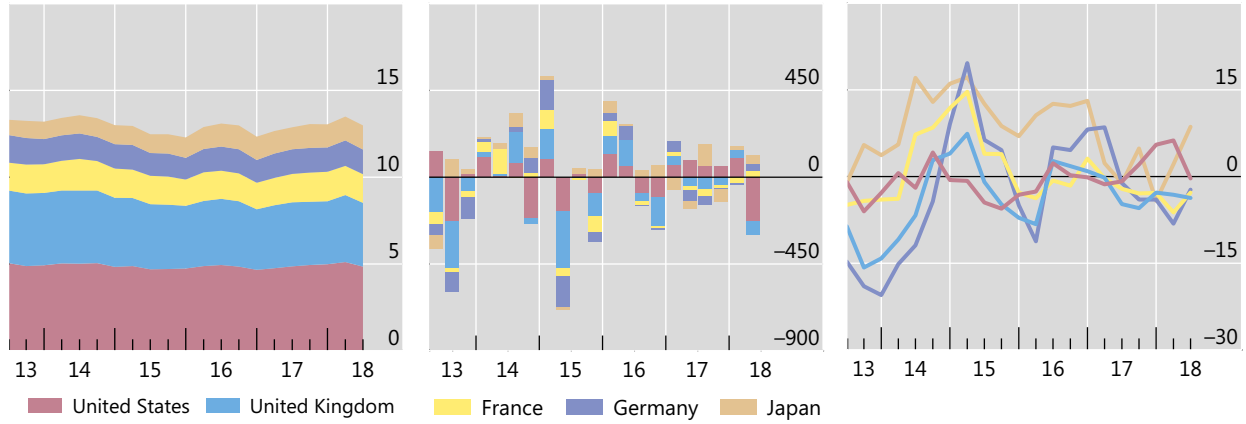
Graph A.3

Amounts outstanding, in USD trn¹

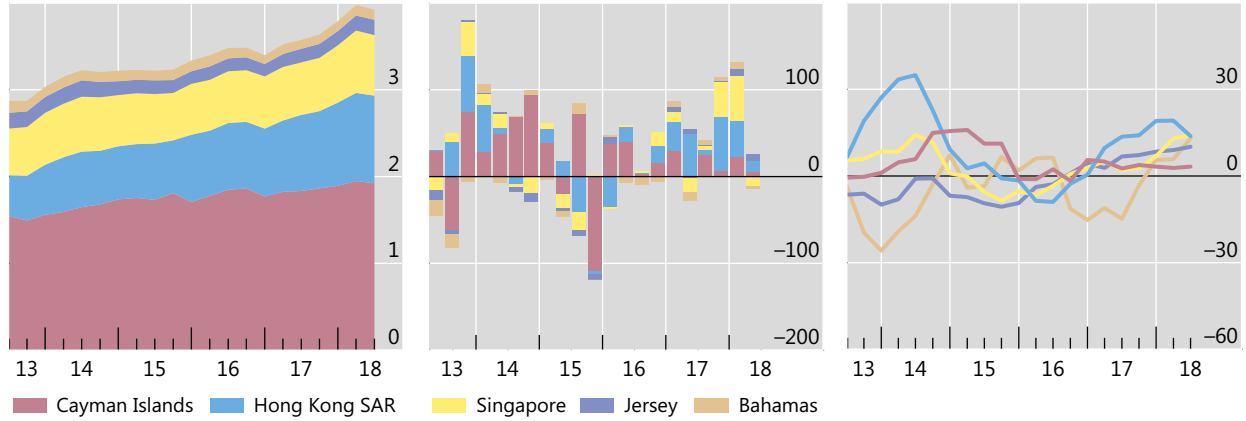
Adjusted changes, in USD bn²

Annual change, in per cent³

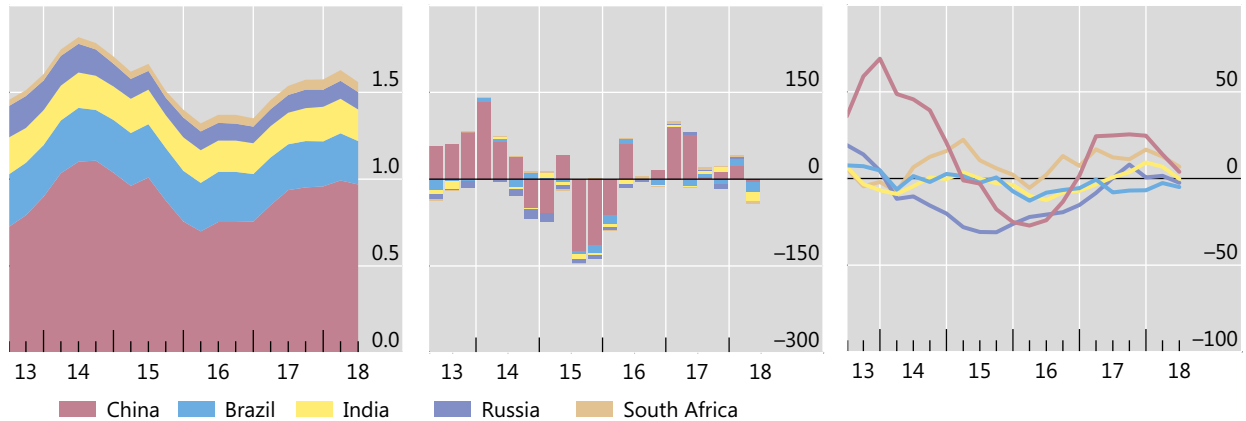
On selected advanced economies



On selected offshore centres



On selected emerging market economies

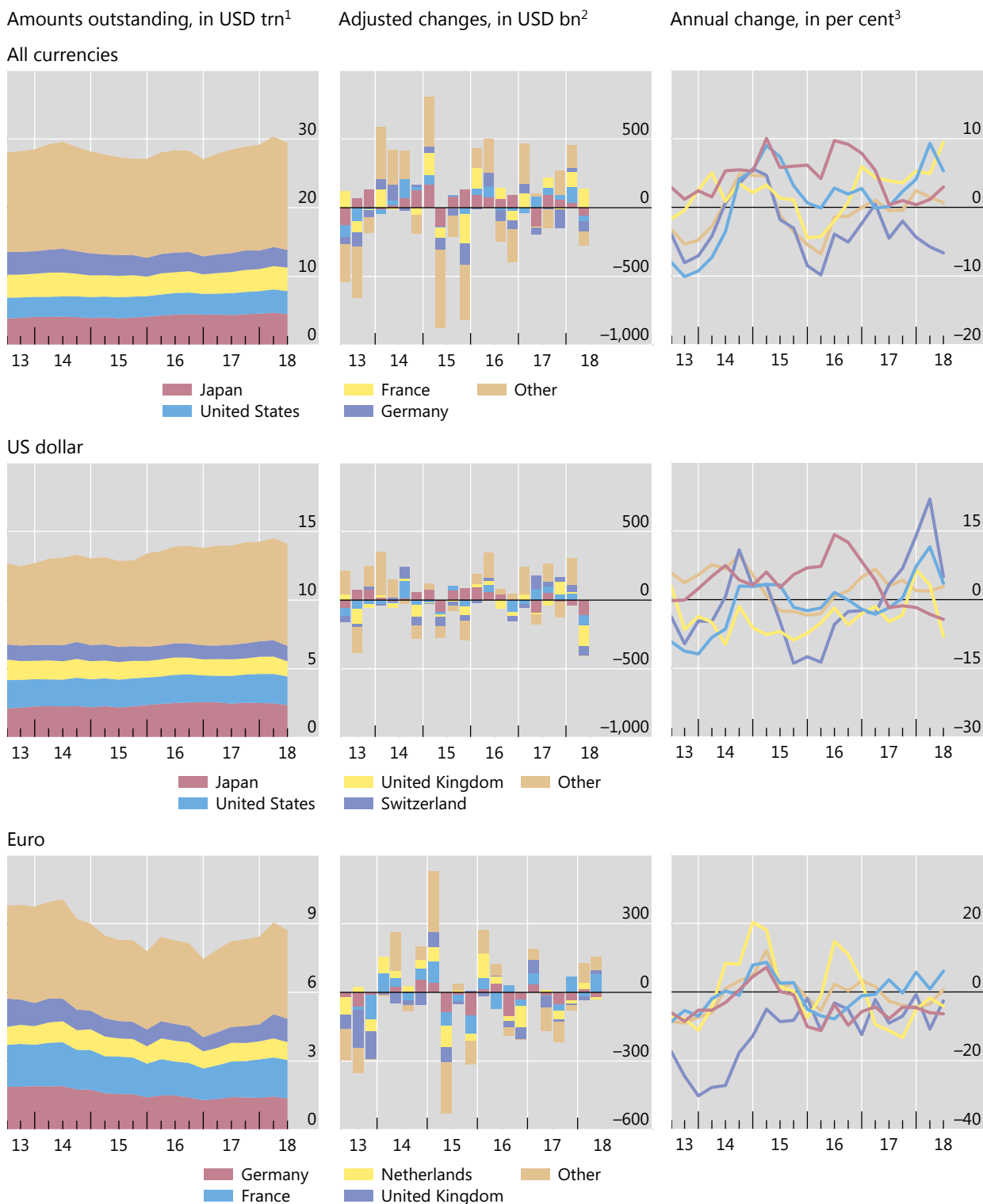


Further information on the BIS locational banking statistics is available at www.bis.org/statistics/bankstats.htm.

¹ At quarter-end. Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date. ² Quarterly changes in amounts outstanding, adjusted for the impact of exchange rate movements between quarter-ends and methodological breaks in the data. ³ Geometric mean of quarterly percentage adjusted changes.

Source: BIS locational banking statistics.

Cross-border claims, by nationality of reporting bank and currency of denomination Graph A.4



Further information on the BIS locational banking statistics is available at www.bis.org/statistics/bankstats.htm.

¹ At quarter-end. Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date. ² Quarterly changes in amounts outstanding, adjusted for the impact of exchange rate movements between quarter-ends and methodological breaks in the data. ³ Geometric mean of quarterly percentage adjusted changes.

Source: BIS locational banking statistics.

Cross-border liabilities of reporting banks

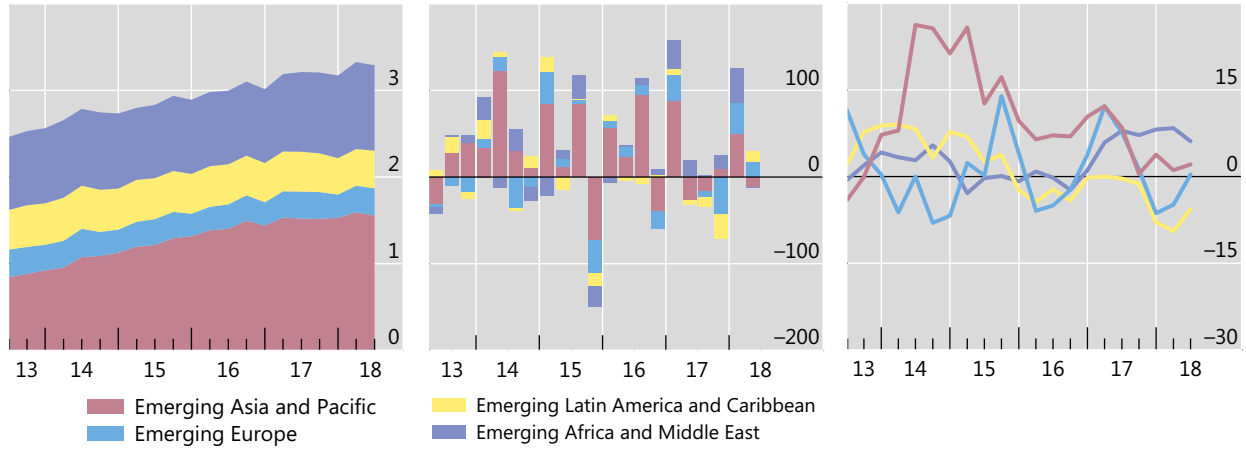
Graph A.5

Amounts outstanding, in USD trn¹

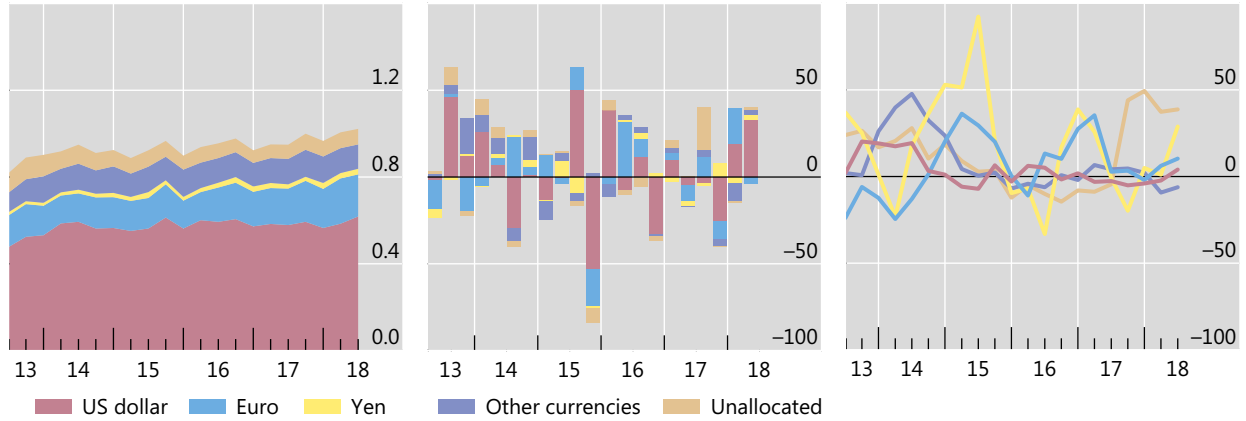
Adjusted changes, in USD bn²

Annual change, in per cent³

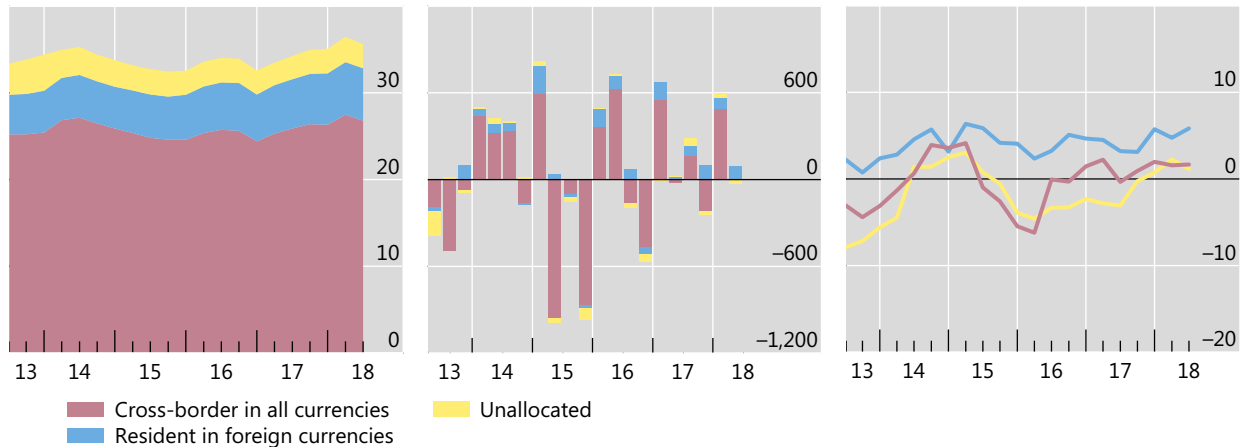
To emerging market economies



To central banks



By currency type and location



Further information on the BIS locational banking statistics is available at www.bis.org/statistics/bankstats.htm.

¹ At quarter-end. Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date. ² Quarterly changes in amounts outstanding, adjusted for the impact of exchange rate movements between quarter-ends and methodological breaks in the data. ³ Geometric mean of quarterly percentage adjusted changes.

Source: BIS locational banking statistics.

B Consolidated banking statistics

Consolidated claims of reporting banks on advanced economies

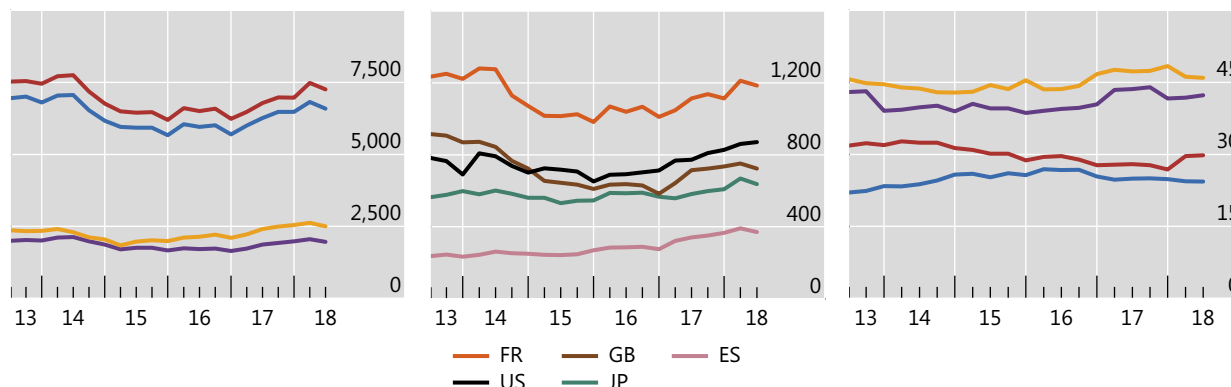
Graph B.1

Foreign claims and local positions, in USD bn^{1,2}

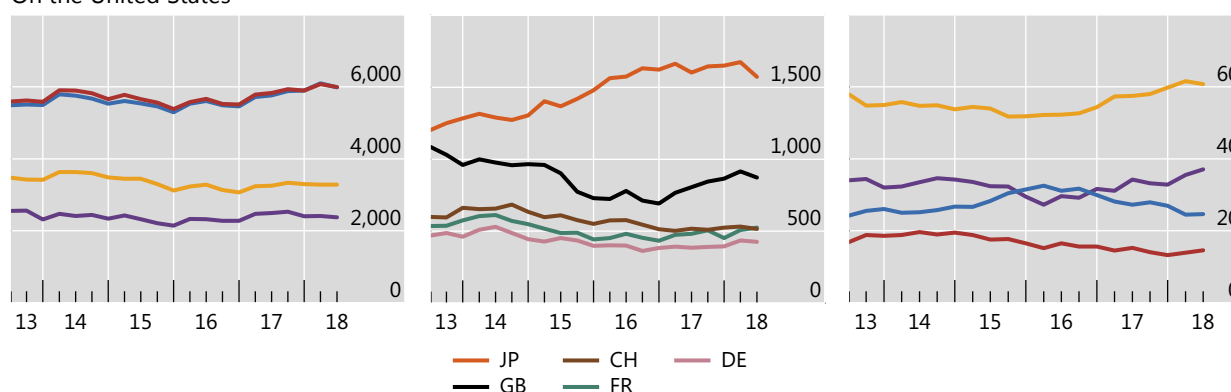
Foreign claims of selected creditors, in USD bn^{1,3}

International claims, by sector and maturity, in per cent⁴

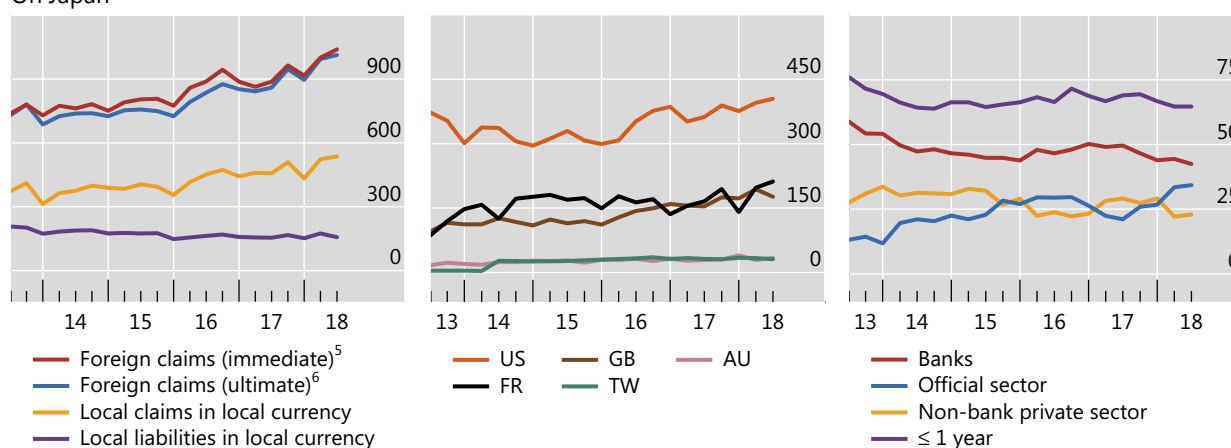
On the euro area



On the United States



On Japan



Further information on the BIS consolidated banking statistics is available at www.bis.org/statistics/bankstats.htm.

¹ Amounts outstanding at quarter-end. Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date. ² Excludes domestic claims, ie claims on residents of a bank's home country. ³ Foreign claims on an ultimate risk basis, by nationality of reporting bank. The banking systems shown are not necessarily the largest foreign bank creditors on each reference date. ⁴ As a percentage of international claims outstanding. ⁵ On an immediate counterparty basis. Includes the unconsolidated claims of banks headquartered outside but located inside CBS-reporting countries. ⁶ On an ultimate risk basis.

Source: BIS consolidated banking statistics (CBS).

Consolidated claims of reporting banks on emerging market economies

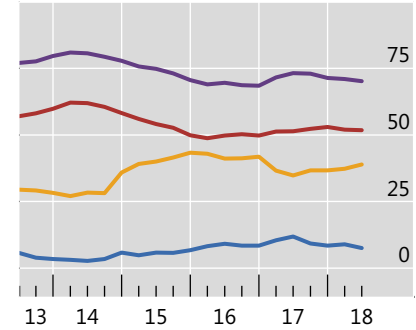
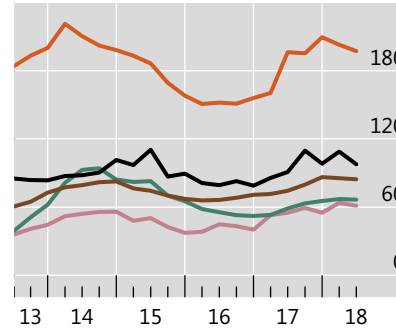
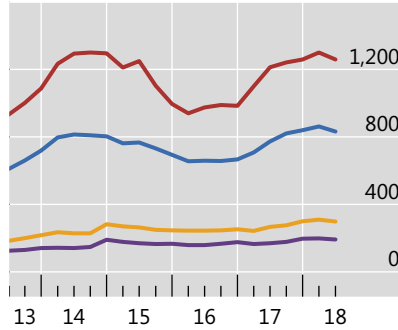
Graph B.2

Foreign claims and local positions, in USD bn^{1,2}

Foreign claims of selected creditors, in USD bn^{1,3}

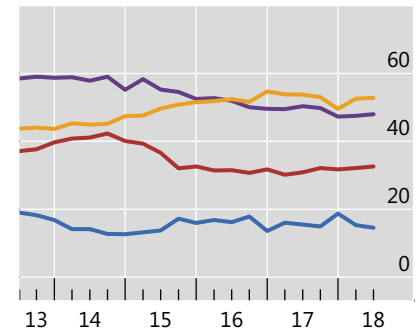
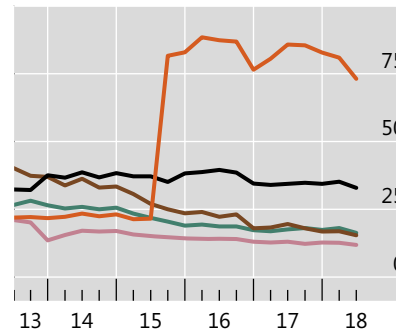
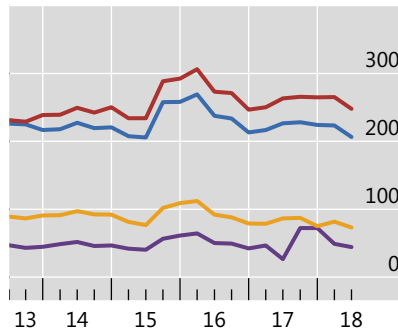
International claims, by sector and maturity, in per cent⁴

On China



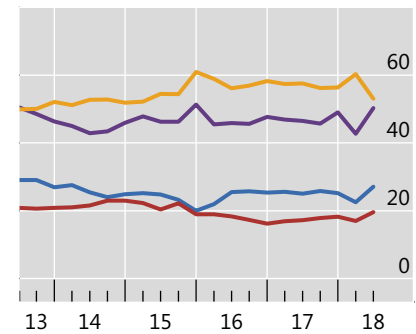
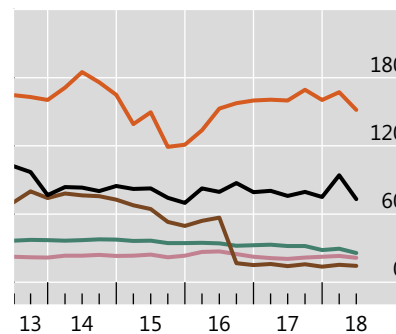
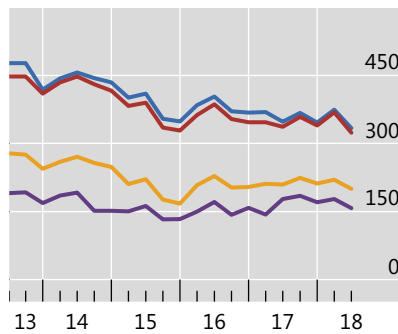
— GB — JP — FR
— US — TW

On Turkey



— ES — GB — DE
— FR — US

On Brazil



— Foreign claims (immediate)⁵
— Foreign claims (ultimate)⁶
— Local claims in local currency
— Local liabilities in local currency

— ES — GB — FR
— US — JP

— Banks
— Official sector
— Non-bank private sector
— ≤ 1 year

Further information on the BIS consolidated banking statistics is available at www.bis.org/statistics/bankstats.htm.

¹ Amounts outstanding at quarter-end. Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date. ² Excludes domestic claims, ie claims on residents of a bank's home country. ³ Foreign claims on an ultimate risk basis, by nationality of reporting bank. The banking systems shown are not necessarily the largest foreign bank creditors on each reference date. ⁴ As a percentage of international claims. ⁵ On an immediate counterparty basis. Includes the unconsolidated claims of banks headquartered outside but located inside CBS-reporting countries. ⁶ On an ultimate risk basis.

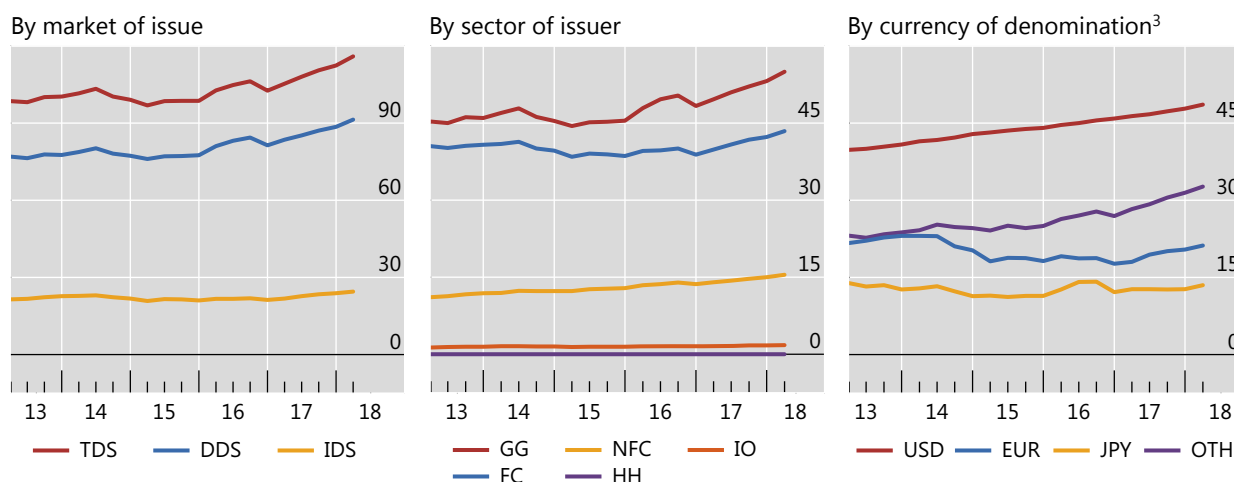
Source: BIS consolidated banking statistics (CBS).

C Debt securities statistics

Global debt securities markets¹

Amounts outstanding, in trillions of US dollars²

Graph C.1



DDS = domestic debt securities; IDS = international debt securities; TDS = total debt securities.

FC = financial corporations; GG = general government; HH = households and non-profit institutions serving households; IO = international organisations; NFC = non-financial corporations.

Further information on the BIS debt securities statistics is available at www.bis.org/statistics/secstats.htm.

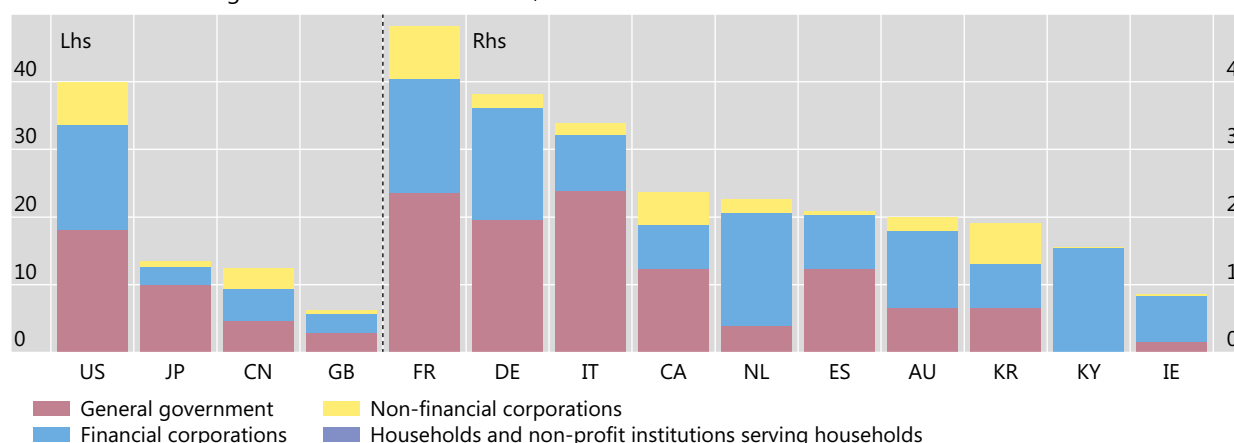
¹ Sample of countries varies across breakdowns shown. For countries that do not report TDS, data are estimated by the BIS as DDS plus IDS. For countries that do not report either TDS or DDS, data are estimated by the BIS as IDS. ² At quarter-end. Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date. ³ Where a currency breakdown is not available, DDS are assumed to be denominated in the local currency.

Sources: Dealogic; Euroclear; Thomson Reuters; Xtrakter Ltd; national data; BIS debt securities statistics; BIS calculations.

Total debt securities, by residence and sector of issuer¹

Amounts outstanding for the latest available data, in trillions of US dollars²

Graph C.2



Further information on the BIS debt securities statistics is available at www.bis.org/statistics/secstats.htm.

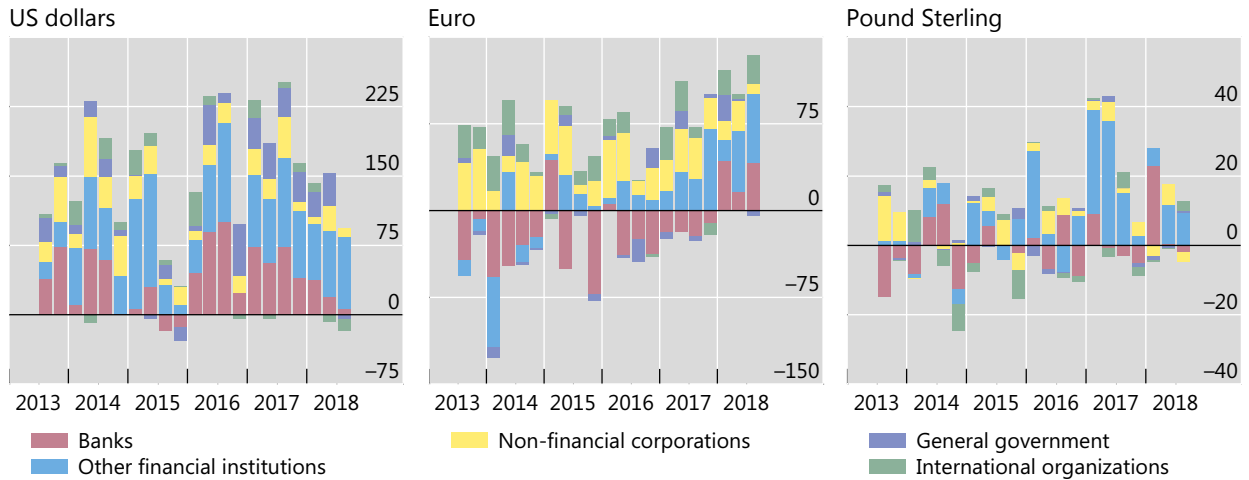
¹ For countries that do not report TDS, data are estimated by the BIS as DDS plus IDS. ² Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date.

Sources: National data; BIS debt securities statistics.

Net issuance of international debt securities

By issuer sector and currency of denomination, in billions of US dollars

Graph C.3



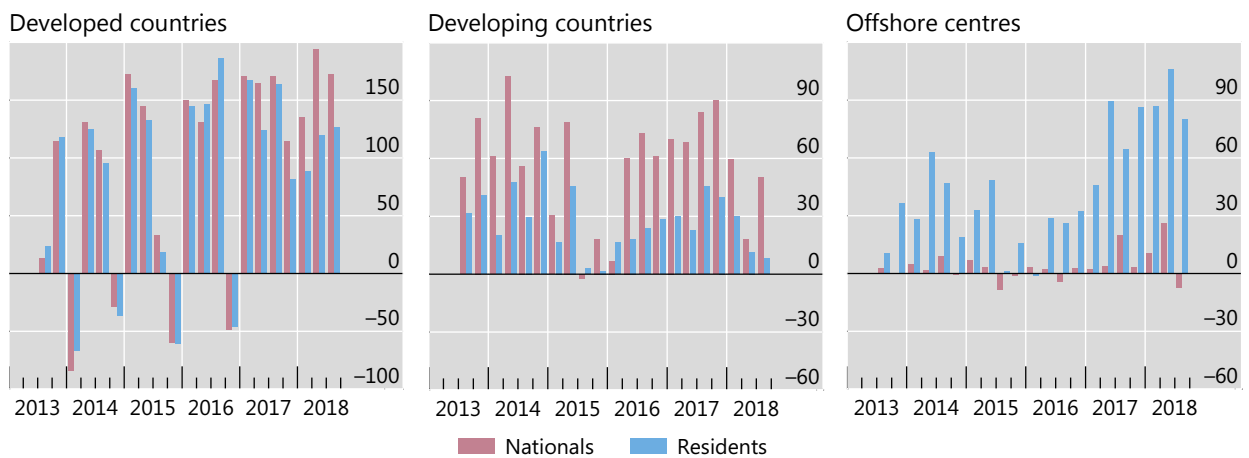
Further information is available at www.bis.org/statistics/secstats.htm.

Sources: Dealogic; Euroclear; Thomson Reuters; Xtrakter Ltd; BIS debt securities statistics.

International debt securities issued by financial and non-financial corporations¹

Net issuance by region, in billions of US dollars²

Graph C.4



Further information is available at www.bis.org/statistics/secstats.htm.

¹ Excluding general government. ² For a list of countries in each region, see Table C1 (<http://stats.bis.org/statx/srs/table/c1>).

Sources: Dealogic; Euroclear; Thomson Reuters; Xtrakter Ltd; BIS debt securities statistics.

D Derivatives statistics

Exchange-traded derivatives

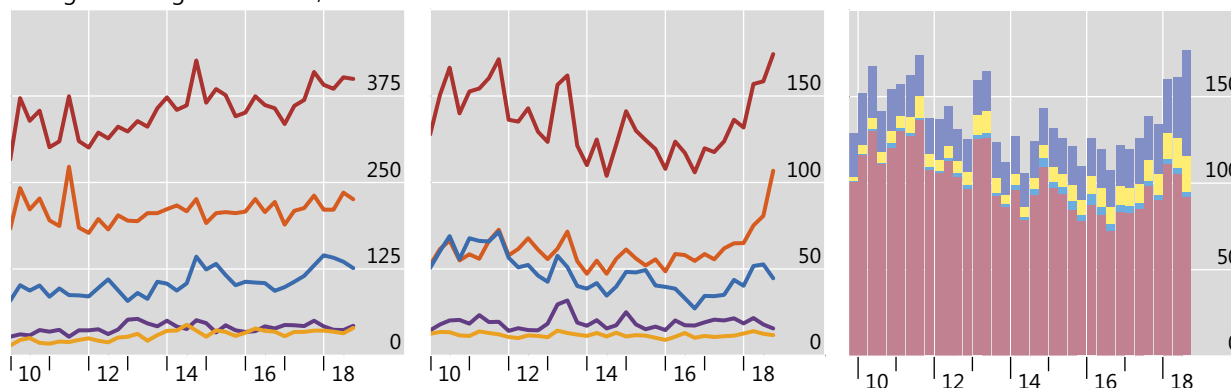
Graph D.1

Open interest, by currency¹

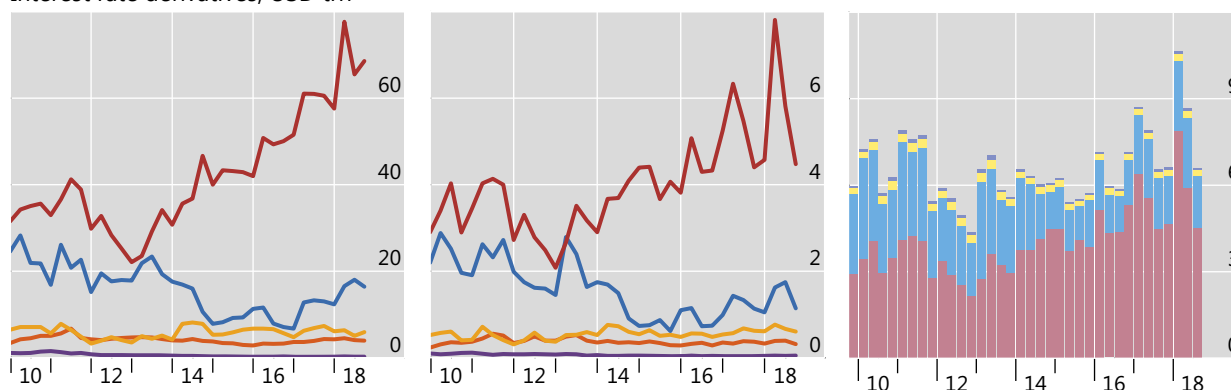
Daily average turnover, by currency²

Daily average turnover, by location of exchange²

Foreign exchange derivatives, USD bn³



Interest rate derivatives, USD trn³



— US dollar — Pound sterling — Other
— Euro — Yen

— North America — Asia and Pacific
— Europe — Other markets

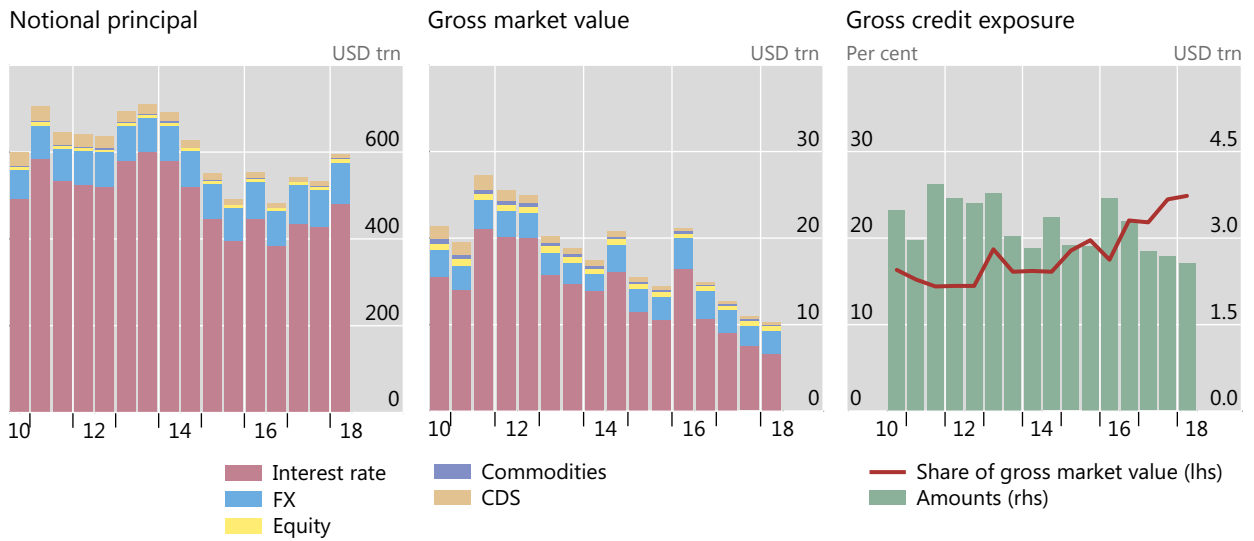
Further information on the BIS derivatives statistics is available at www.bis.org/statistics/extderiv.htm.

¹ At quarter-end. Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date. ² Quarterly averages of daily turnover. ³ Futures and options.

Sources: Euromoney TRADEDATA; Futures Industry Association; The Options Clearing Corporation; BIS derivatives statistics.

Global OTC derivatives markets¹

Graph D.2



Further information on the BIS derivatives statistics is available at www.bis.org/statistics/derstats.htm.

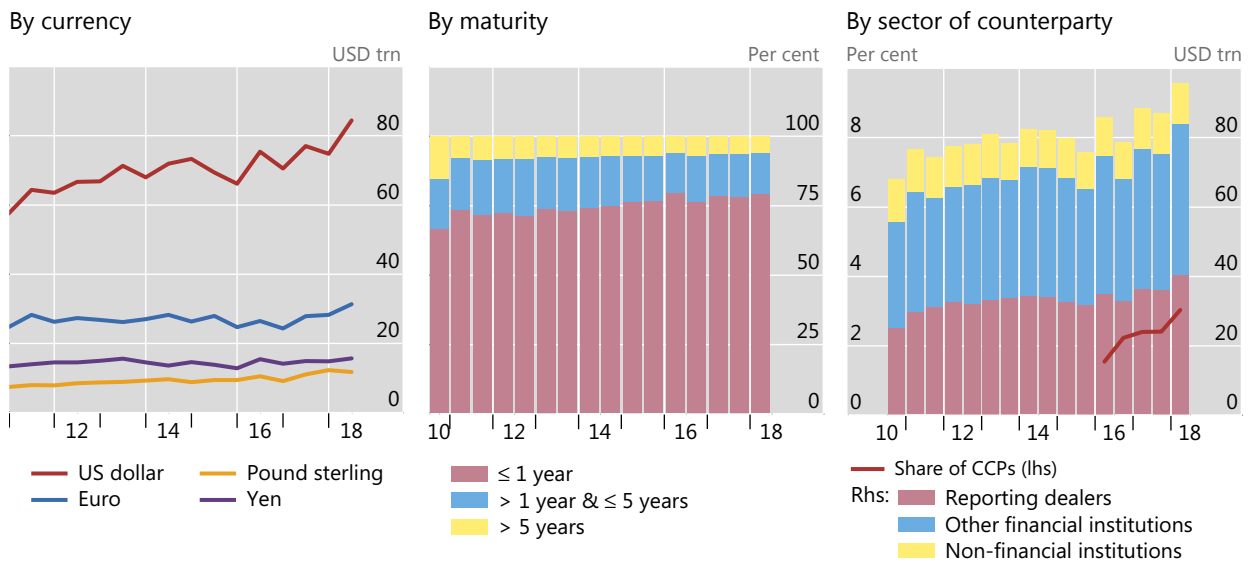
¹ At half-year end (end-June and end-December). Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date.

Source: BIS derivatives statistics.

OTC foreign exchange derivatives

Notional principal¹

Graph D.3



Further information on the BIS derivatives statistics is available at www.bis.org/statistics/derstats.htm.

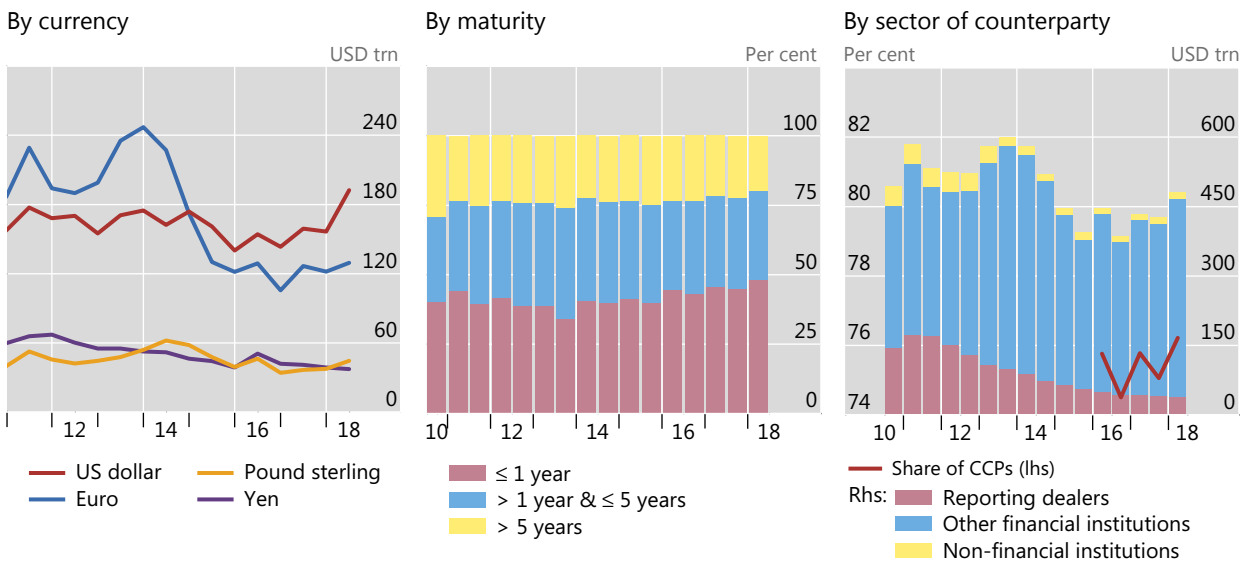
¹ At half-year end (end-June and end-December). Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date.

Source: BIS derivatives statistics.

OTC interest rate derivatives

Notional principal¹

Graph D.4



Further information on the BIS derivatives statistics is available at www.bis.org/statistics/derstats.htm.

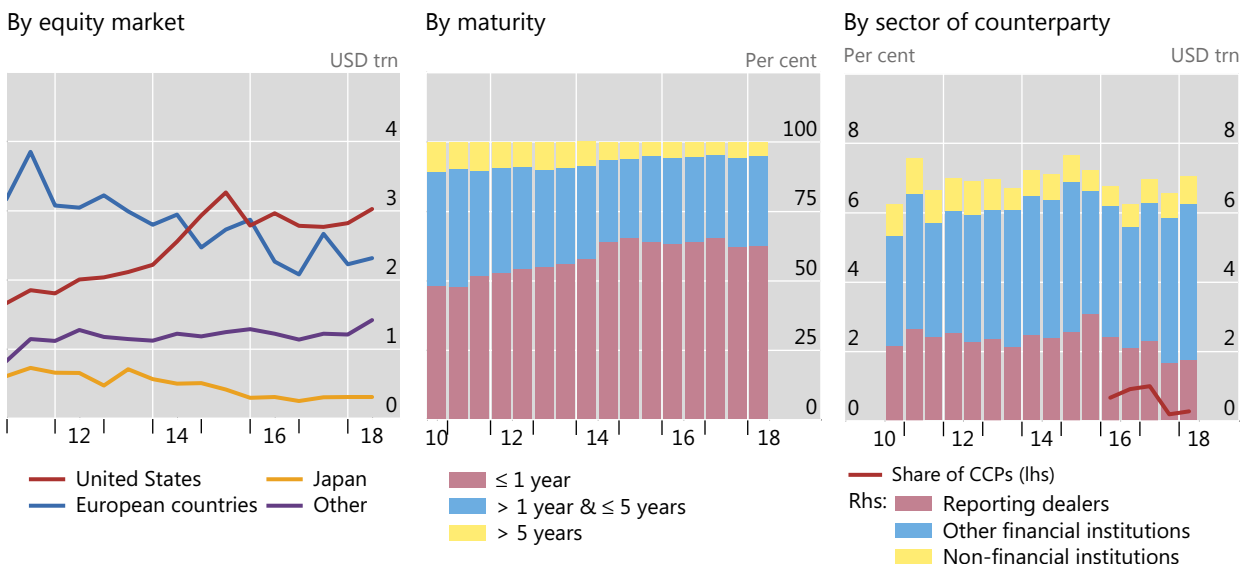
¹ At half-year end (end-June and end-December). Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date.

Source: BIS derivatives statistics.

OTC equity-linked derivatives

Notional principal¹

Graph D.5



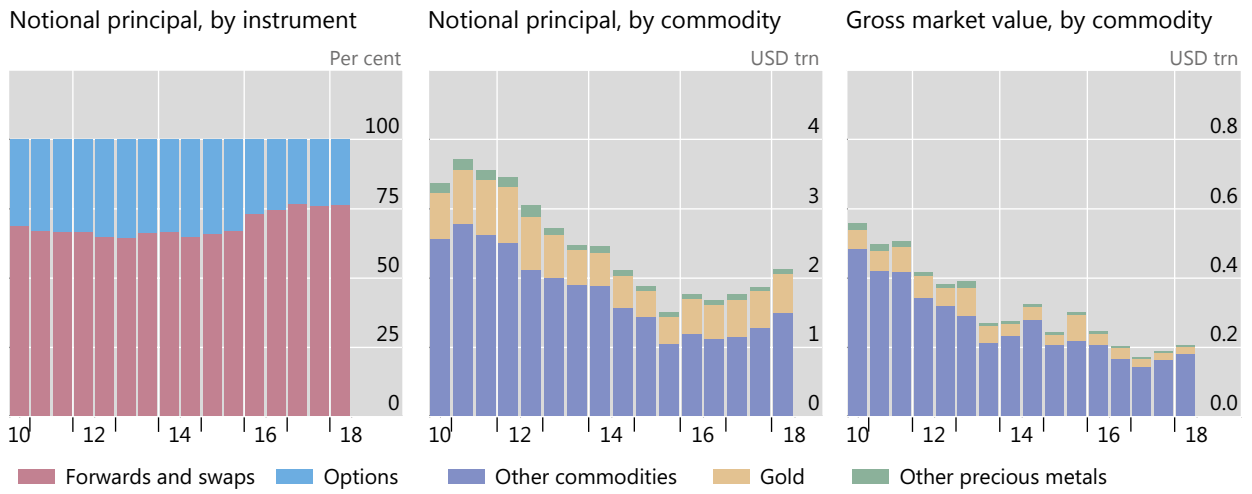
Further information on the BIS derivatives statistics is available at www.bis.org/statistics/derstats.htm.

¹ At half-year end (end-June and end-December). Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date.

Source: BIS derivatives statistics.

OTC commodity derivatives¹

Graph D.6



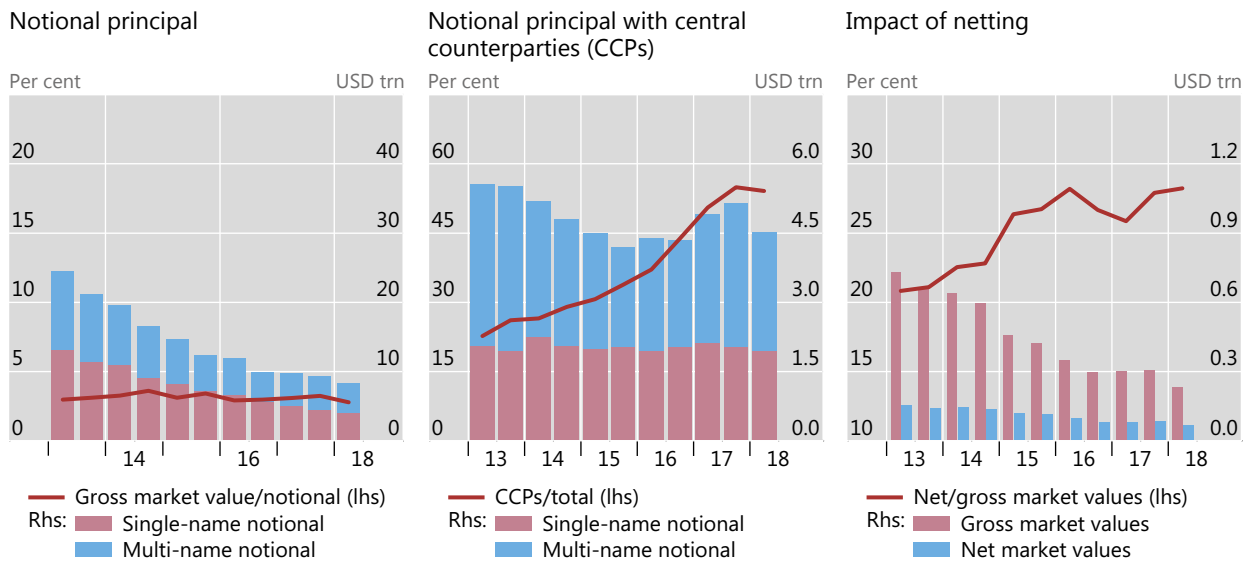
Further information on the BIS derivatives statistics is available at www.bis.org/statistics/derstats.htm.

¹ At half-year end (end-June and end-December). Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date.

Source: BIS derivatives statistics.

Credit default swaps¹

Graph D.7



Further information on the BIS derivatives statistics is available at www.bis.org/statistics/derstats.htm.

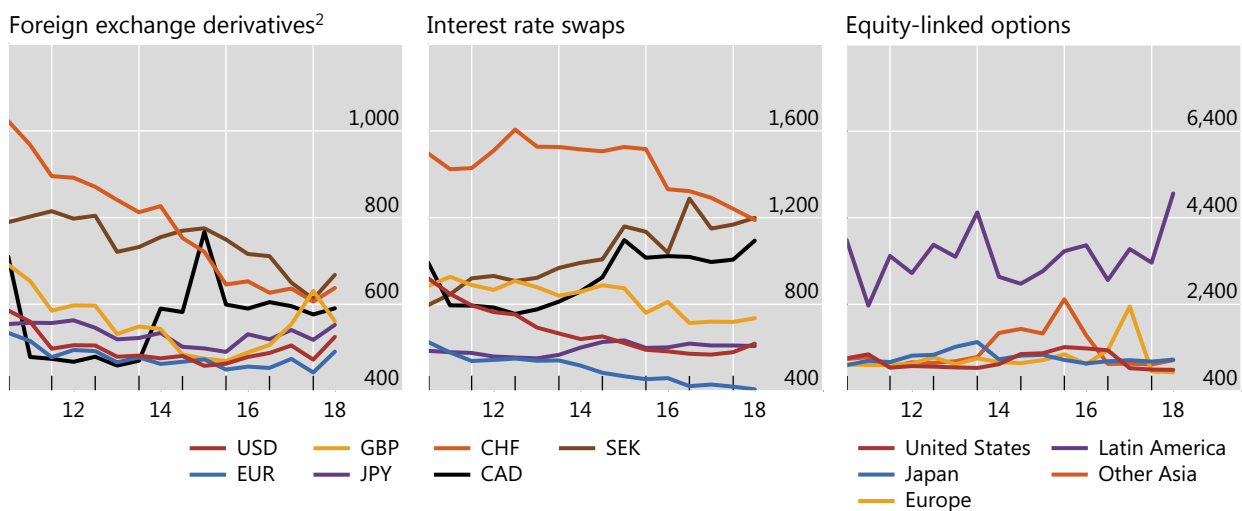
¹ At half-year end (end-June and end-December). Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date.

Source: BIS derivatives statistics.

Concentration in global OTC derivatives markets

Herfindahl index¹

Graph D.8



Further information on the BIS derivatives statistics is available at www.bis.org/statistics/derstats.htm.

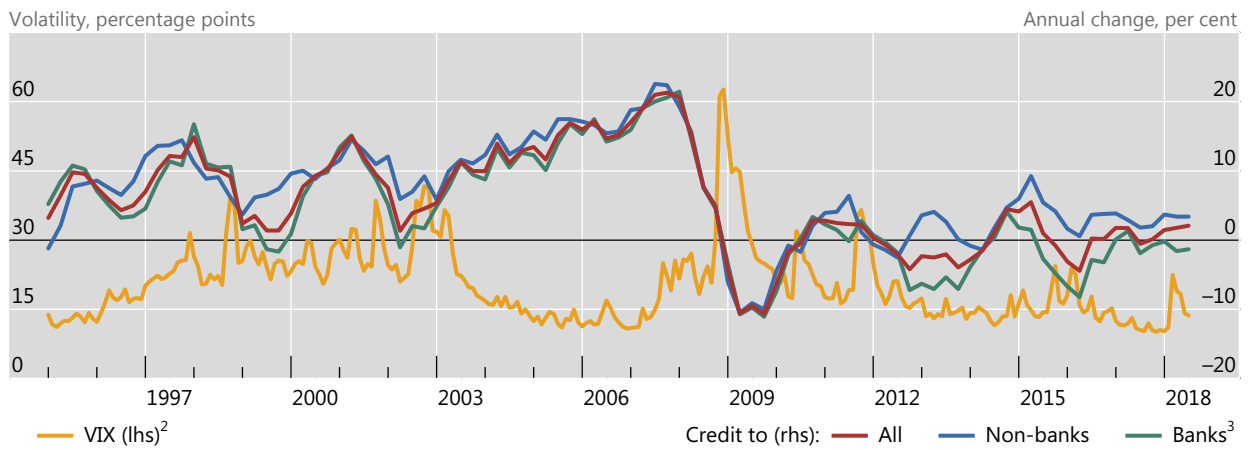
¹ The index ranges from 0 to 10,000, where a lower number indicates that there are many dealers with similar market shares (as measured by notional principal) and a higher number indicates that the market is dominated by a few reporting dealers. ² Foreign exchange forwards, foreign exchange swaps and currency swaps.

Source: BIS derivatives statistics.

E Global liquidity indicators

Growth of international bank credit¹

Graph E.1



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

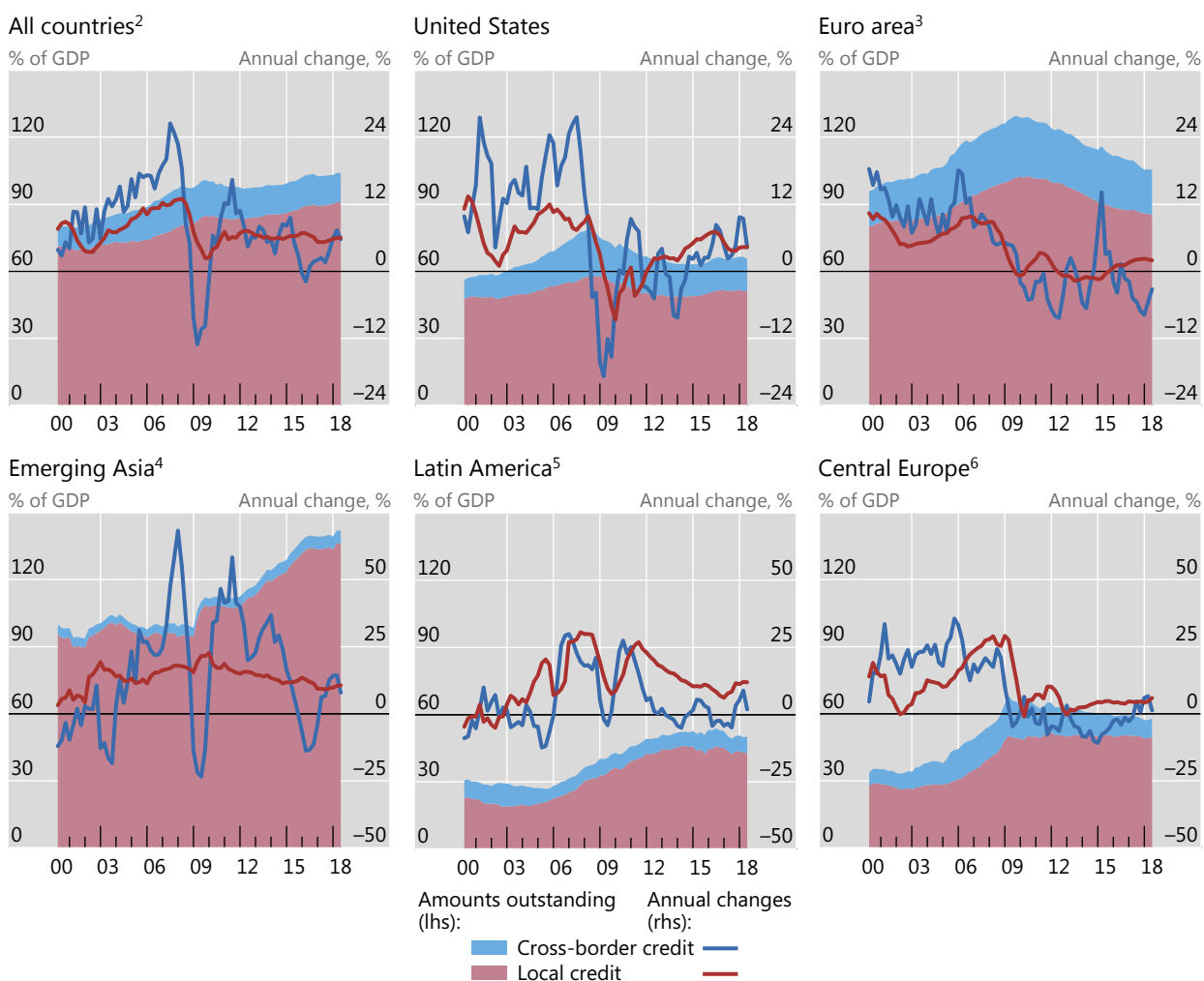
¹ LBS-reporting banks' cross-border claims plus local claims in foreign currencies. ² Chicago Board Options Exchange S&P 500 implied volatility index; standard deviation, in percentage points per annum. ³ Including intragroup transactions.

Sources: Bloomberg; BIS locational banking statistics.

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

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

Graph E.2



Further information on the BIS global liquidity indicators is available at www.bis.org/statistics/gli.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 credit to the non-financial sector; BIS locational banking statistics; BIS calculations.

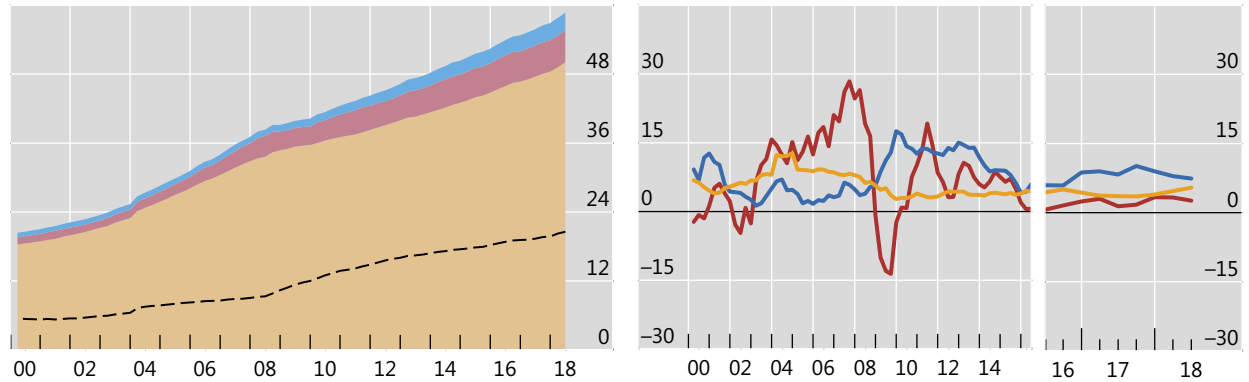
Global credit to the non-financial sector, by currency

Graph E.3

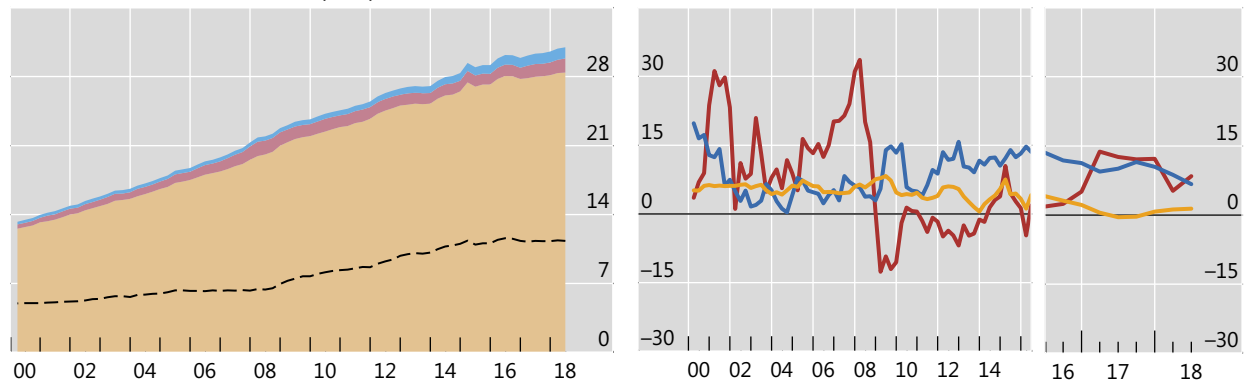
Amounts outstanding, in trillions of currency units¹

Annual change, in per cent²

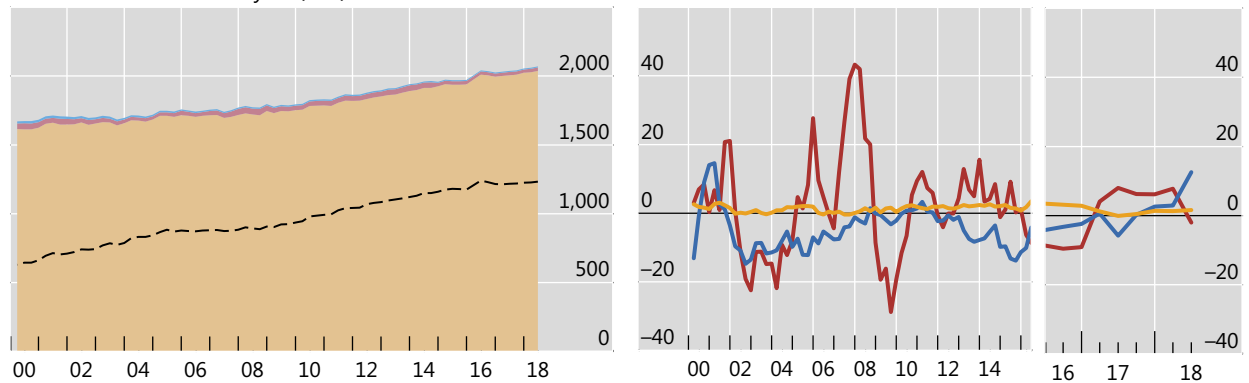
Credit denominated in US dollars (USD)



Credit denominated in euros (EUR)



Credit denominated in yen (JPY)



Credit to residents³
 Credit to non-residents:

 Of which:

 Credit to government

 Debt securities⁴
 Loans⁵

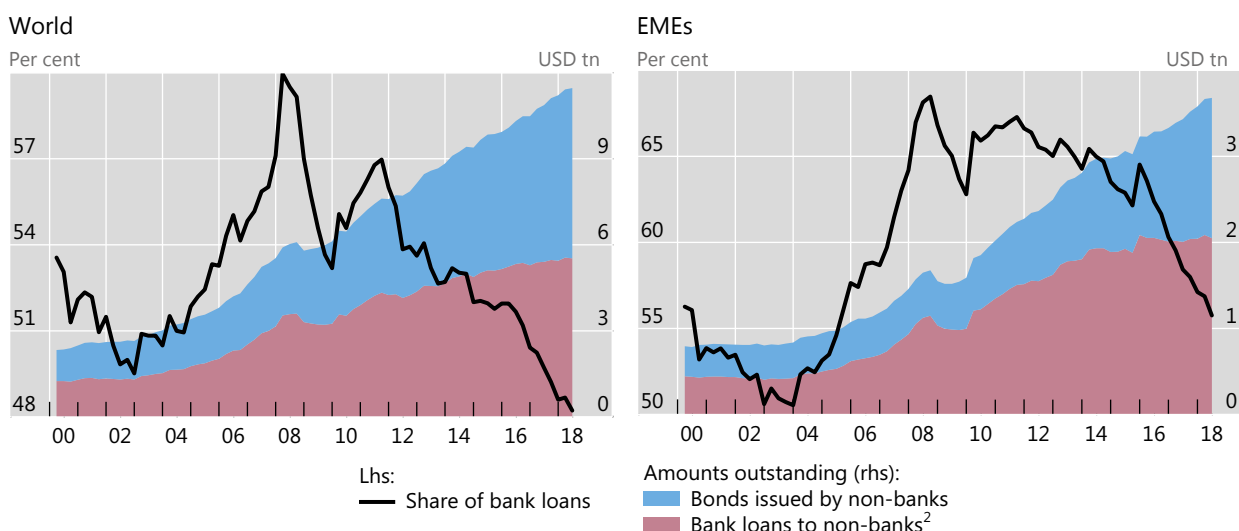
Further information on the BIS global liquidity indicators is available at www.bis.org/statistics/gli.htm.

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. EUR-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.

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

Graph E.4



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

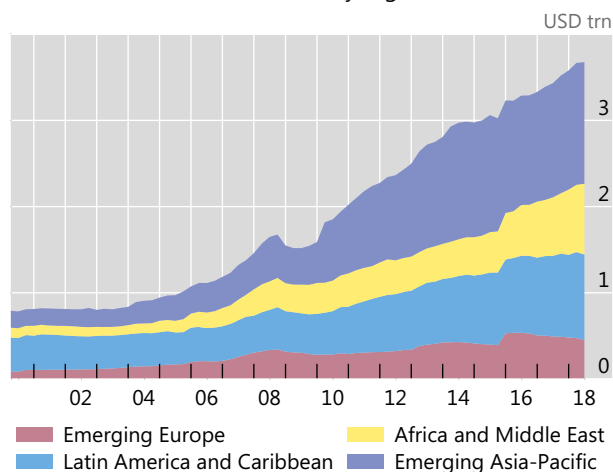
¹ Non-banks comprise non-bank financial entities, non-financial corporations, governments, households and international organisations. ² Loans by LBS-reporting banks to non-bank borrowers, including non-bank financial entities, comprise cross-border plus local loans.

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

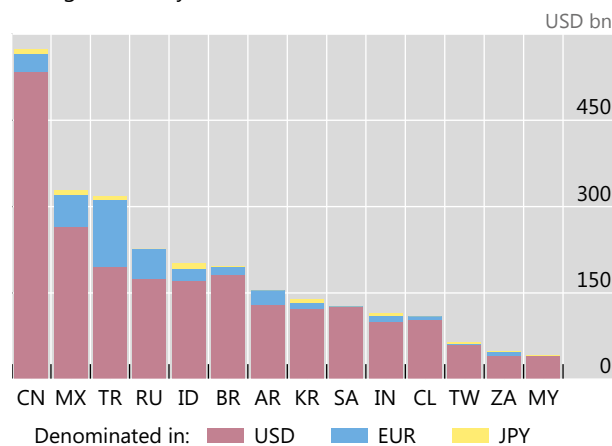
Foreign currency credit to non-banks in EMEs

Graph E.5

US dollar-denominated credit by region



Foreign currency credit to selected EMEs¹



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

¹ Amounts outstanding for the latest available data.

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

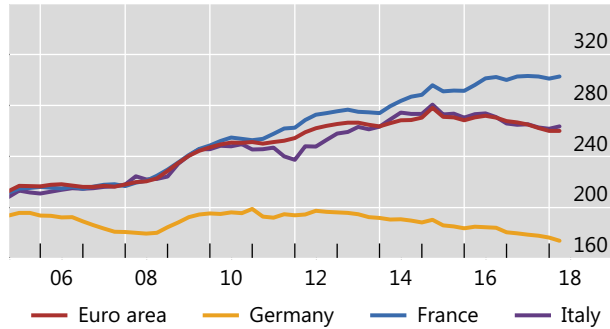
F Statistics on total credit to the non-financial sector

Total credit to the non-financial sector (core debt)

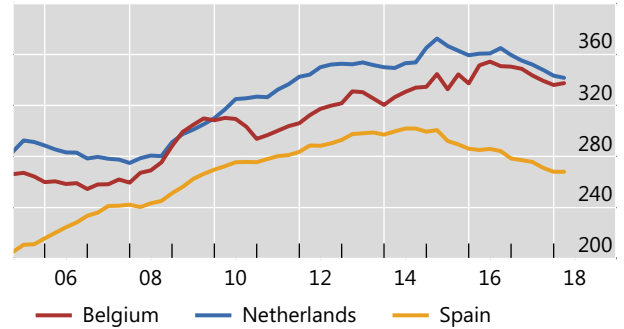
As a percentage of GDP

Graph F.1

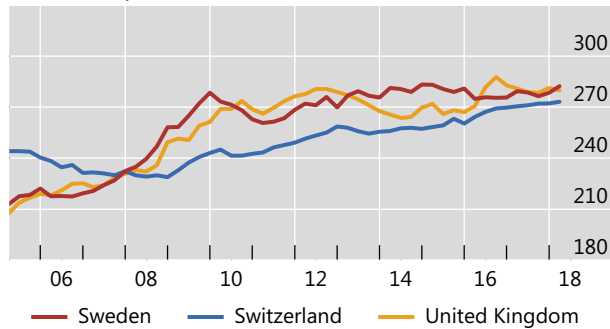
Euro area: aggregate and major countries



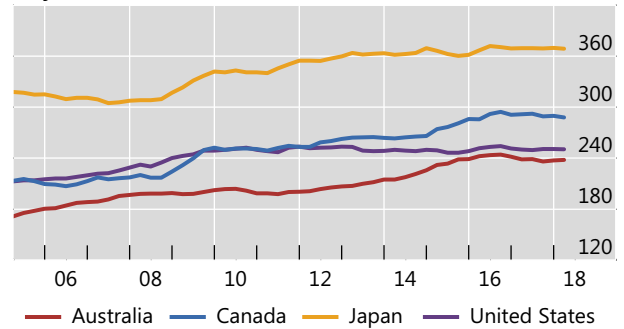
Euro area: other countries



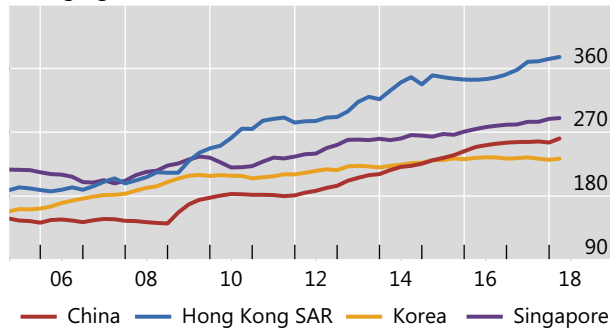
Other European countries



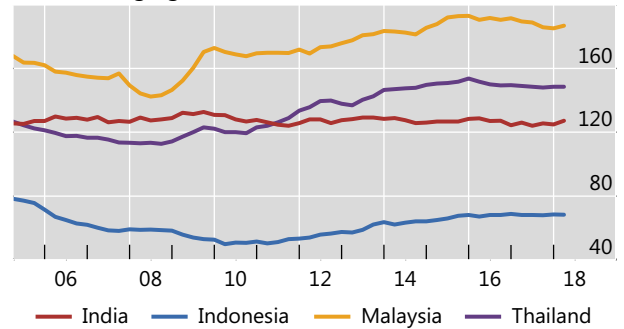
Major advanced economies



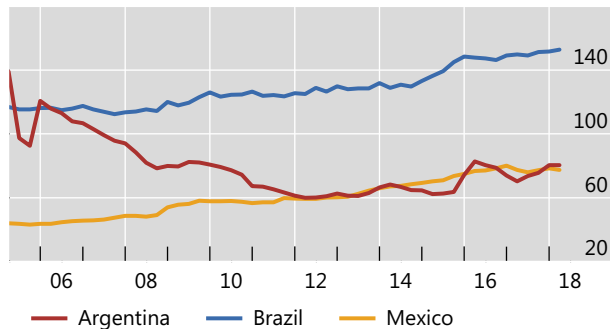
Emerging Asia



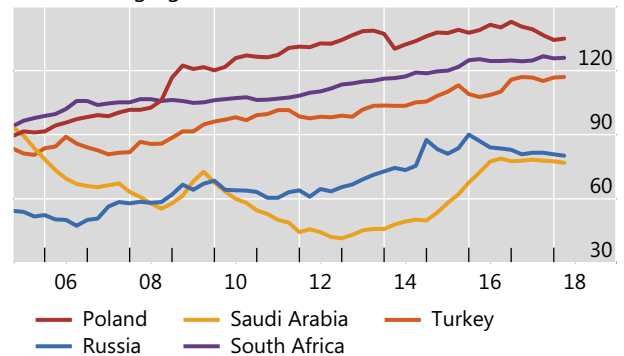
Other emerging Asia



Latin America



Other emerging market economies



Further information on the BIS credit statistics is available at www.bis.org/statistics/totcredit.htm.

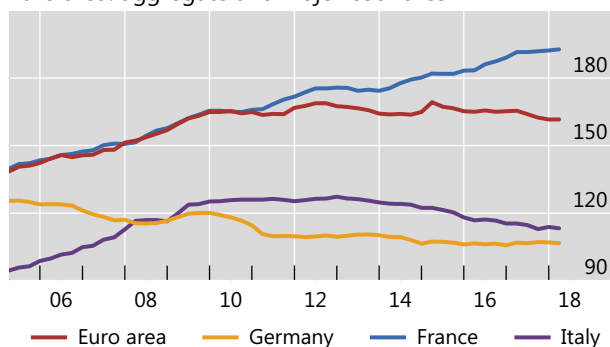
Source: BIS total credit statistics.

Total credit to the private non-financial sector (core debt)

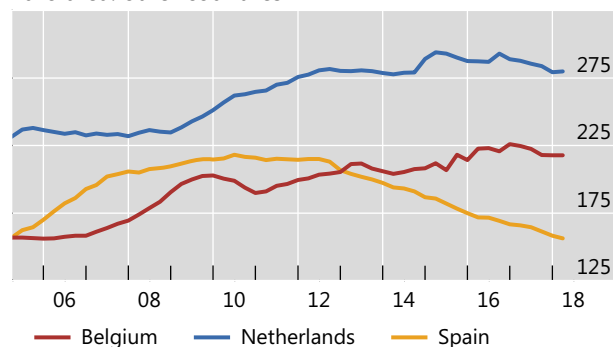
As a percentage of GDP

Graph F.2

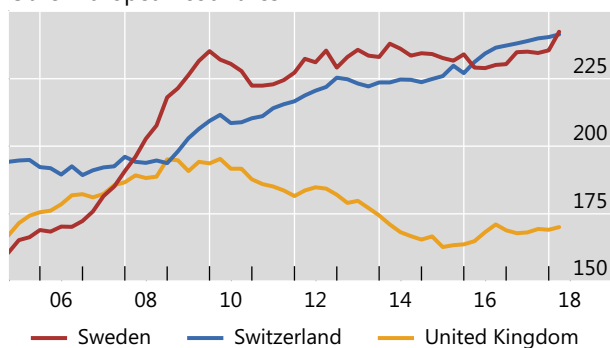
Euro area: aggregate and major countries



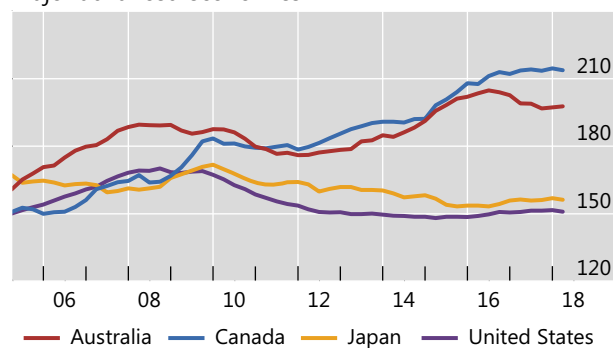
Euro area: other countries



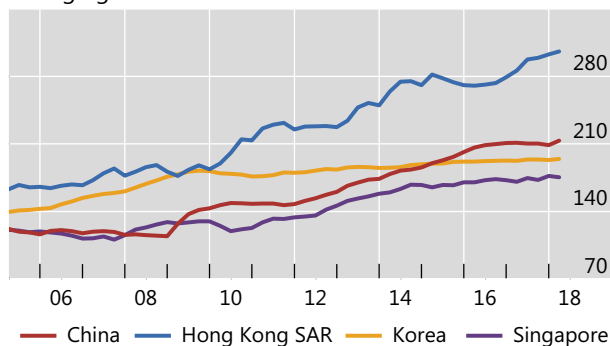
Other European countries



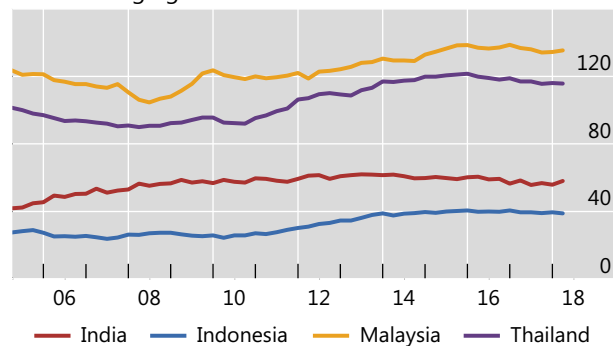
Major advanced economies



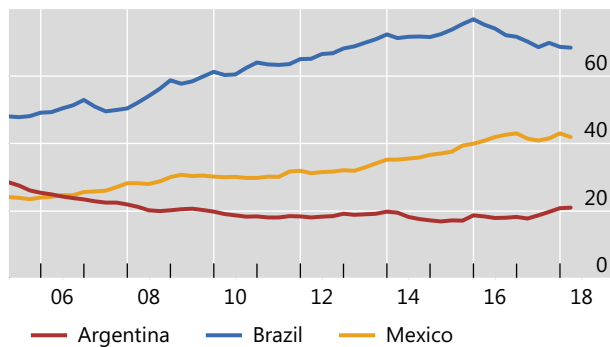
Emerging Asia



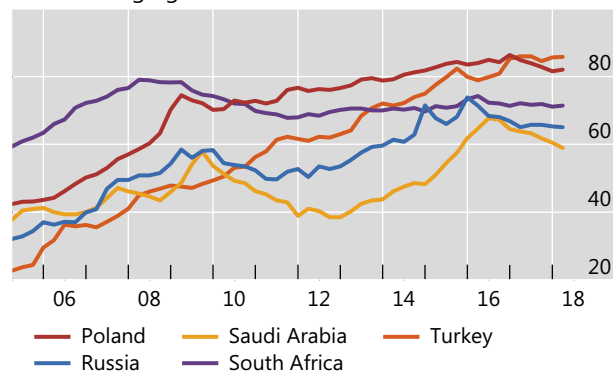
Other emerging Asia



Latin America



Other emerging market economies



Further information on the BIS credit statistics is available at www.bis.org/statistics/totcredit.htm.

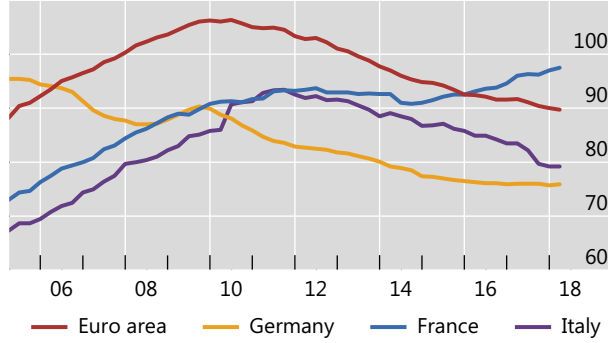
Source: BIS total credit statistics.

Bank credit to the private non-financial sector (core debt)

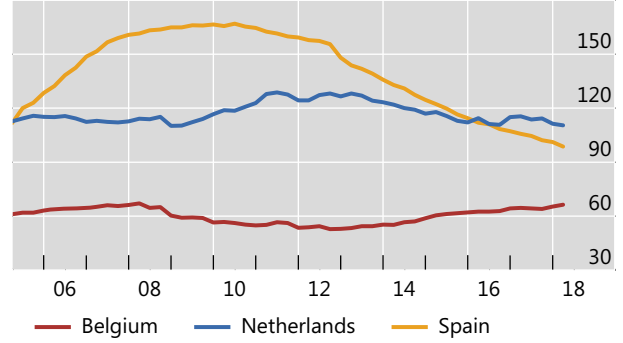
As a percentage of GDP

Graph F.3

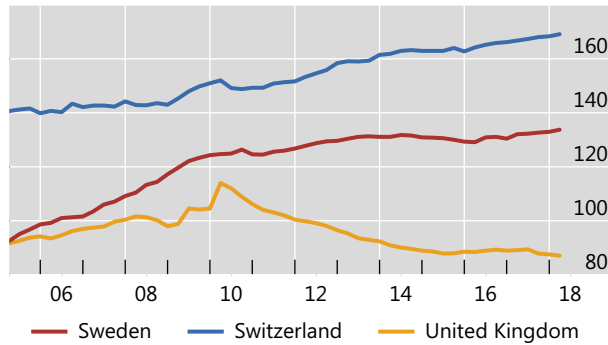
Euro area: aggregate and major countries



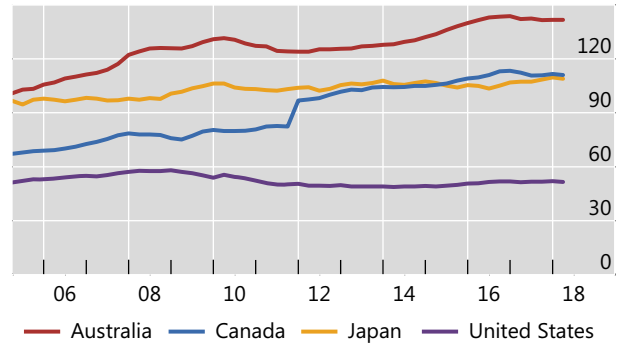
Euro area: other countries



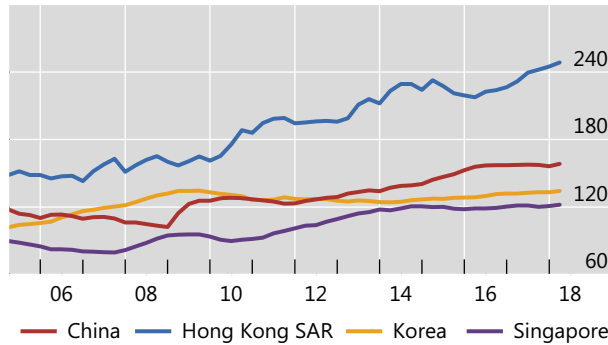
Other European countries



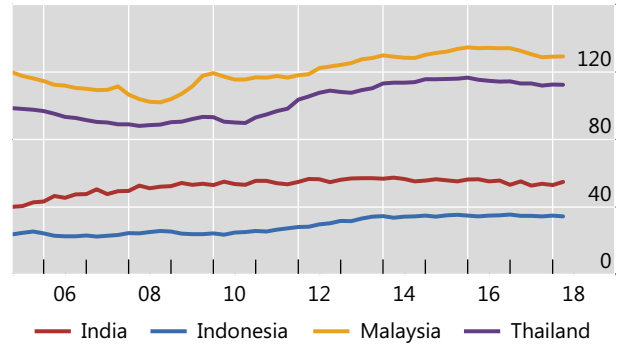
Major advanced economies



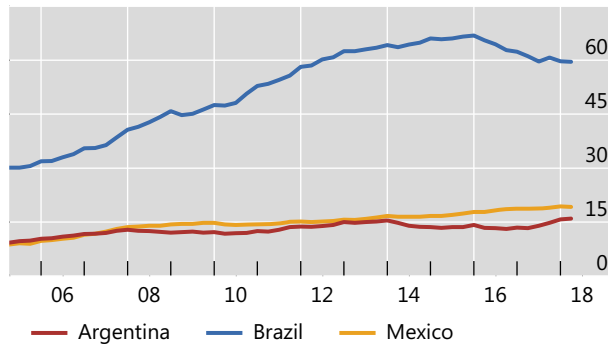
Emerging Asia



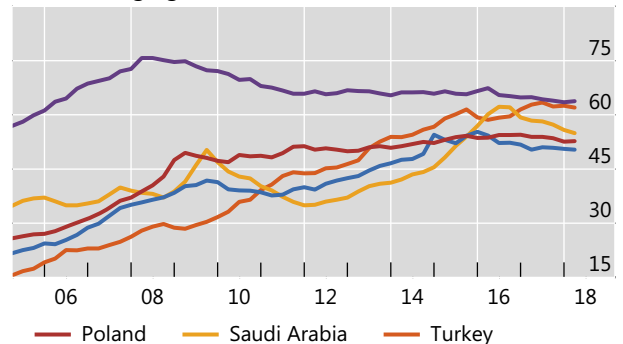
Other emerging Asia



Latin America



Other emerging market economies



Further information on the BIS credit statistics is available at www.bis.org/statistics/totcredit.htm.

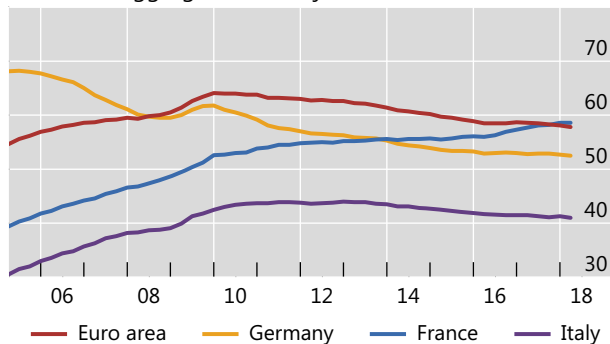
Source: BIS total credit statistics.

Total credit to households (core debt)

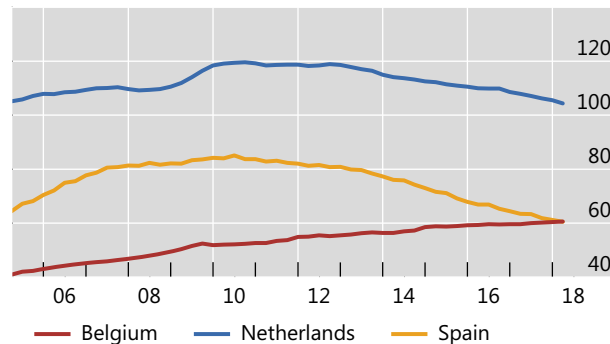
As a percentage of GDP

Graph F.4

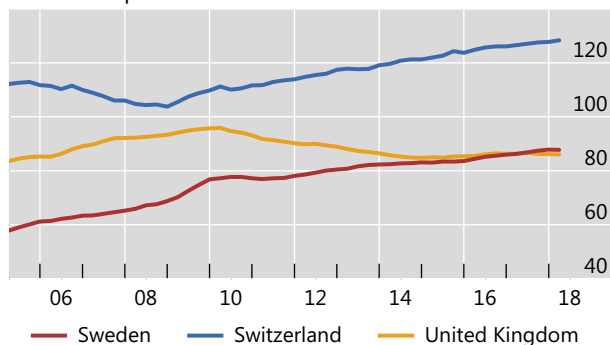
Euro area: aggregate and major countries



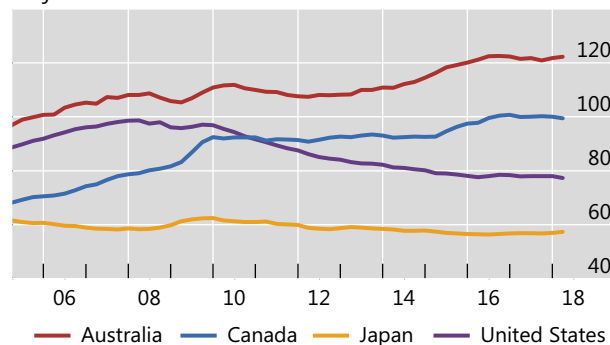
Euro area: other countries



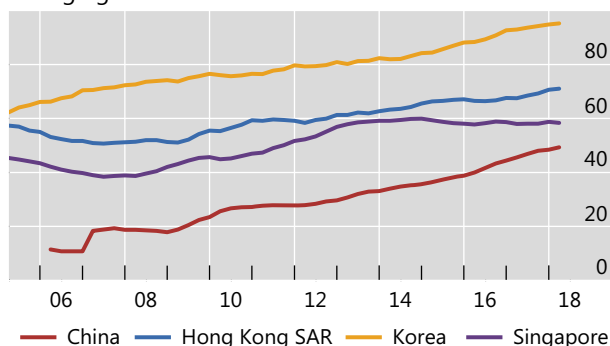
Other European countries



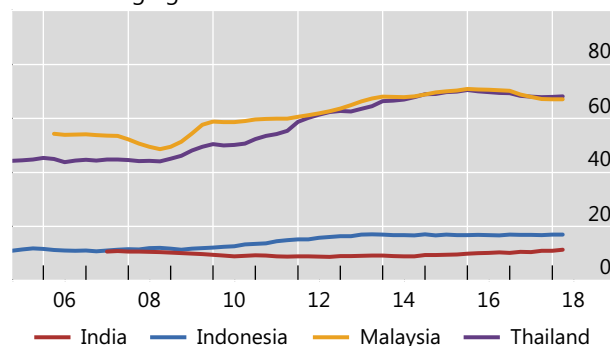
Major advanced economies



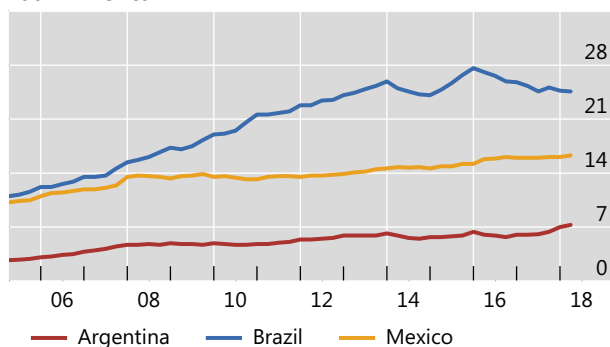
Emerging Asia



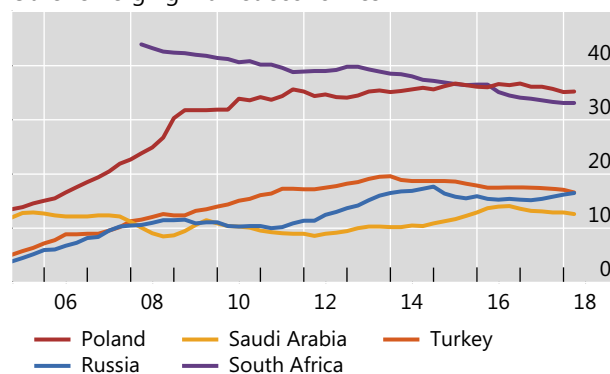
Other emerging Asia



Latin America



Other emerging market economies



Further information on the BIS credit statistics is available at www.bis.org/statistics/totcredit.htm.

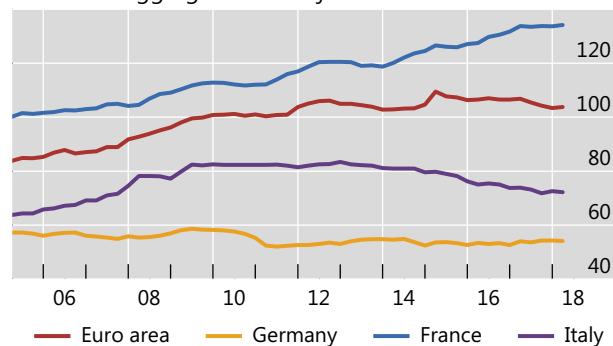
Source: BIS total credit statistics.

Total credit to non-financial corporations (core debt)

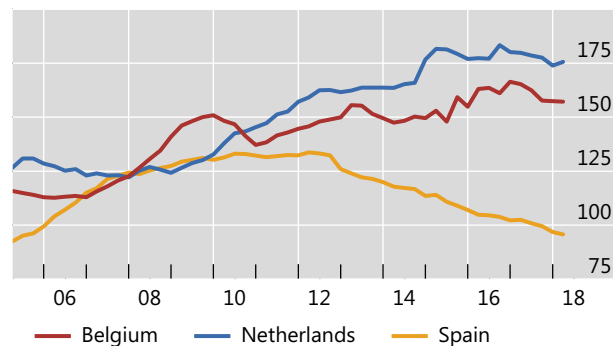
As a percentage of GDP

Graph F.5

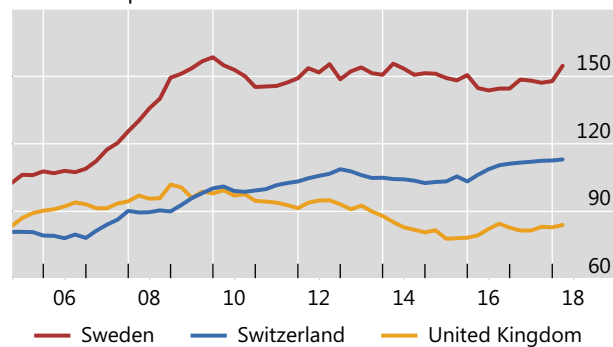
Euro area: aggregate and major countries



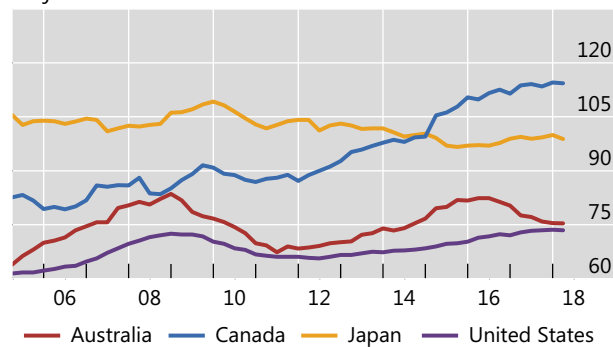
Euro area: other countries



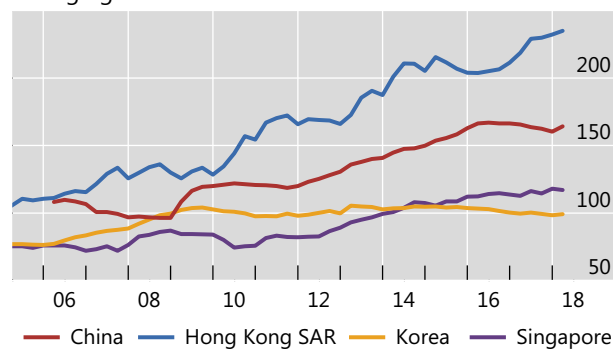
Other European countries



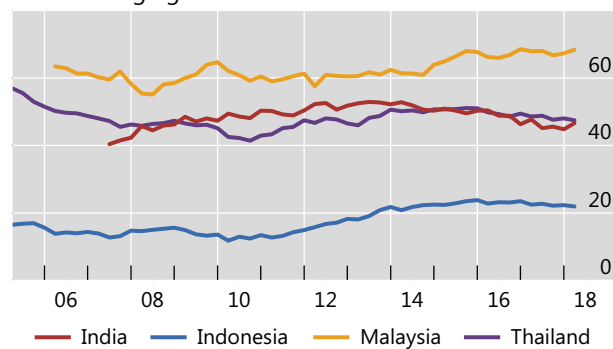
Major advanced economies



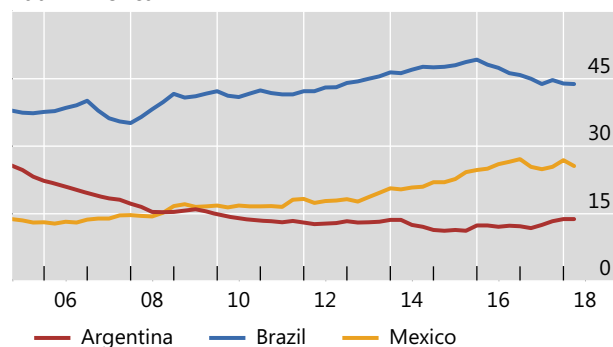
Emerging Asia



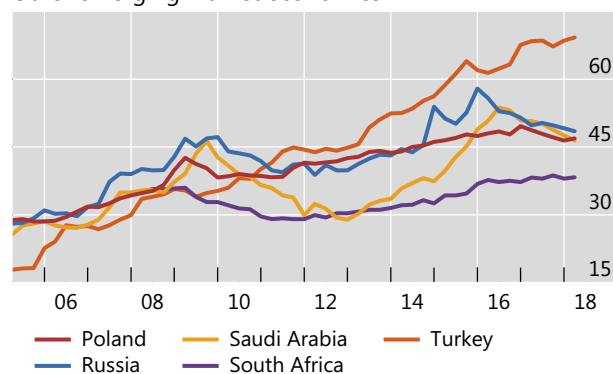
Other emerging Asia



Latin America



Other emerging market economies



Further information on the BIS credit statistics is available at www.bis.org/statistics/totcredit.htm.

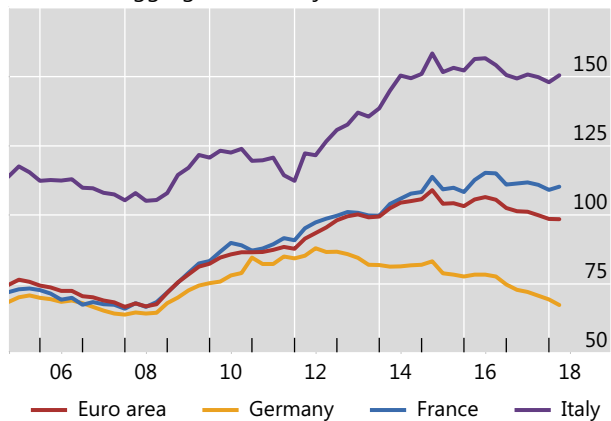
Source: BIS total credit statistics.

Total credit to the government sector at market value (core debt)¹

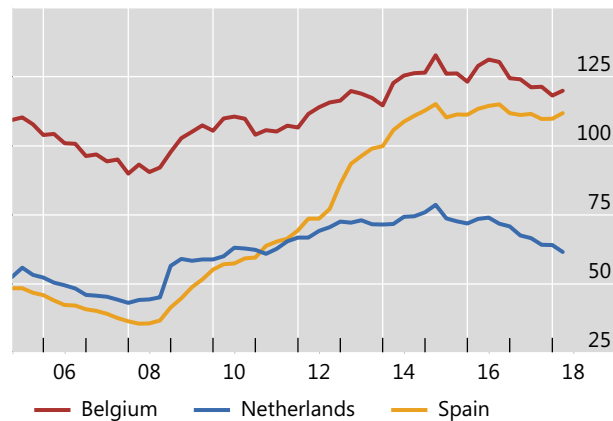
As a percentage of GDP

Graph F.6

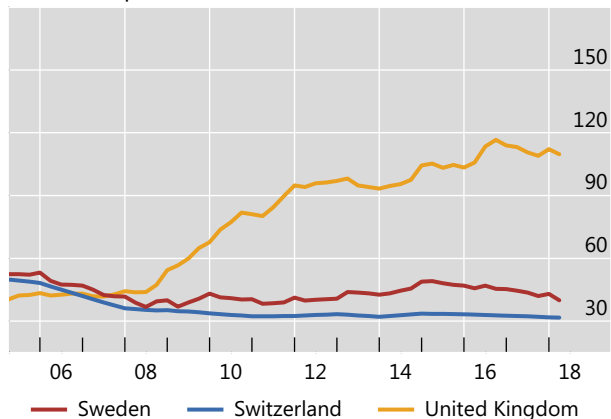
Euro area: aggregate and major countries



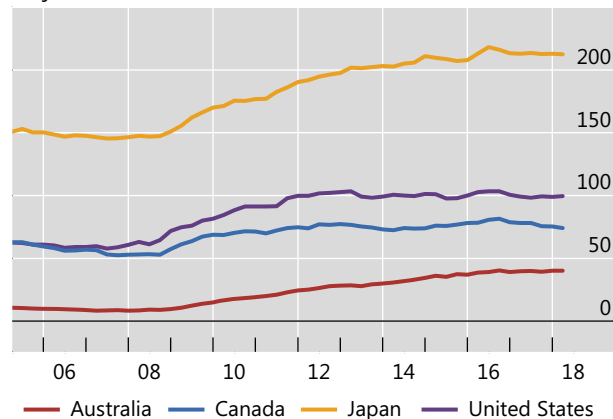
Euro area: other countries



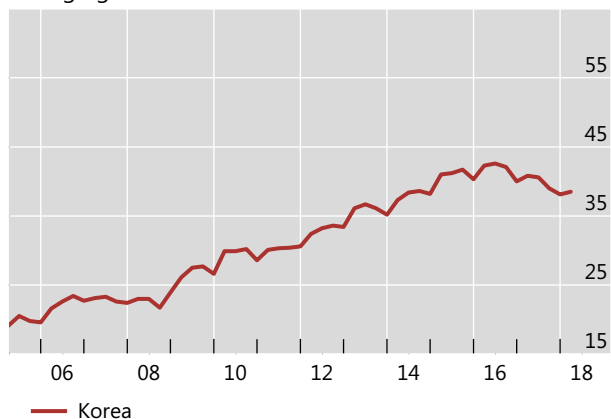
Other European countries



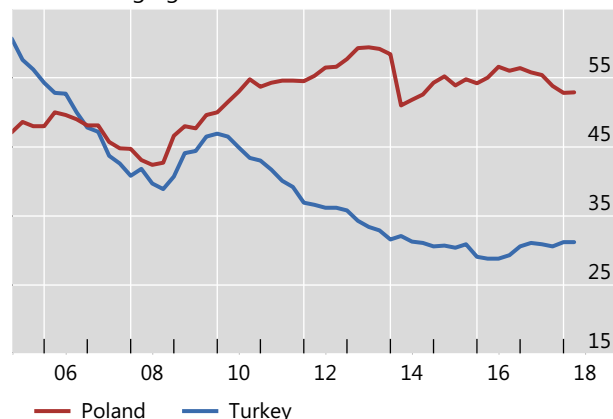
Major advanced economies



Emerging Asia



Other emerging market economies



Further information on the BIS credit statistics is available at www.bis.org/statistics/totcredit.htm.

¹ Consolidated data for the general government sector.

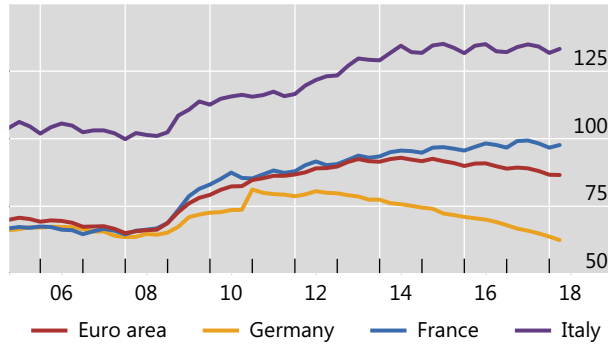
Source: BIS total credit statistics.

Total credit to the government sector at nominal value (core debt)¹

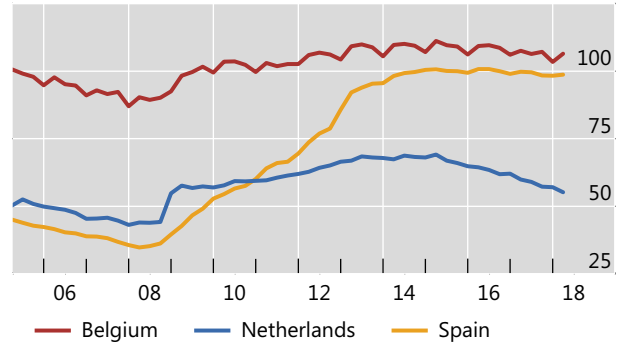
As a percentage of GDP

Graph F.7

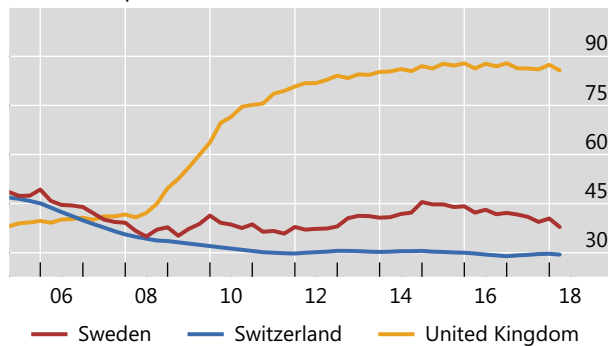
Euro area: aggregate and major countries



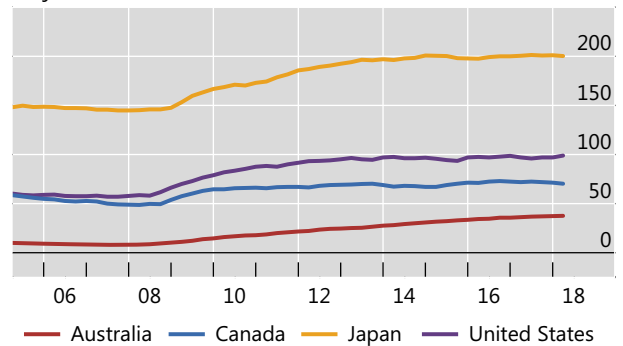
Euro area: other countries



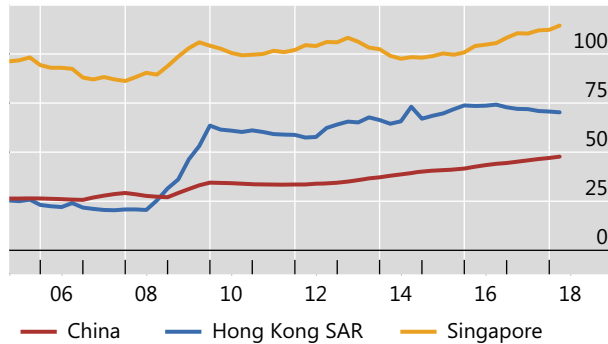
Other European countries



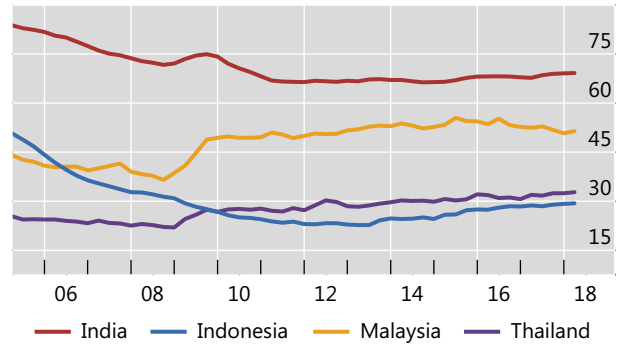
Major advanced economies



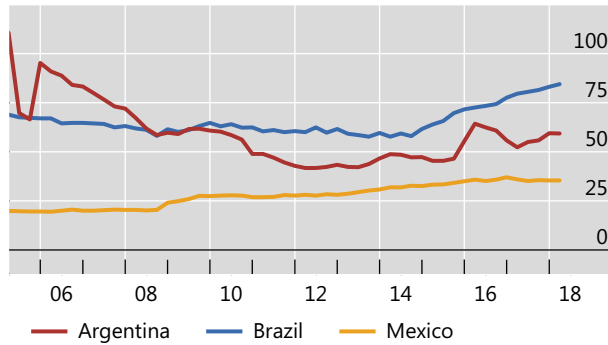
Emerging Asia



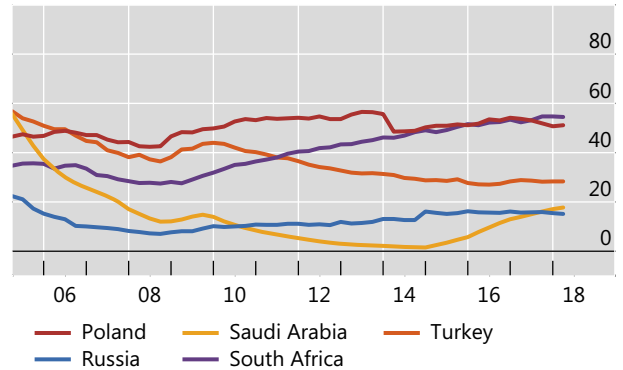
Other emerging Asia



Latin America



Other emerging market economies



Further information on the BIS credit statistics is available at www.bis.org/statistics/totcredit.htm.

¹ Consolidated data for the general government sector; central government for Argentina, Indonesia, Malaysia, Mexico, Saudi Arabia and Thailand.

Source: BIS total credit statistics.

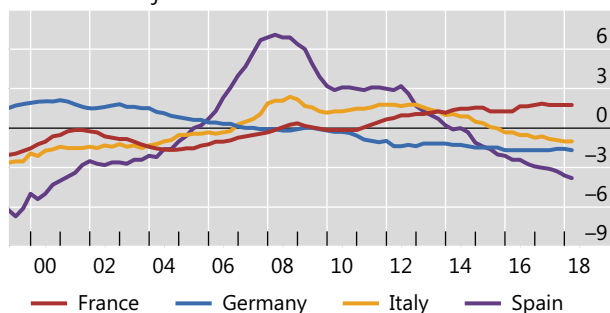
G Debt service ratios for the private non-financial sector

Debt service ratios of the private non-financial sector

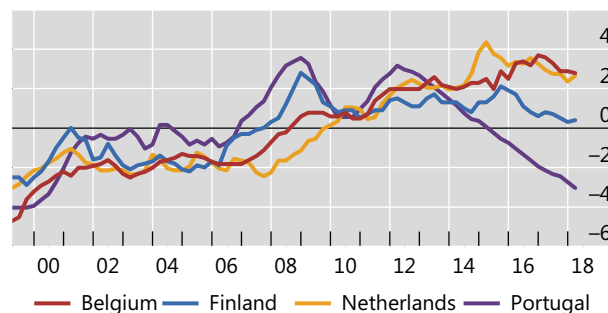
Deviation from country-specific mean, in percentage points¹

Graph G.1

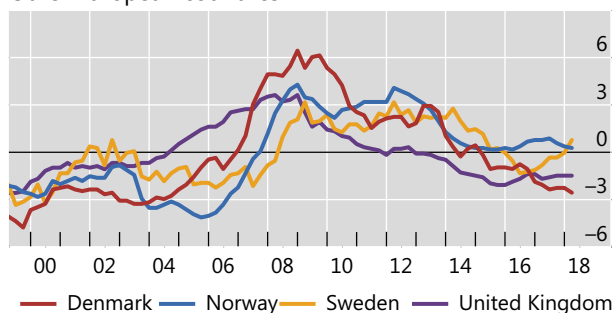
Euro area: major countries



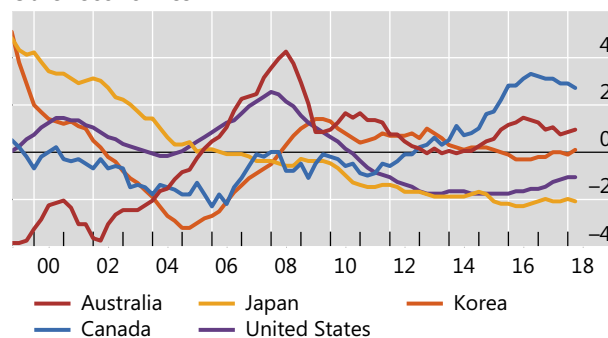
Euro area: other countries



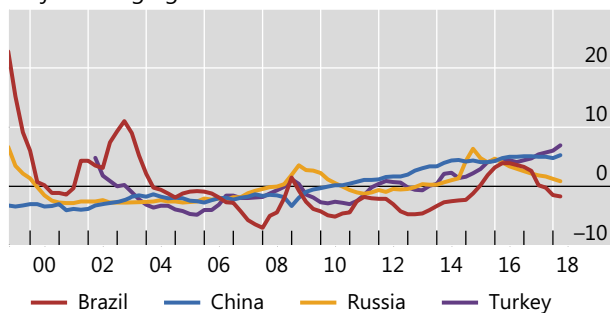
Other European countries



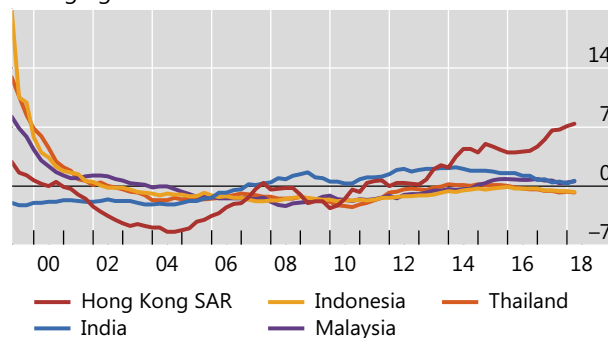
Other economies



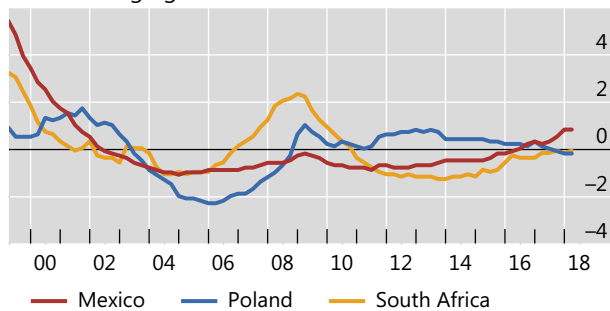
Major emerging markets²



Emerging Asia²



Other emerging markets²



Further information on the BIS debt service ratio statistics is available at www.bis.org/statistics/dsr.htm.

¹ Country-specific means are based on all available data from 1999 onwards. ² Countries which are using alternative measures of income and interest rates. Further information is available under "Methodology and data for DSR calculation" at www.bis.org/statistics/dsr.htm.

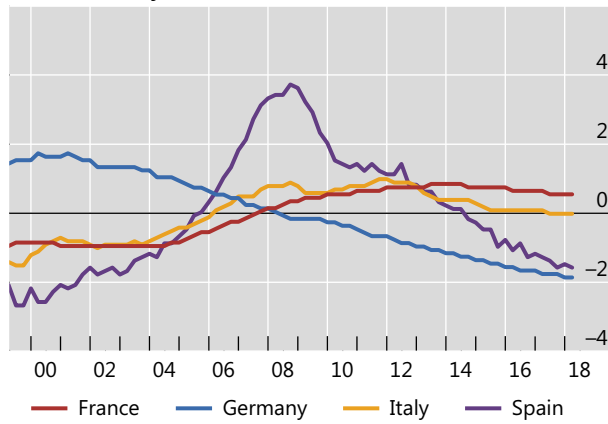
Source: BIS debt service ratios statistics.

Debt service ratios of households

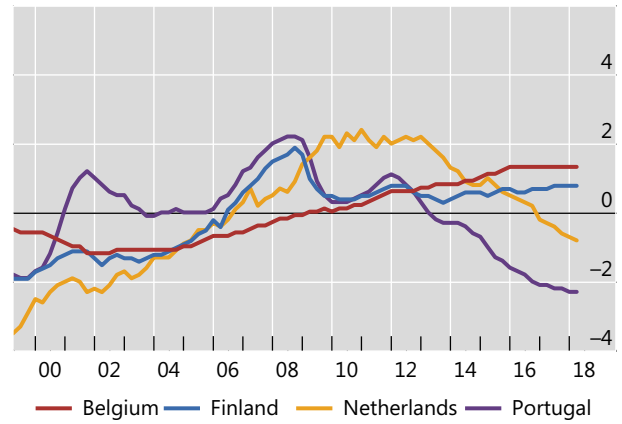
Deviation from country-specific mean, in percentage points¹

Graph G.2

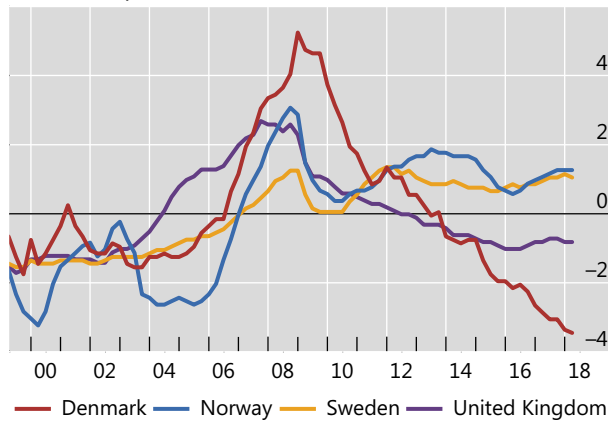
Euro area: major countries



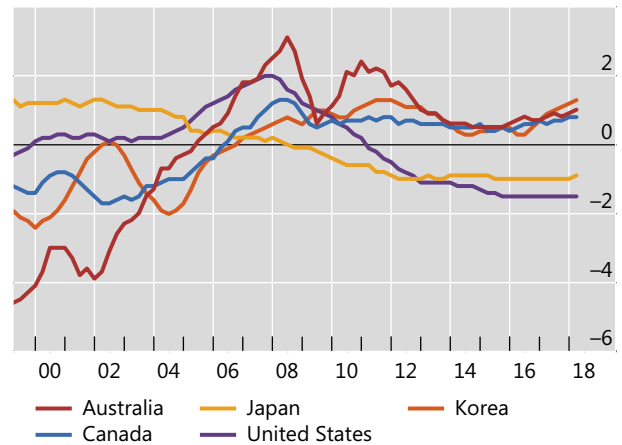
Euro area: other countries



Other European countries



Other economies



Further information on the BIS debt service ratio statistics is available at www.bis.org/statistics/dsr.htm.

¹ Country-specific means are based on all available data from 1999 onwards.

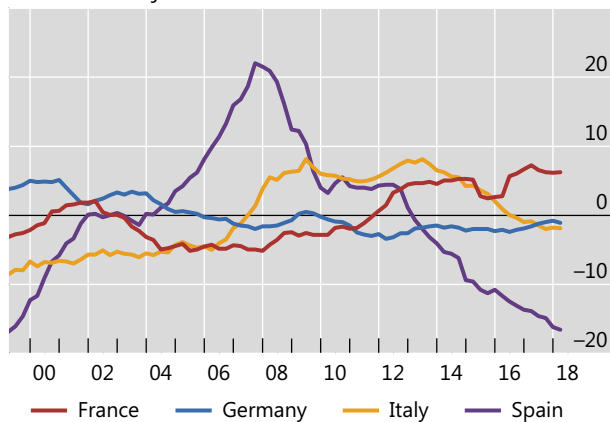
Source: BIS debt service ratios statistics.

Debt service ratios of non-financial corporations

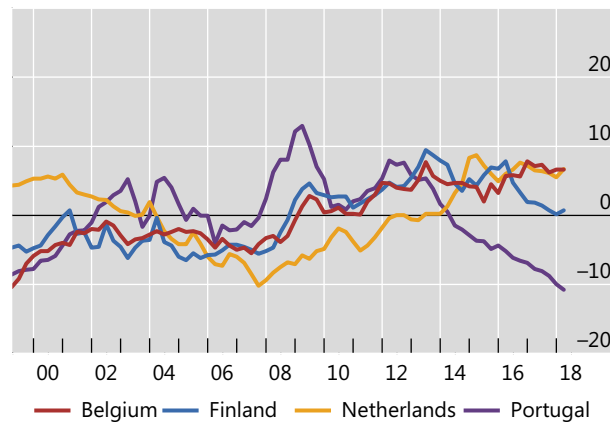
Deviation from country-specific mean, in percentage points¹

Graph G.3

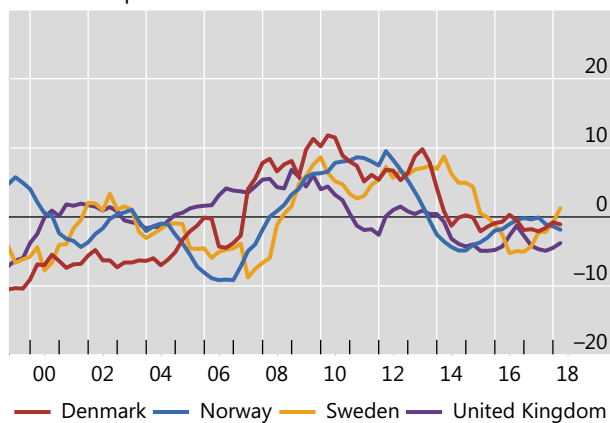
Euro area: major countries



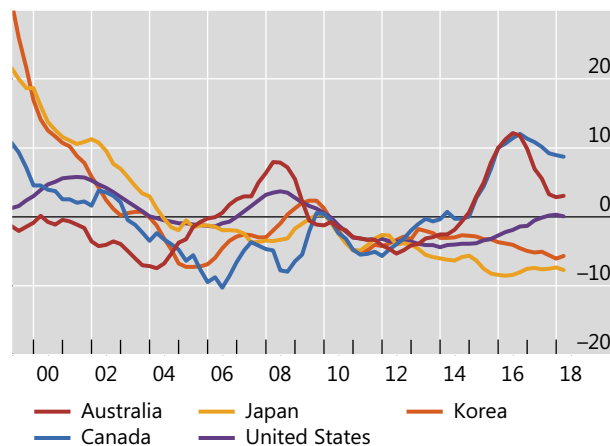
Euro area: other countries



Other European countries



Other economies



Further information on the BIS debt service ratio statistics is available at www.bis.org/statistics/dsr.htm.

¹ Country-specific means are based on all available data from 1999 onwards.

Source: BIS debt service ratios statistics.

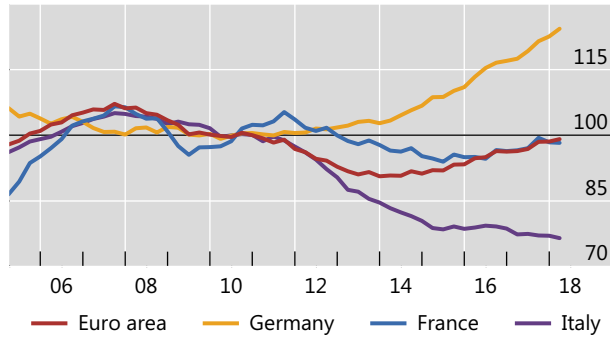
H Property price statistics

Real residential property prices

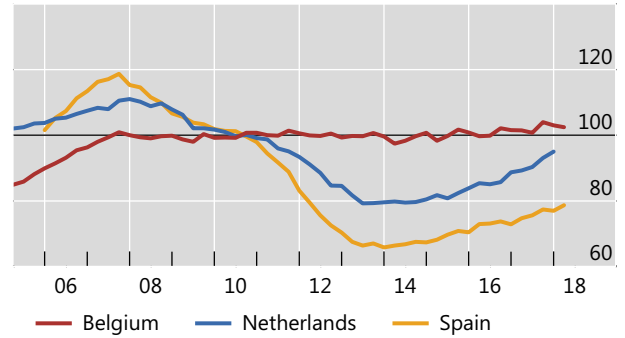
CPI-deflated, 2010 = 100

Graph H.1

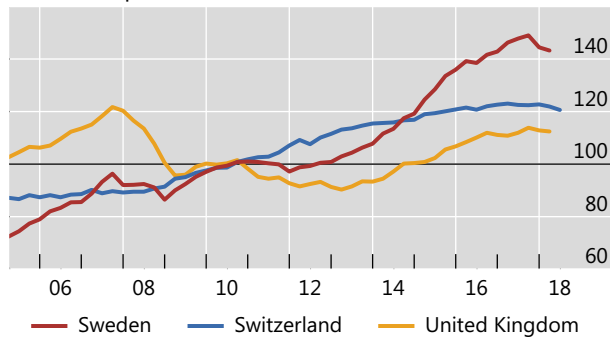
Euro area: aggregate and major countries



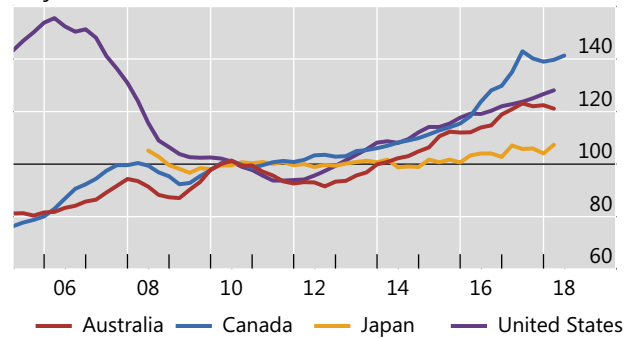
Euro area: other countries



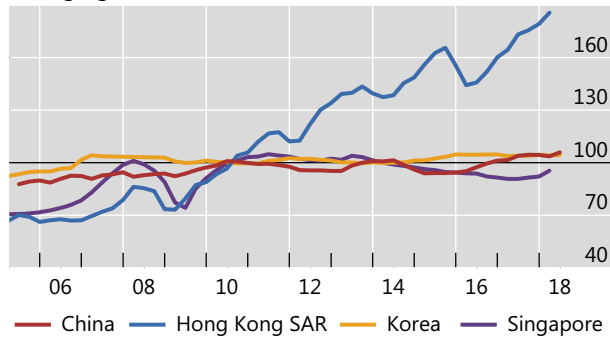
Other European countries



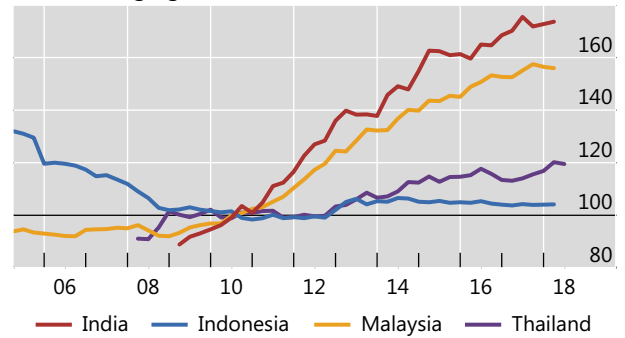
Major advanced economies



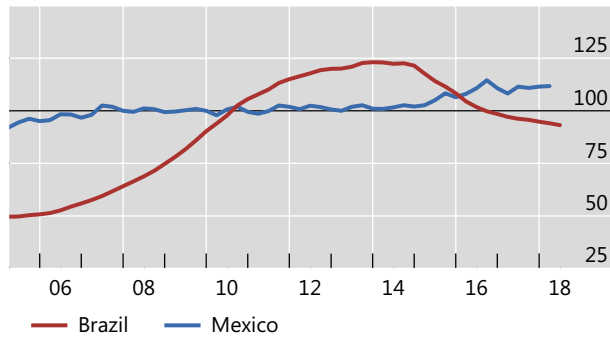
Emerging Asia



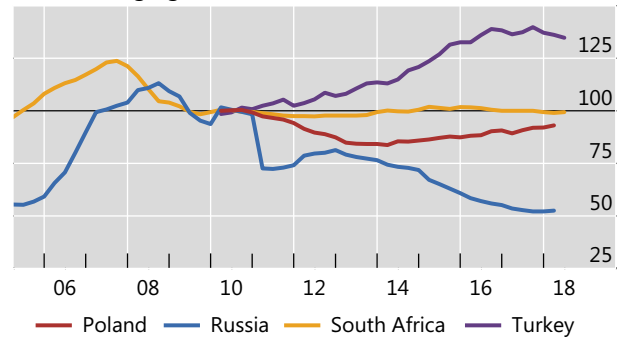
Other emerging Asia



Latin America



Other emerging market economies



Further information on the BIS property price statistics is available at www.bis.org/statistics/pp.htm.

Source: BIS property prices statistics.

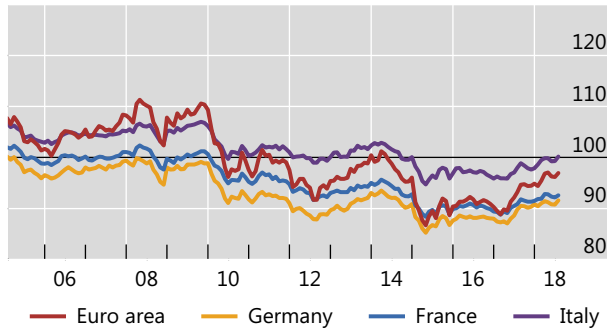
I Effective and US dollar exchange rate statistics

Real effective exchange rates

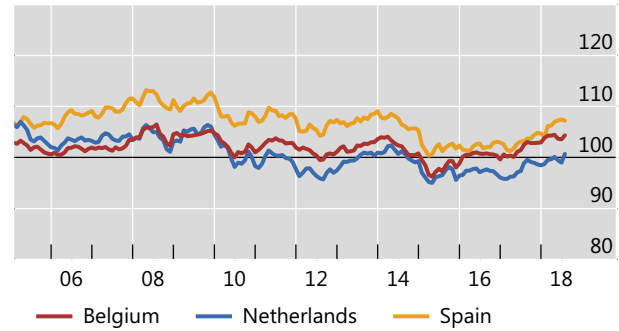
CPI-based, 1995–2005 = 100¹

Graph I.1

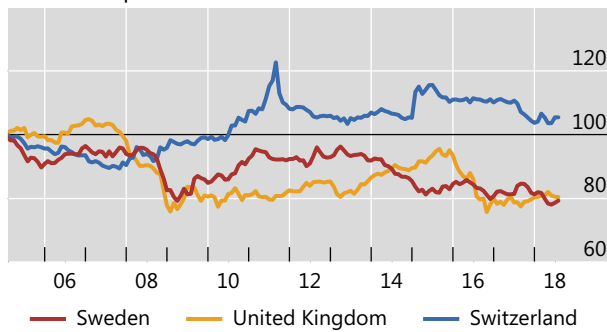
Euro area: aggregate and major countries



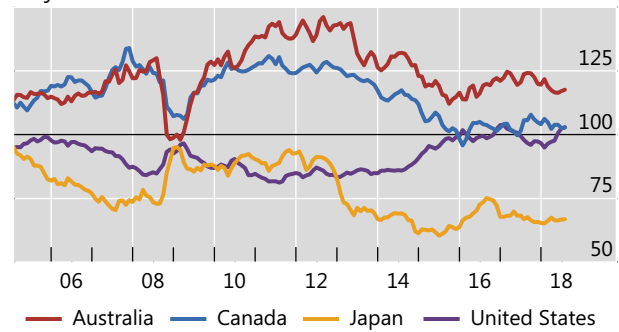
Euro area: other countries



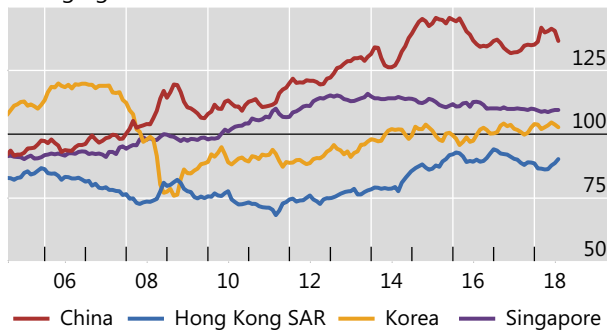
Other European countries



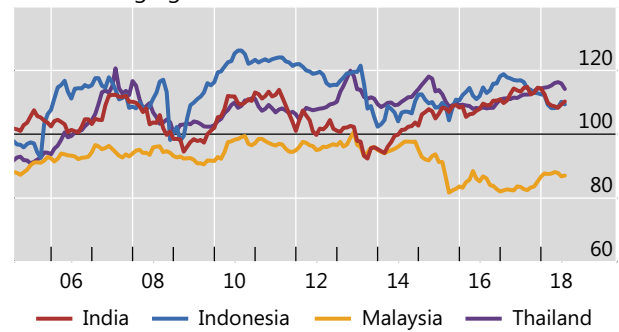
Major advanced economies



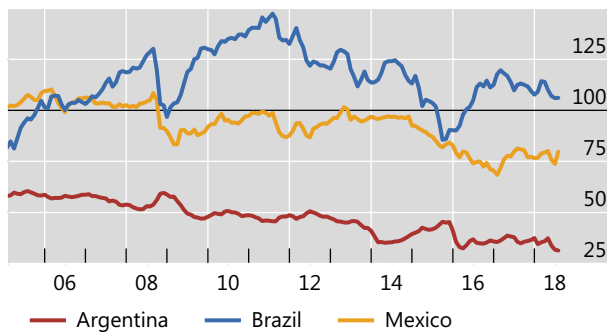
Emerging Asia



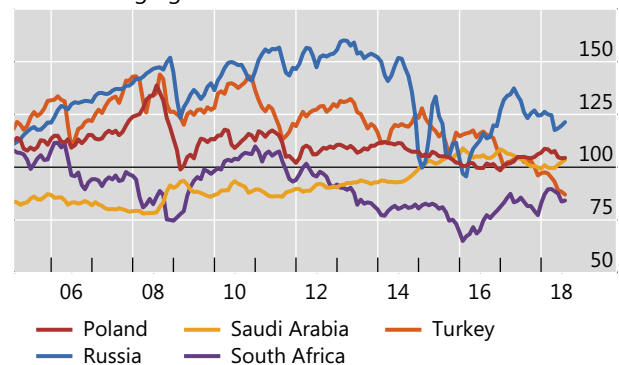
Other emerging Asia



Latin America



Other emerging market economies



Further information on the BIS effective exchange rate statistics is available at www.bis.org/statistics/eer.htm.

¹ An increase indicates a real-term appreciation of the local currency against a broad basket of currencies.

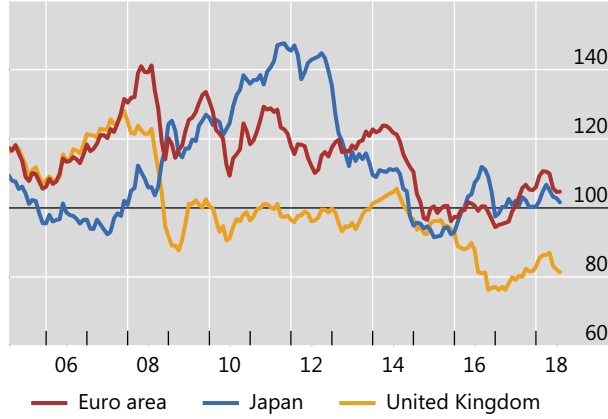
Source: BIS effective exchange rates statistics.

US dollar exchange rates

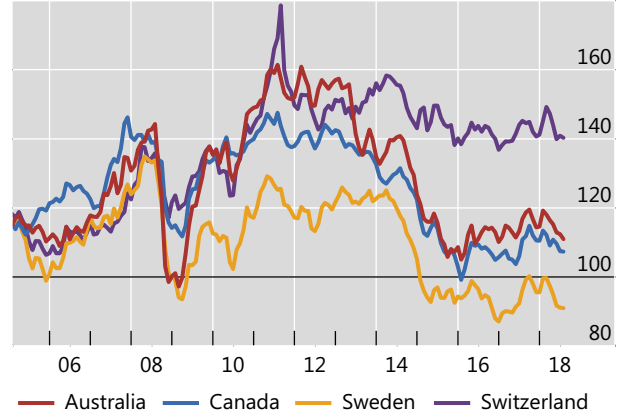
Indices, 1995–2005 = 100¹

Graph I.2

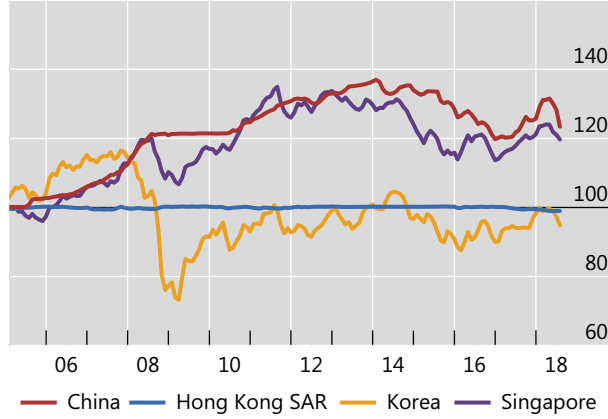
Major advanced economies



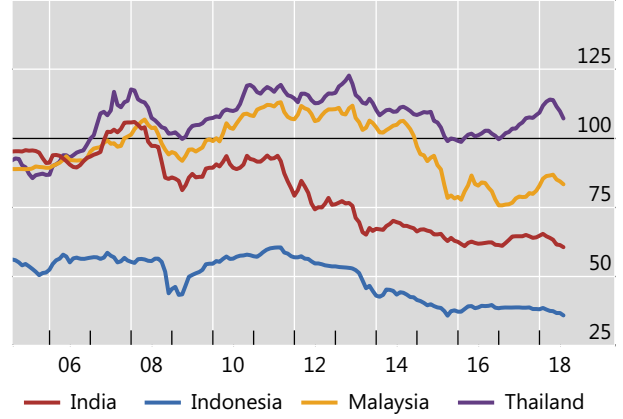
Other advanced economies



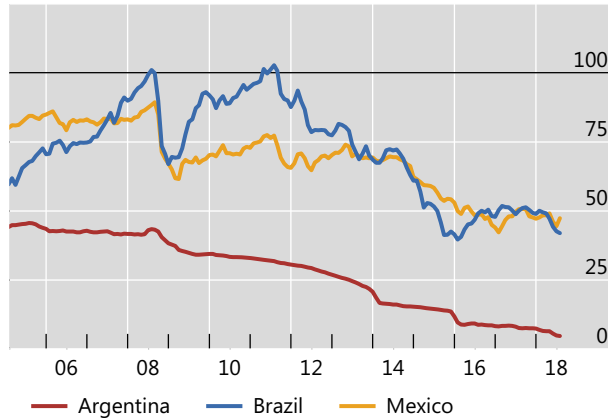
Emerging Asia



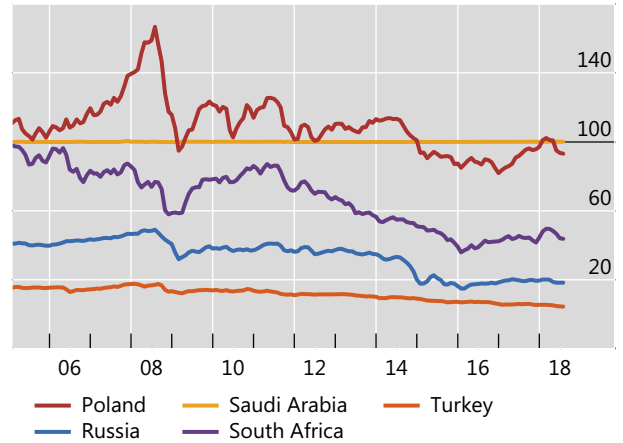
Other emerging Asia



Latin America



Other emerging market economies



Further information on the exchange rate statistics is available at www.bis.org/statistics/xrusd.htm.

¹ An increase indicates an appreciation of the local currency against the US dollar.

Source: BIS US dollar exchange rates statistics.

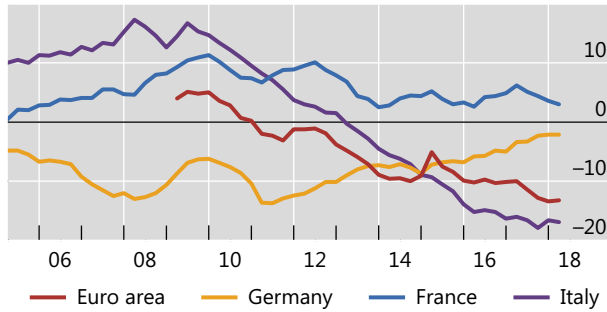
J Credit-to-GDP gaps

Credit-to-GDP gaps

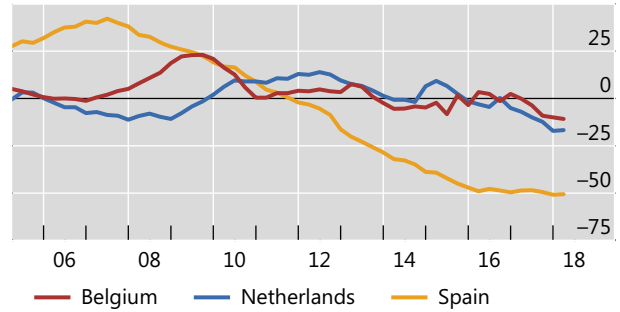
In percentage points of GDP

Graph J.1

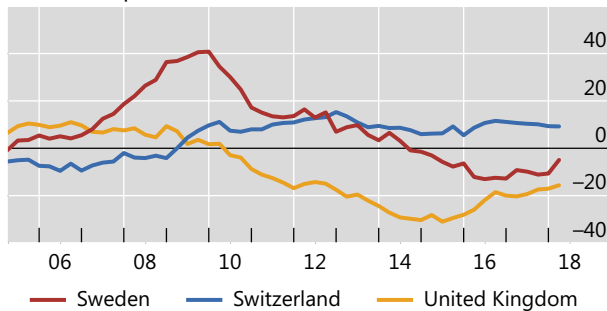
Euro area: aggregate and major countries



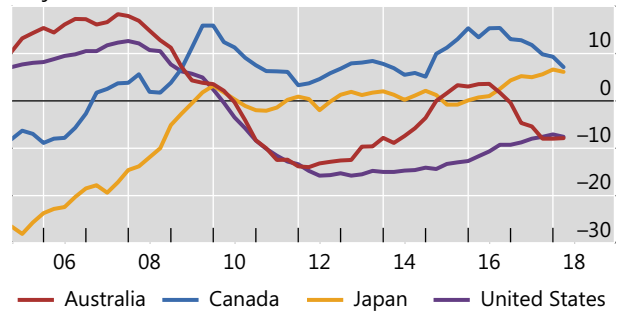
Euro area: other countries



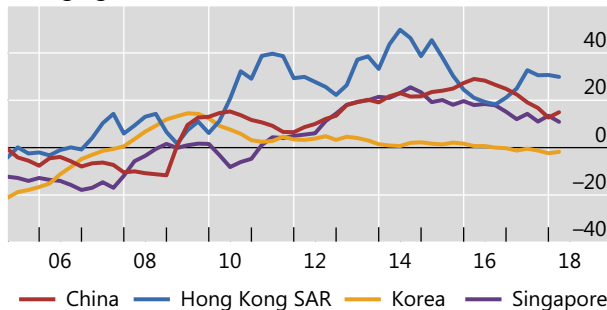
Other European countries



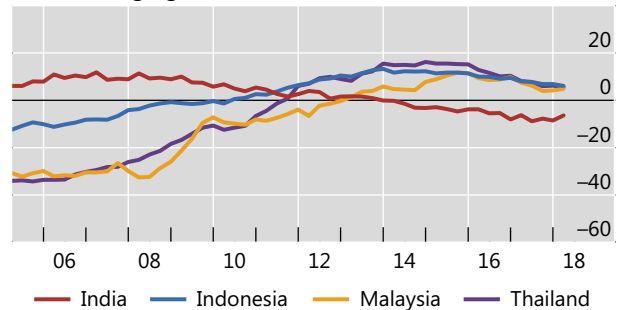
Major advanced economies



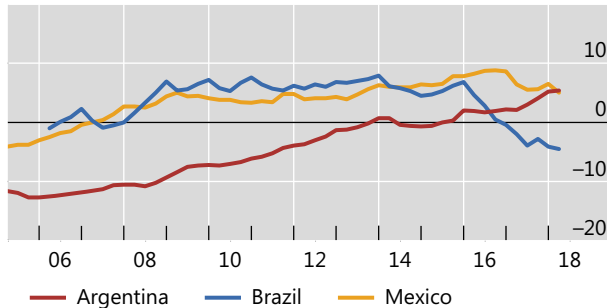
Emerging Asia



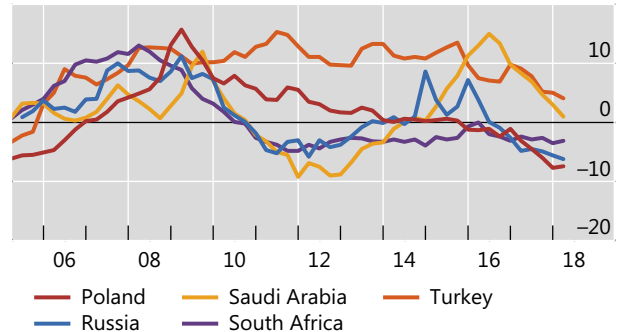
Other emerging Asia



Latin America



Other emerging market economies



¹ Estimates based on series on total credit to the private non-financial sector. The credit-to-GDP gap is defined as the difference between the credit-to-GDP ratio and its long-term trend; the long-term trend is calculated using a one-sided Hodrick-Prescott filter with a smoothing parameter of 400,000. Further information on the BIS credit-to-GDP gaps is available at www.bis.org/statistics/c_gaps.htm.

Source: BIS credit-to-GDP gaps statistics.

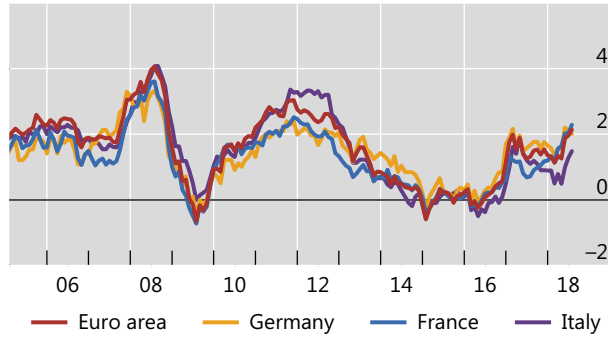
K Consumer prices

Consumer prices

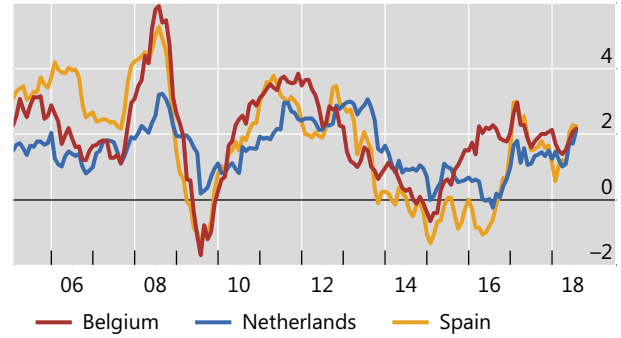
Year-on-year percentage changes

Graph K.1

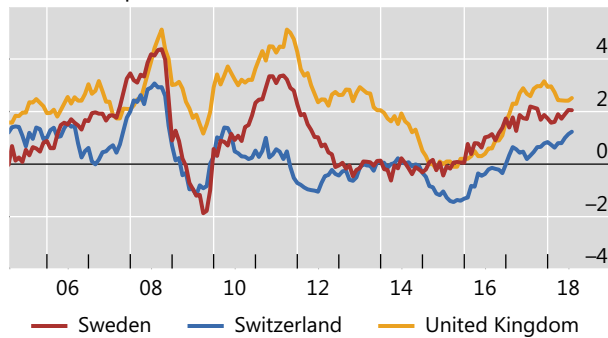
Euro area: aggregate and major countries



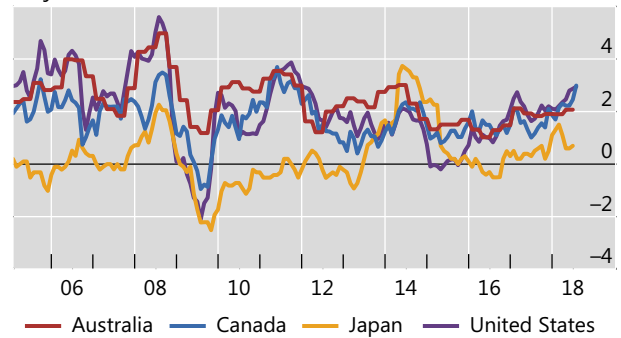
Euro area: other countries



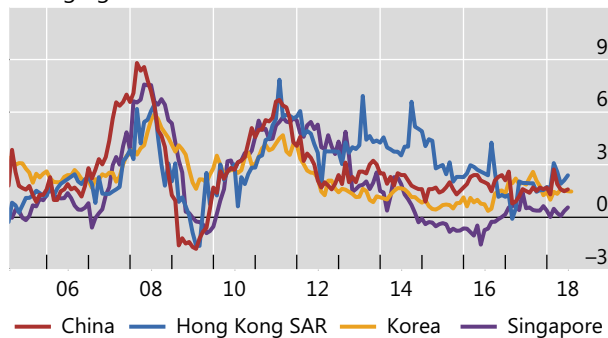
Other European countries



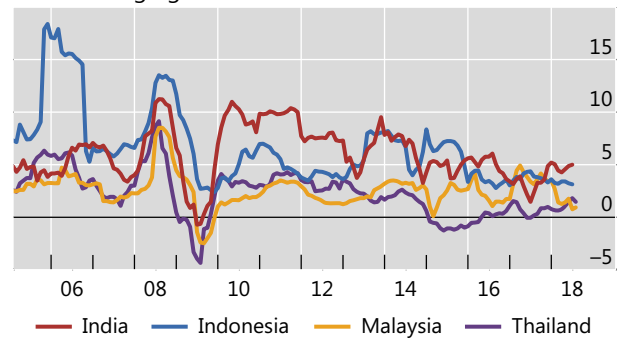
Major advanced economies



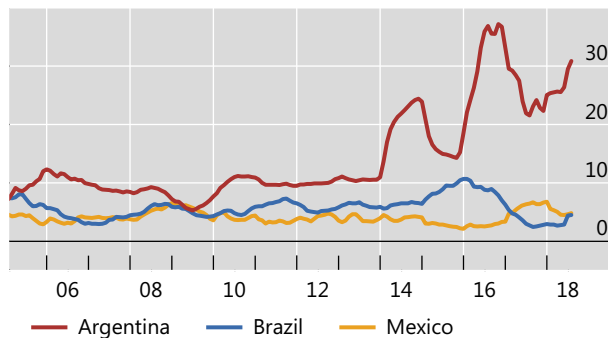
Emerging Asia



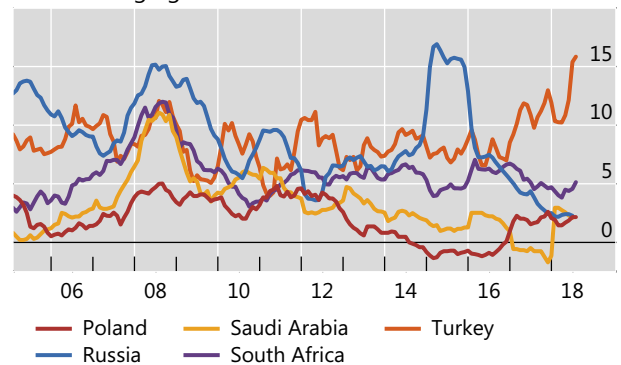
Other emerging Asia



Latin America



Other emerging market economies



Further information on the BIS consumer prices is available at www.bis.org/statistics/cp.htm.

Source: BIS consumer price statistics.

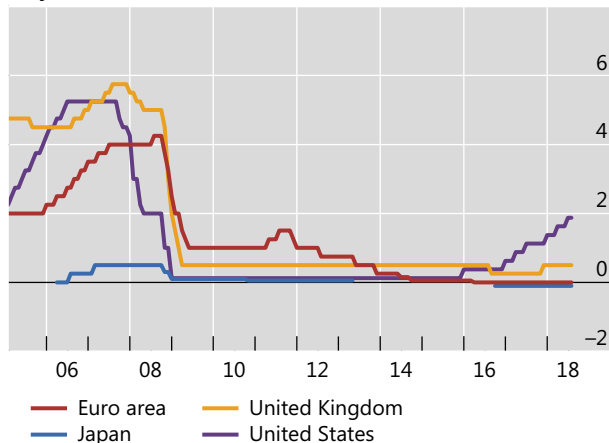
L Central bank policy rates

Central bank policy or representative rates

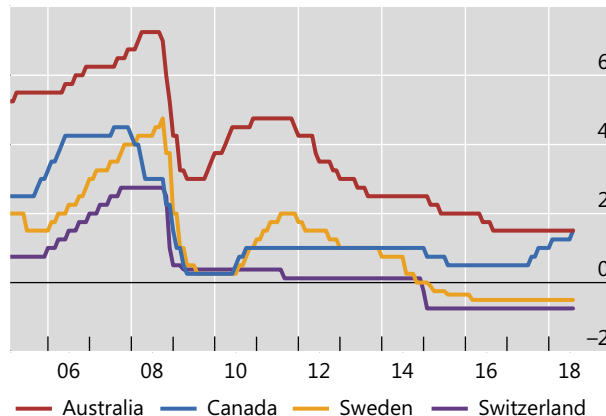
Month-end; in per cent

Graph L.1

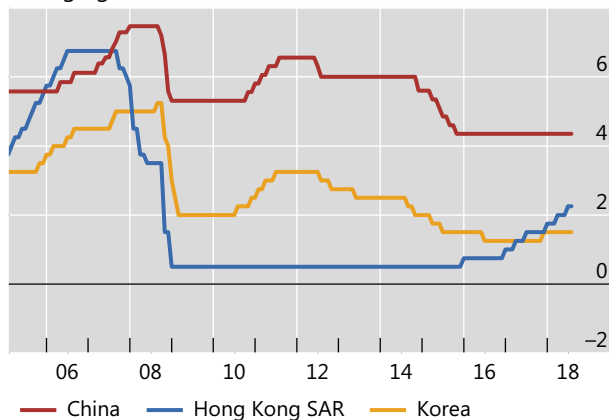
Major advanced economies



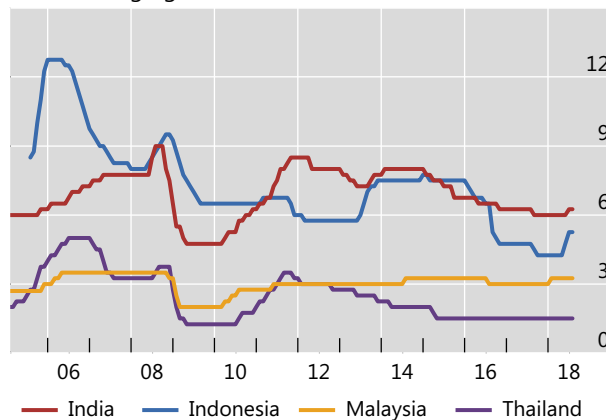
Other advanced economies



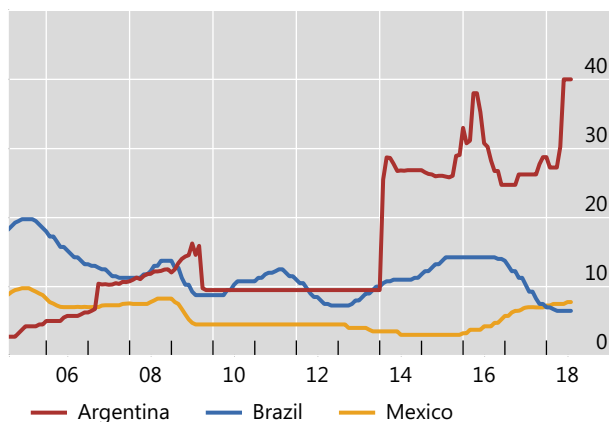
Emerging Asia



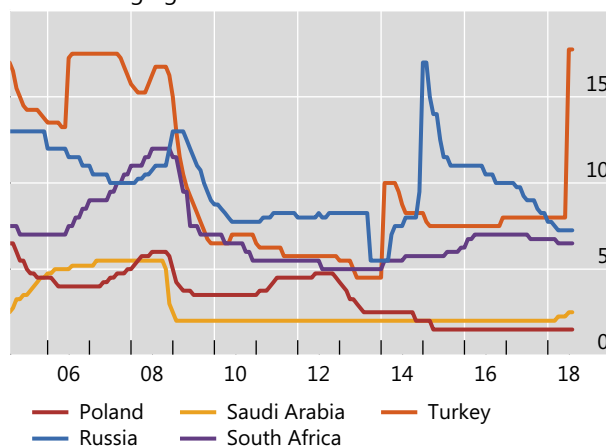
Other emerging Asia



Latin America



Other emerging market economies



Further information on the policy rates is available at www.bis.org/statistics/cbpol.htm.

Source: BIS policy rates statistics.

Special features in the BIS Quarterly Review

September 2018	<u>Fintech credit markets around the world: size, drivers and policy issues</u>	Stijn Claessens, Jon Frost, Grant Turner & Feng Zhu
September 2018	<u>Regulating cryptocurrencies: assessing market reactions</u>	Raphael Auer & Stijn Claessens
September 2018	<u>The rise of zombie firms: causes and consequences</u>	Ryan Banerjee & Boris Hofmann
September 2018	<u>Term premia: models and some stylised facts</u>	Benjamin H Cohen, Peter Hördahl & Dora Xia
March 2018	<u>Early warning indicators of banking crises: expanding the family</u>	Iñaki Aldasoro, Claudio Borio & Mathias Drehmann
March 2018	<u>Tracking the international footprints of global firms</u>	Stefan Avdjiev, Mary Everett, Philip R Lane & Hyun Song Shin
March 2018	<u>Payments are a-changin' but cash still rules</u>	Morten Bech, Umar Faruqi, Frederik Ougaard & Cristina Picillo
March 2018	<u>The ABCs of bank PBRs: What drives bank price-to-book ratios?</u>	Bilyana Bogdanova, Ingo Fender & Előd Takáts
March 2018	<u>Mortgages, developers and property prices</u>	Michael Chui, Anamaria Illes & Christian Uppé
March 2018	<u>The implications of passive investing for securities markets</u>	Vladyslav Sushko & Grant Turner
December 2017	<u>Is there a debt service channel of monetary transmission?</u>	Boris Hofmann & Gert Peersman
December 2017	<u>Household debt: recent developments and challenges</u>	Anna Zabai

Recent BIS publications¹

BIS Papers

Central banks and debt: emerging risks to the effectiveness of monetary policy in Africa? **BIS Papers No 99, October 2018**

In a period of rising trade protectionism and higher interest rates abroad, there is renewed urgency to ensure that debt, already on an upward path, does not impede the effectiveness of monetary policy in African countries. While central banks can affect the level and composition of debt held or owed by the financial sector if they have supervisory powers, they can only influence government debt indirectly, notably through communications. Advising the government and state-owned companies on debt management and macroeconomic developments might help slow a build-up in debt. Should debt nevertheless rise, certain institutional arrangements, such as rules against direct funding of the government budget, setting an inflation target for monetary policy, and operational independence, could help protect the effectiveness of monetary policy. Pursuing reforms that implement such arrangements could be one way forward for some African central banks.

BIS Working Papers

Non-monetary news in central bank communication **Anna Cieslak and Andreas Schrimpf** **December 2018, No 761**

We quantify the importance of non-monetary news in central bank communication. Using evidence from four major central banks and a comprehensive classification of events, we decompose news conveyed by central banks into news about monetary policy, economic growth, and separately, shocks to risk premia. Our approach exploits high-frequency comovement of stocks and interest rates combined with monotonicity restrictions across the yield curve. We find significant differences in news composition depending on the communication channel used by central banks. Non-monetary news prevails in about 40% of policy decision announcements by the Fed and the ECB, and this fraction is even higher for communications that provide context to policy decisions such as press conferences. We show that non-monetary news accounts for a significant part of financial markets' reaction during the financial crisis and in the early recovery, while monetary shocks gain importance since 2013.

Gross capital flows by banks, corporates and sovereigns **Stefan Avdjiev, Bryan Hardy, Sebnem Kalemli-Ozcan and Luis Servén** **December 2018, No 760**

We construct a new data set of quarterly international capital flows by sector, with an emphasis on debt flows. Using our new data set, we establish four facts. First, the co-movement of capital inflows and outflows is driven by inflows and outflows vis-à-vis the domestic banking sector. Second, the procyclicality of capital inflows is driven by banks and corporates, whereas sovereigns' external liabilities move acyclically in advanced and countercyclically in emerging countries. Third, the procyclicality of capital outflows is driven by advanced countries' banks

¹ Requests for publications should be addressed to Bank for International Settlements, Press & Communications, Centralbahnplatz 2, CH-4002 Basel. These publications are also available on the BIS website (<http://www.bis.org/>).

and emerging countries' sovereigns (reserves). Fourth, capital inflows and outflows decline for banks and corporates when global risk aversion (VIX) increases, whereas sovereign flows show no response. These facts are inconsistent with a large class of theoretical models.

Assessing inflation expectations anchoring for heterogeneous agents: analysts, businesses and trade unions

Ken Miyajima and James Yetman
November 2018, No 759

Forecasts of agents who are actively involved in the setting of prices and wages are less readily available than those of professional analysts, but may be more relevant for understanding inflation dynamics. Here we compare inflation expectations anchoring between analysts, businesses and trade unions for one country for which comparable forecasts are available for almost two decades: South Africa. Forecasts are modelled as monotonically diverging from an estimated long-run anchor point, or "implicit anchor", towards actual inflation as the forecast horizon shortens. We find that the estimated inflation anchors of analysts lie within the 3-6 percent inflation target range of the central bank. However, those for businesses and trade unions, which our evidence suggests may be most relevant for driving the inflation process, have remained above the top end of the official target range. Our results point to challenges for central banks seeking to gain credibility with agents whose decisions directly influence inflation.

Foreign currency borrowing, balance sheet shocks and real outcomes

Bryan Hardy
November 2018, No 758

Emerging market firms frequently borrow in foreign currency (FX), but their assets are often denominated in domestic currency. This behavior leads to an FX mismatch on firms balance sheets, which can harm their net worth in the event of a depreciation. I use a large, unanticipated, and exogenous depreciation episode and a unique dataset to identify the real and financial effects of firm balance sheet shocks. I construct a new dataset of all listed non-financial firms, matched to their banks, in Mexico over 2008q1-2015q2. This dataset combines firm-level balance sheets and real outcomes, currency composition of both assets and liabilities, and firms' loan-level borrowing from banks in peso and FX. This data allows me to control for shocks to firms' credit supply to identify the balance sheet shock and examine its real consequences. I find that non-exporting firms that have a larger FX mismatch experience greater negative balance sheet effects following the depreciation. Among these, smaller firms see a decrease in loan growth, resulting in stagnant employment growth and decreased growth in physical capital relative to firms with smaller FX mismatch. Larger firms with a large FX mismatch also have lower growth in FX loans following the shock, but are able to increase borrowing in peso loans, resulting in relatively higher growth in employment and physical capital. My results imply that firms are subject to net worth based borrowing constraints, and that these constraints are more binding on smaller firms and for loans in FX.

Explaining Monetary Spillovers: The Matrix Reloaded

Jonathan Kearns, Andreas Schrimpf and Dora Xia
November 2018, No 757

Using monetary policy shocks for seven advanced economy central banks, measured at high-frequency, we document the strength and characteristics of interest rate spillovers to 47 advanced and emerging market economies. Our main goal is to assess different channels through which spillovers occur and why some countries' interest rates respond more than others. We find that there is no evidence that spillovers relate to real linkages, such as trade flows. There is some indication that exchange rate regimes influence the extent of spillovers. By far the strongest determinant of interest rate spillovers is financial openness. Countries that have stronger bilateral (and aggregate) financial links with the US or euro area are susceptible to stronger interest rate spillovers. These effects are much more pronounced at the longer end of the yield curve, indicating that while countries retain policy rate independence, financial conditions are influenced by global yields.

Financial structure and income inequality

Michael Brei, Giovanni Ferri and Leonardo Gambacorta

November 2018, No 756

This paper empirically investigates the link between financial structure and income inequality. Using data for a panel of 97 economies over the period 1989-2012, we find that the relationship is not monotonic. Up to a point, more finance reduces income inequality. Beyond that point, inequality rises if finance is expanded via market-based financing, while it does not when finance grows via bank lending. These findings concur with a well-established literature indicating that deeper financial systems help reduce poverty and inequality in developing countries, but also with recent evidence of rising inequality in various financially advanced economies.

Measuring financial cycle time

Andrew Filardo, Marco Jacopo Lombardi and Marek Raczko

November 2018, No 755

Motivated by the traditional business cycle approach of Burns and Mitchell (1946), we explore cyclical similarities in financial conditions over time in order to improve our understanding of financial cycles. Looking back at 120 years of data, we find that financial cycles exhibit behaviour characterised by recurrent, endogenous swings in financial conditions, which result in costly booms and busts. Yet the recurrent nature of such swings may not appear so obvious when looking at conventionally plotted time-series data (that is, observed in calendar time). Using the pioneering framework developed by Stock (1987), we offer a new statistical characterisation of the financial cycle using a continuous-time autoregressive model subject to time deformation, and test for systematic differences between calendar and a new notion of financial cycle time. We find the time deformation to be statistically significant, and associated with levels of long-term real interest rates, inflation volatility and the perceived riskiness of the macro-financial environment. Implications for statistical modelling, endogenous risk-taking economic behaviour and policy are highlighted.

Euro area unconventional monetary policy and bank resilience

Fernando Avalos and Emmanuel C Mamatzakis

November 2018, No 754

This paper examines whether euro area unconventional monetary policies have affected the loss-absorbing buffers (that is the resilience) of the banking industry. We employ various measures to capture the effect of the broad array of programmes used by the ECB to implement balance sheet policies, while we control for the effect of conventional and negative (or very low) interest rate policy. The results suggest that, above and away from the zero-lower bound, looser interest rate policy tends to weaken our measure of euro area banks' loss-absorbing buffers. On the contrary, further lowering interest rates near and below the zero lower bound seems to strengthen (or weaken less) such buffers, which points towards non-linearities arising in the vicinity of the lower bound. Moreover, balance sheet easing policies enhance bank level resilience overall. However, unconventional monetary policies seem to have increased the fragility of banks in the member states hardest hit by the 2011 sovereign debt crisis. In fact, the evidence presented in this paper suggest that the resilience gains of unconventional monetary policies have accrued mostly to banks headquartered in the so-called core euro area countries (Austria, Belgium, Finland, France, Germany, Luxembourg and Netherlands). Finally, unconventional monetary policies seem to have enhanced more the resilience of banks that were relatively stronger, i.e. that were in the higher deciles of the distribution of loss-absorbing buffers.

Currency depreciation and emerging market corporate distress

Valentina Bruno and Hyun Song Shin

October 2018, No 753

How do emerging market corporates fare during periods of currency depreciation? We find that non-financial firms that exploit favorable global financing conditions to issue US dollar bonds and build cash balances are also those whose share price is most vulnerable to local currency depreciation. In particular, firms' vulnerability to currency depreciation derives less from the foreign currency debt as such, but from the cash balances that are built up by using

foreign currency debt. Overall, our results point to a financial motive for dollar bond issuance by emerging market firms in carry trade-like transactions that leave them vulnerable in an environment of dollar strength.

The effects of prudential regulation, financial development and financial openness on economic growth

Pierre-Richard Agénor, Leonardo Gambacorta, Enisse Kharroubi and Luiz Awazu Pereira da Silva
October 2018, No 752

This paper studies the effects of prudential regulation, financial development, and financial openness on economic growth. Using both existing models and a new OLG framework with banking and prudential regulation in the form of capital requirements, the first part presents an analytical review of the various channels through which prudential regulation can affect growth. The second part provides a reduced-form empirical analysis, based on panel regressions for a sample of 64 advanced and developing economies. The results show that growth may be promoted by prudential policies whose goal is to mitigate financial risks to the economy. At the same time, financial openness tends to reduce the growth benefits of these policies, possibly because of either greater opportunities to borrow abroad or increased scope for cross-border leakages in regulation.

Exchange rates and prices: evidence from the 2015 Swiss franc appreciation

Raphael Auer, Ariel Burstein and Sarah M Lein
October 2018, No 751

The removal of the lower bound on the EUR/CHF exchange rate in January 2015 provides a unique setting to study the implications of a large and sudden appreciation in an otherwise stable macroeconomic environment. Using transaction-level data on non-durable goods purchases by Swiss consumers, we measure the response of border and consumer retail prices to the CHF appreciation and how household expenditures responded to these price changes. Consumer prices of imported goods and of competing Swiss-produced goods fell by more in product categories with larger reductions in border prices and a lower share of CHF-invoiced border prices. These price changes resulted in substantial expenditure switching between imported and Swiss-produced goods. While the frequency of import retail price reductions rose in the aftermath of the appreciation, the average size of these price reductions fell (and more so in product categories with larger border price declines and a lower share of CHF-invoiced border prices), contributing to low pass-through into import prices.

Forward guidance and heterogeneous beliefs

Philippe Andrade, Gaetano Gaballo, Eric Mengus and Benoit Mojon
October 2018, No 750

Central banks' announcements that rates are expected to remain low could signal either a weak macroeconomic outlook, which would slow expenditure, or a more accommodative stance, which may stimulate economic activity. We use the Survey of Professional Forecasters to show that, when the Fed gave guidance between Q3 2011 and Q4 2012, these two interpretations co-existed despite a consensus on low expected rates. We rationalise these facts in a New-Keynesian model where heterogeneous beliefs introduce a trade-off in forward guidance policy: leveraging on the optimism of those who believe in monetary easing comes at the cost of inducing excessive pessimism in non-believers.

Whatever it takes. What's the impact of a major nonconventional monetary policy intervention?

Carlo Alcaraz, Stijn Claessens, Gabriel Cuadra, David Marques-Ibanez and Horacio Saprizo
October 2018, No 749

We assess how a major, unconventional central bank intervention, Draghi's "whatever it takes" speech, affected lending conditions. Similar to other large interventions, it responded to adverse financial and macroeconomic developments that also influenced the supply and demand for credit. We avoid such endogeneity concerns by comparing credit granted and its conditions by individual banks to the same borrower in a third country. We show that the intervention reversed prior risk-taking - in volume, price, and risk ratings - by subsidiaries of euro area banks relative to other local and foreign banks. Our results document a new effect of interventions and are robust along many dimensions.

Domestic and global output gaps as inflation drivers: what does the Phillips curve tell?

Martina Jašová, Richhild Moessner and Előd Takáts

September 2018, No 748

We study how domestic and global output gaps affect CPI inflation. We use a New Keynesian Phillips curve framework, which controls for non-linear exchange rate movements for a panel of 26 advanced and 22 emerging economies covering the 1994Q1-2017Q4 period. We find broadly that both global and domestic output gaps are significant drivers of inflation both in the pre-crisis (1994-2008) and post-crisis (2008-2017) periods. Furthermore, after the crisis, in advanced economies the effect of the domestic output gap declines, while in emerging economies the effect of the global output gap declines. The paper demonstrates the usefulness of the New Keynesian Phillips curve in identifying the impact of global and domestic output gaps on inflation.

How do credit ratings affect bank lending under capital constraints?

Stijn Claessens, Andy Law and Teng Wang

September 2018, No 747

Through the lens of credit risk ratings, we investigate how banks determine loan terms under capital constraints. Using a unique and comprehensive supervisory dataset of individual corporate loans in the US, we show that unexpected adjustments to banks' internal rating systems, which only alter how outsiders assess the riskiness of borrowers, trigger changes in loan terms. The effects are asymmetric: downward adjustments to ratings increase spreads by some 40 bps and decrease committed loan sizes and maturities, but upward adjustments lead to much weaker (yet opposite) effects. Importantly, we find effects to be strong for smaller, riskier, and capital constrained banks as well as for borrowers with poorer credit quality and for non-guaranteed loans. Our findings, robust in several ways, highlight the important role of regulatory capital in loan terms.

What drives local lending by global banks?

Stefan Avdjiev, Uluc Aysun and Ralf Hepp

September 2018, No 746

We find that the lending behaviour of global banks' subsidiaries throughout the world is more closely related to local macroeconomic conditions and their financial conditions than to those of their owner-specific counterparts. This inference is drawn from a panel dataset populated with bank-level observations from the Bankscope database. Using this database, we identify ownership structures and incorporate them into a unique methodology that identifies and compares the owner and subsidiary-specific determinants of lending. A distinctive feature of our analysis is that we use multi-dimensional country-level data from the BIS international banking statistics to account for exchange rate fluctuations and cross-border lending.

Financial stress in lender countries and capital outflows from emerging market economies

Ilhyock Shim and Kwanho Shin

September 2018, No 745

We investigate if financial stress in countries where international banks are headquartered is a major driver of banking outflows from emerging market economies (EMEs). We find that when financial stress measured by sovereign or bank CDS spread or corporate bond spread increases, international banks decrease their lending to EMEs, which acts as a major driver of capital outflows from EMEs. In particular, financial stress in lender countries is a more important driver than the local financial conditions and macroeconomic fundamentals of EMEs. Such results generally hold even after the Global Financial Crisis (GFC) period, but to a lesser extent. When we divide the total amount of international lending into subcomponents, cross-border lending to EMEs is more susceptible to financial stress in lender countries than is local lending, and that local lending in foreign currency is more stable than is cross-border lending. Our findings suggest that it is desirable for EME policymakers to promote diversification of lender countries and induce more borrowing from local subsidiaries than cross-border lenders.

Basel Committee on Banking Supervision

Cyber-resilience: range of practices

December 2018

The Basel Committee on Banking Supervision today published the report. It identifies, describes and compares the range of observed bank, regulatory and supervisory cyber-resilience practices across jurisdictions.

Based on analysis of authorities' responses to previous international surveys and on exchanges between international experts, the report gains insight into the effective practices and expectations in place. It also benefited from industry participants' input.

The current challenges and initiatives to enhance cyber-resilience are summarised in 10 key findings and illustrated by case studies which focus on concrete developments in the jurisdictions covered.

Implementation of Basel standards - A report to G20 Leaders on implementation of the Basel III regulatory reforms

November 2018

Full, timely and consistent implementation of Basel III remains fundamental to building a resilient financial system, maintaining public confidence in regulatory ratios and providing a level playing field for internationally active banks. This report updates G20 Leaders on progress and challenges in the implementation of the Basel III regulatory reforms since July 2017, when the Basel Committee last reported to the G20.

The report summarises the steps taken by Basel Committee member jurisdictions to adopt the Basel III standards, banks' progress in bolstering their capital and liquidity positions, the consistency of implementation in jurisdictions assessed since the Committee's last report and the Committee's implementation work plan.

Incentives to centrally clear over-the-counter (OTC) derivatives

November 2018, BCBS & CPMI Papers

The report identifies reform areas that may merit consideration by the relevant standard-setting bodies (SSBs). The findings from the report will inform relevant SSBs regarding any subsequent policy efforts and potential adjustments, bearing in mind the original objectives of the reforms. This does not imply a scaling back of those reforms or an undermining of members' commitment to implement them.

Fifteenth progress report on adoption of the Basel regulatory framework

October 2018

The report includes the status of adoption of the Basel III risk-based capital standards, the leverage ratio, the standards for global and domestic systemically important banks (SIBs) and interest rate risk in the banking book (IRRBB), the Net Stable Funding Ratio (NSFR), the large exposures framework and the disclosure requirements.

Statement on leverage ratio window-dressing behaviour

October 2018

The Basel III leverage ratio standard comprises a 3% minimum level that banks must meet at all times, a buffer for global systemically-important banks and a set of public disclosure requirements. For the purpose of disclosure requirements, banks must calculate the leverage ratio on a quarter-end basis. Certain jurisdictions require banks to calculate the ratio more frequently (eg using averages of exposure amounts based on daily or month-end values).

Heightened volatility in various segments of money markets and derivatives markets around key reference dates (eg quarter-end dates) has alerted the Committee to potential regulatory arbitrage by banks. A particular concern is "window dressing", in the form of temporary reductions of transaction volumes in key financial markets around reference dates resulting in the reporting and public disclosure of elevated leverage ratios.

Window-dressing by banks is unacceptable, as it undermines the intended policy objectives of the leverage ratio requirement and risks disrupting the operations of financial markets. Banks and supervisors should ensure ongoing compliance with the Committee's leverage ratio such that it accurately reflects the resilience of banks and to mitigate any possible disruption to the operations of financial markets that results from window dressing.

Accordingly, in evaluating its leverage ratio exposure, a bank should assess the volatility of transaction volumes throughout reporting periods, and the effect on its leverage ratio requirements. Banks should also desist from undertaking transactions with the sole purpose of reporting and disclosing higher leverage ratios at reporting days only.

Leverage ratio treatment of client cleared derivatives

October 2018

A key element of the Basel Committee's post-crisis Basel III reforms is the introduction of a leverage ratio requirement. The leverage ratio complements the risk-based capital requirements by providing a safeguard against unsustainable levels of leverage and by mitigating gaming and model risk across both internal models and standardised risk measurement approaches. By design, the leverage ratio does not differentiate risk across different asset classes.

This consultative document seeks the views of stakeholders on whether a targeted and limited revision of the leverage ratio's treatment of client cleared derivatives may be warranted, based on the findings of the Committee's review of the impact of the leverage ratio on banks' provision of client clearing services and in consideration of key policy objectives of G20 Leaders both to prevent excessive leverage and improve the quality and quantity of capital in the banking system and to promote central clearing of standardised derivatives contracts.

Stress testing principles

October 2018

The 2009 principles were designed to address key weaknesses in stress testing practices as highlighted by the global financial crisis. Since then, the role of stress testing has rapidly evolved and grown in importance in many jurisdictions. The principles published today have been updated to reflect that stress testing is now both a critical element of risk management for banks and a core tool for banking supervisors and macroprudential authorities. The updated principles are set at a high level so that they can be applied across banks and jurisdictions while remaining relevant as stress testing practices continue to evolve.

The principles are guidelines that focus on the core elements of stress testing frameworks. These include the objectives, governance, policies, processes, methodology, resources and documentation that guide stress testing activities and facilitate the use, implementation and oversight of stress testing frameworks. Each principle is followed by a short description of considerations that are equally relevant for banks and authorities. This description is followed by additional points applicable to either banks or authorities, as follows:

- Additional points for banks: points with particular relevance to (a) banks' own internal stress testing activities and (b) their participation in bank-run supervisory stress tests.
- Additional points for authorities: points with particular relevance to (a) supervisor-run stress tests and (b) the authorities' role in bank-run supervisory stress tests. They also cover the role of authorities in their oversight of banks' internal stress testing activities.

Basel III Monitoring Report

October 2018

This report presents the results of the Basel Committee's latest Basel III monitoring exercise based on data as of 31 December 2017. The Committee established a rigorous reporting process to regularly review the implications of the Basel III standards for banks, and has been publishing the results of such exercises since 2012. For the first time, the report sets out the impact of the Basel III framework that was initially agreed in 2010 as well as the effects of the Committee's December 2017 finalisation of the Basel III reforms.

Regulatory Consistency Assessment Programme (RCAP) - Assessment of Basel NSFR regulations - Kingdom of Saudi Arabia

September 2018

Through its Regulatory Consistency Assessment Programme (RCAP), the Basel Committee monitors the timely adoption of regulations by its members, assesses their consistency with the Basel framework and analyses the quality of intended regulatory outcomes. The RCAP also helps member jurisdictions to identify deviations from the Basel framework and assesses their materiality.

This report describes the Committee's assessment of the implementation of the Basel Net Stable Funding Ratio (NSFR) regulations in the Kingdom of Saudi Arabia. The Saudi Arabian NSFR regulations have been assessed as compliant, which is the highest possible grade.

Regulatory Consistency Assessment Programme (RCAP) - Assessment of Basel large exposures framework - Kingdom of Saudi Arabia

September 2018

Through its Regulatory Consistency Assessment Programme (RCAP), the Basel Committee monitors the timely adoption of regulations by its members, assesses their consistency with the Basel framework and analyses the quality of intended regulatory outcomes. The RCAP also helps member jurisdictions to identify deviations from the Basel framework and assesses their materiality.

This report describes the Committee's assessment of the implementation of the Basel Large Exposure (LEX) regulations in the Kingdom of Saudi Arabia. The Saudi Arabian LEX regulations have been assessed as compliant, which is the highest possible grade.

Speeches

Shelter from the storm

Remarks by Mr Agustín Carstens, General Manager of the BIS, at a seminar at the European Stability Mechanism, Luxembourg, 7 December 2018.

Getting one's house in order, building a resilient and flexible economy, and reducing vulnerabilities - all these things are of first-order importance. But it would be naive to believe that we can avoid all future crises. And when they do occur, having a shelter from the storm is very important. This speech reviews the achievements and unintended consequences of the policy response to the Global Financial Crisis and the subsequent European debt crisis. It then sketches the challenges authorities might face in the years to come and discusses what can be done to safeguard economic and financial stability.

Big tech in finance and new challenges for public policy

Keynote address by Mr Agustín Carstens, General Manager of the BIS, at the FT Banking Summit, London, 4 December 2018.

Large technology companies with established user networks ("big tech") are challenging traditional finance. Having started with payments, in some markets such companies have been expanding into the provision of credit, insurance and even wealth management. They have been doing so either directly or in cooperation with incumbent financial institutions. This raises a host of questions around competition, financial inclusion, data protection and financial stability. Will this growth lead to a more diverse financial system or to new forms of concentration? Is the expansion of big tech driven by efficiency gains, or by arbitrage of the current regulatory system? And how should public policy adapt to these developments in order to protect client data and help sustain strong and balanced growth?

Financial instability: can Big Data help connect the dots?

Remarks by Mr Luiz Awazu Pereira da Silva, Deputy General Manager of the BIS, and Goetz von Peter, Principal Economist at the BIS, based on a speech delivered at the Ninth European Central Bank Statistics Conference on "20 years of ESCB statistics: what's next?", Frankfurt am Main, 11 July 2018.

The Great Financial Crisis fuelled a broad-based expansion of financial statistics. A second, much larger wave of data hits the shores as central banks and the financial sector embrace Big Data. Collecting more data or dots is necessary, but connecting the dots is the critical step for understanding the implications for financial stability. It is the lens that matters: it takes purposeful analysis to turn data into useful information. Financial markets are flush with data, yet the bigger picture can slip out of sight. This is where policymakers and market participants fall short time and again: in run-ups to previous crises, simple aggregates would signal problems yet warnings went unheeded. The onset of a crisis then sharpens the focus on critical data for the management and resolution of the crisis. Later, when the financial cycle turns again, innovation and changing structure make financial risks harder to locate using the existing data.

Ten years after the Great Financial Crisis - where do we stand?

Lecture by Mr Agustín Carstens, General Manager of the BIS, at the People's Bank of China, Beijing, 19 November 2018.

After central banks played a critical role in stemming the Great Financial Crisis, monetary stimulus in subsequent years helped to build the foundations for the recovery. But in its wake, there were unintended side effects and structural changes that will need to be addressed in the normalisation phase. These include high levels of debt, a shift from bank financing to bond financing and the postponement of structural reforms. The unwinding of monetary accommodation currently in progress in core advanced economies is a sign that earlier policies have done their job. Yet, risks are ever present, notably sharp market corrections that could spill over globally due to significant allocations by global asset managers in emerging market economy (EME) local currency bonds. To meet these challenges, policymakers need to adopt growth-enhancing structural reforms and implement fully the agreed post-crisis financial reforms. EME authorities should also be prepared to manage spillovers through the flexible use of policy instruments.

On money, debt, trust and central banking

Keynote speech by Mr Claudio Borio, Head of the Monetary and Economic Department of the BIS, at the Cato Institute, 36th Annual Monetary Conference, Washington DC, 15 November 2018.

This essay examines in detail the properties of a well functioning monetary system - defined as money plus the mechanisms to execute payments - in both the short and long run, drawing on both theory and the lessons from history. It stresses the importance of trust and of the institutions needed to secure it. Ensuring price and financial stability is critical to nurturing and maintaining that trust. In the process, the essay addresses several related questions, such as the relationship between money and debt, the viability of cryptocurrencies as money, money neutrality, and the nexus between monetary and financial stability. While the present monetary system, with central banks and a prudential apparatus at its core, can and must be improved, it still provides the best basis to build on.

Money in a digital age: 10 thoughts

Speech by Mr Agustín Carstens, General Manager of the BIS, at Lee Kuan Yew School of Public Policy, Singapore, 15 November 2018.

New technology has spurred economic growth to the benefit of us all and we should continue to welcome innovation, including in the space of finance and payments. But the claims of its proponents should be tested against the laws of economics, centuries of accumulated wisdom and plain old common sense. Good technology alone does not ensure good economics, just as good economics does not ensure good technology. Technology is only effective once it has

found its economic purpose. We must consider the intended goals and harness the best and most appropriate technology to help us get there.

Distributed ledger technology and large value payments: a global game approach

Presentation by Mr Hyun Song Shin, Economic Adviser and Head of Research of the BIS, at the conference on "Cryptocurrencies and Blockchains", University of Chicago Becker Friedman Institute, 9 November 2018.

Payment systems built around distributed ledger technology (DLT) operate by maintaining identical copies of the history of payments among the participant nodes in the payment system. Cryptocurrencies are perhaps the best-known example of the application of DLT, but the applicability of the technology is much broader. Payment systems based on DLT are compatible with oversight by the central bank, and several central banks have conducted successful trials of interbank payments. In these trials, payment system participants transfer digital tokens that are redeemable at the central bank and use DLT to transfer them to other system participants. Decentralised consensus is achieved through agreement of a supermajority of the participants (typically 75-80%) who collectively validate payments.

Nevertheless, the technology by itself does not overcome the credit needs of the payment system to maintain settlement liquidity. In conventional real-time gross settlement (RTGS) payment systems, the value of daily payments can be over 100 times the deposit balance maintained by the system participant at the central bank. As such, incoming payments are recycled into outgoing payments, and credit provided by the central bank supplements private credit from outside the payment system for the smooth functioning of the system as a whole.

We examine the liquidity properties of decentralised payment systems in an economic model of payments, in which the cost of credit to finance payments enters explicitly.

Financial inclusion in the age of fintech: a paradigm shift

Welcoming keynote address¹ by Mr Luiz Awazu Pereira da Silva, Deputy General Manager of the BIS, at the fourth FSI-GPFI conference on standard-setting bodies and innovative financial inclusion: implications of fintech and other regulatory and supervisory developments, Basel, Switzerland, 25 October 2018.

Yuan Fluctuates With Market, PBOC Has Tools to Maintain Control, Agustín Carstens says

Interview with Mr Agustín Carstens, General Manager of the BIS, in Yicai Global, conducted by Ms Yang Yanqing and Ms Zhou Ailin and published online on 1 November 2018.

Money and payment systems in the digital age

Speech by Mr Agustín Carstens, General Manager of the BIS, at the Finance and Global Economics Forum of the Americas and on the occasion of the 70th anniversary of the University of Miami Business School, Miami, 1 November 2018.

Money is one of humankind's most important inventions and is critical to a modern economy, including for the payment of goods and services. Money has evolved through the years with central banks playing an important role. These days, most central banks operate complex systems that allow for safe and efficient payments. Central banks are using the latest technologies to make payment systems more robust, more resilient and more timely, and will continue to play a critical role in pushing the boundaries of how technology can enhance the payments landscape. Money and payments continue to evolve, and the future is promising.

The new supervisory agenda

Keynote address by Mr Agustín Carstens, General Manager of the BIS, at the 13th ASBA-BCBS-FSI High-level Meeting on "Global and Regional Supervisory Priorities", Nassau, 30 October 2018.

Deposit insurance and financial stability: old and new challenges

Keynote address by Mr Agustín Carstens, General Manager of the BIS, at the 17th IADI Annual General Meeting and Annual Conference on "Deposit insurance and financial stability: recent financial topics", Basel, 18 October 2018.

New loan provisioning standards and procyclicality

Panel remarks by Mr Claudio Borio, Head of the Monetary and Economic Department of the BIS, at the High-level conference on "The new bank provisioning standards: implementation challenges and financial stability implications", jointly organised by the Bank of Spain, the Centro de Estudios Monetarios y Financieros (CEMFI) and the BIS Financial Stability Institute (FSI), Madrid, Spain, 18-19 October 2018.

The adoption of the new expected credit loss provisioning standard - IFRS 9 - is a landmark. What are its implications for financial stability? While the new standard is likely to mitigate the procyclicality of the financial system to some extent relative to the previous, incurred loss model, it falls short by a significant margin of what one would like from a financial stability perspective. This points to broader inevitable tensions between accounting and prudential regulation, and calls for the active use of backstops (or so-called prudential filters) to preserve stability. Experience with the operation of the alternative dynamic (countercyclical) credit loss provisioning scheme adopted by the Bank of Spain points to some strengths and weaknesses in the broader macroprudential frameworks in which such arrangements are embedded.

The 'real' illusion: How monetary factors matter in low-for-long rates

Article by Mr Claudio Borio, Head of the Monetary and Economic Department of the BIS, Mr Piti Disyatat, Director of Research, Bank of Thailand, Mr Mikael Juselius, Research Adviser, Monetary Policy and Research Department, Bank of Finland, and Mr Phurichai Rungcharoenkitkul, Senior Economist, Monetary and Economic Department, Bank for International Settlements, in • VoxEU.org, published on 18 October 2018.

Bringing the BIS to Asia - and Asia to the BIS

Opening remarks by Agustín Carstens, General Manager of the BIS, at the BIS symposium on "New challenges for central banking" to mark the 20th anniversary of the BIS Representative Office for Asia and the Pacific, Hong Kong, 15 October 2018.

The European banking union: what are the missing pieces?

Public lecture by Mr Fernando Restoy, Chairman, Financial Stability Institute, Bank for International Settlements, at the International Center for Monetary and Banking Studies, Geneva, Switzerland, 16 October 2018.

The success of the European banking union project should be gauged in terms of how far the process meets two objectives: ensuring a more closely integrated banking system in the euro zone; and denationalising the value of banks' liabilities. It is shown that progress is still incomplete on both fronts. In order to accomplish the set goals, it may be necessary to consider additional steps, including: (i) completion of a single rulebook; (ii) promotion of a more market-sensitive structure for the banking industry; (iii) swift action to address the implementation challenges of the new resolution framework for systemic banks; and (iv) development of a common administrative insolvency regime for non-systemic institutions.

Challenges for the world economy: implications for Arab economies

Keynote speech by Mr Agustín Carstens, General Manager of the BIS, at the 42nd Annual Meeting of the Council of Arab Central Banks and Monetary Authorities Governors, Amman, 17 September 2018.

A decade after the global financial crisis, the global economy is now solidly expanding. Yet, this expansion is by no means universal. Arab countries in particular have struggled to cope with large swings in energy prices, relying primarily on fiscal policy to stabilise their economies. But this will prove more difficult as the prospect of monetary policy normalisation looms large. Meanwhile, trade tensions could derail world growth and lower energy prices. As borrowing costs rise, the use of fiscal policy as a shock absorber will become more difficult. Hence, there is no alternative to building resilience. In addition to increasing an economy's diversification and flexibility while reducing its vulnerabilities, expanded external cushions such as international reserves or access to external liquidity assistance could play an important part.

BIS Quarterly Review, September 2018 - media briefing

Remarks by Mr Claudio Borio, Head of the Monetary and Economic Department of the BIS and Mr Hyun Song Shin, Economic Adviser and Head of Research of the BIS.

Reflections on the Lehman collapse, 10 years later

Translation of an article by Mr Hyun Song Shin, Economic Adviser and Head of Research of the BIS, in the • Frankfurter Allgemeine Zeitung (FAZ), 15 September 2018.