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

B Consolidated banking statistics

C Debt securities statistics

D Derivatives statistics

E Global liquidity indicators

F Statistics on total credit to the non-financial sector

G Debt service ratios for the private non-financial sector

H Property price statistics

I Effective and US dollar exchange rate statistics

J Credit-to-GDP gaps

K Consumer price indices

L Central bank policy rates

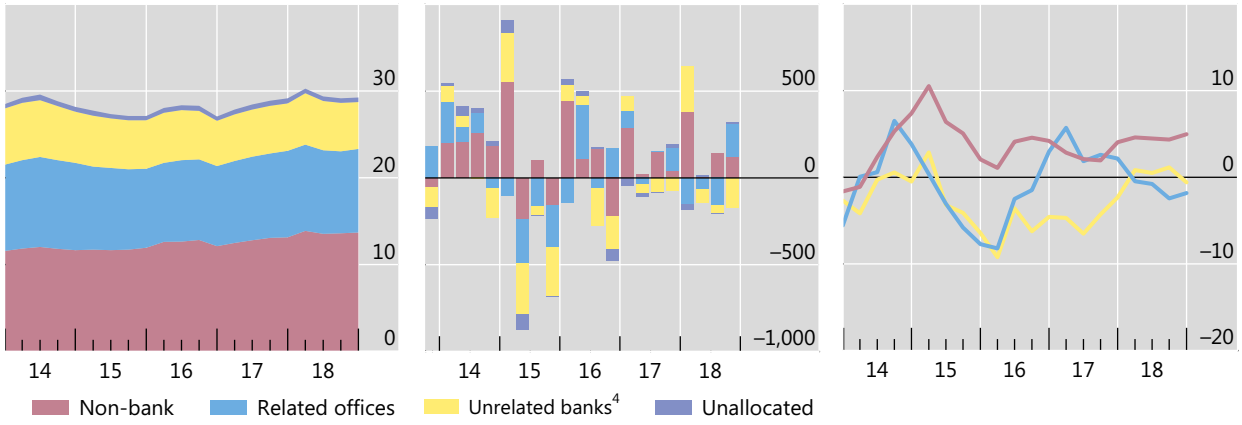
A Locational banking statistics

Cross-border claims, by sector, currency and instrument

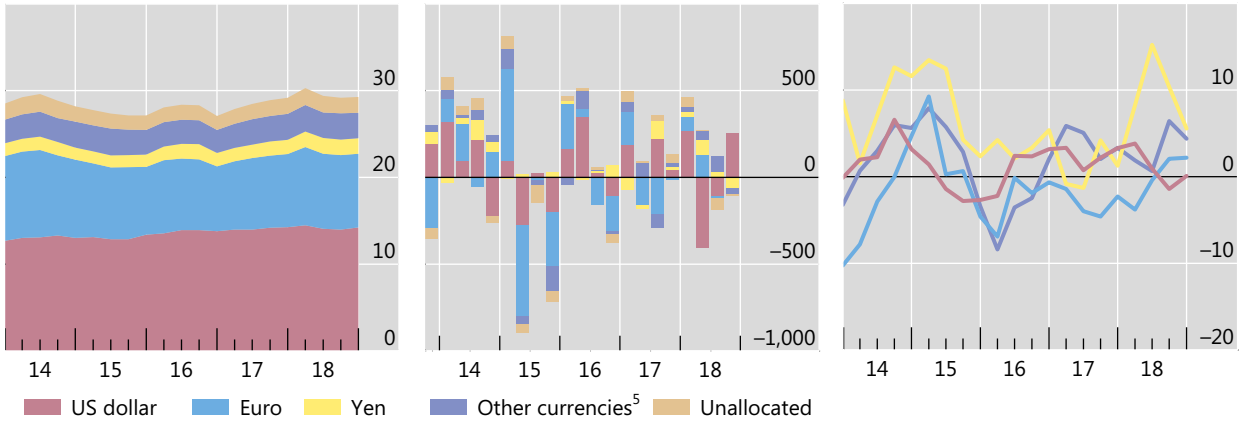
Graph A.1

Amounts outstanding, in USD trn[1] | Adjusted changes, in USD bn[2] | Annual change, in per cent[3]

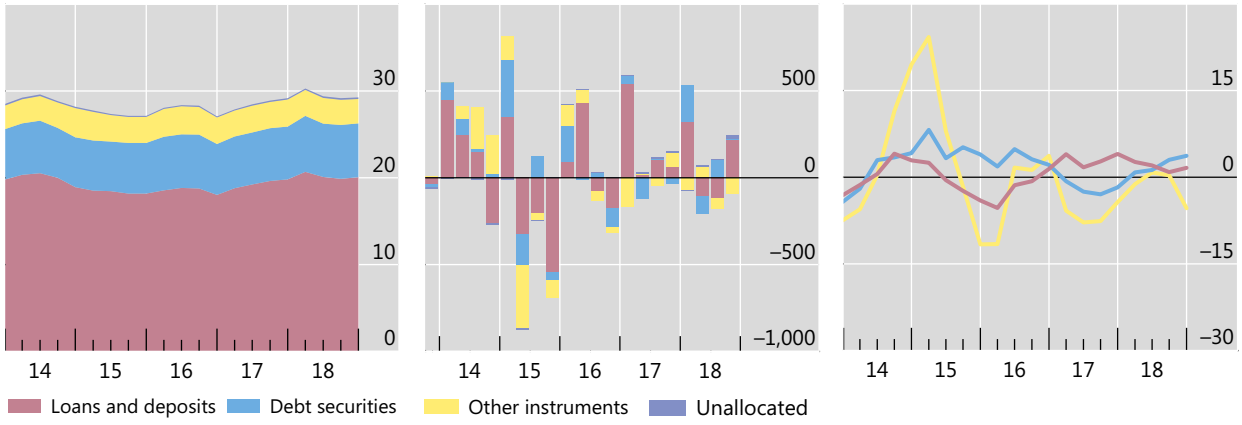
By sector of counterparty



By currency



By instrument



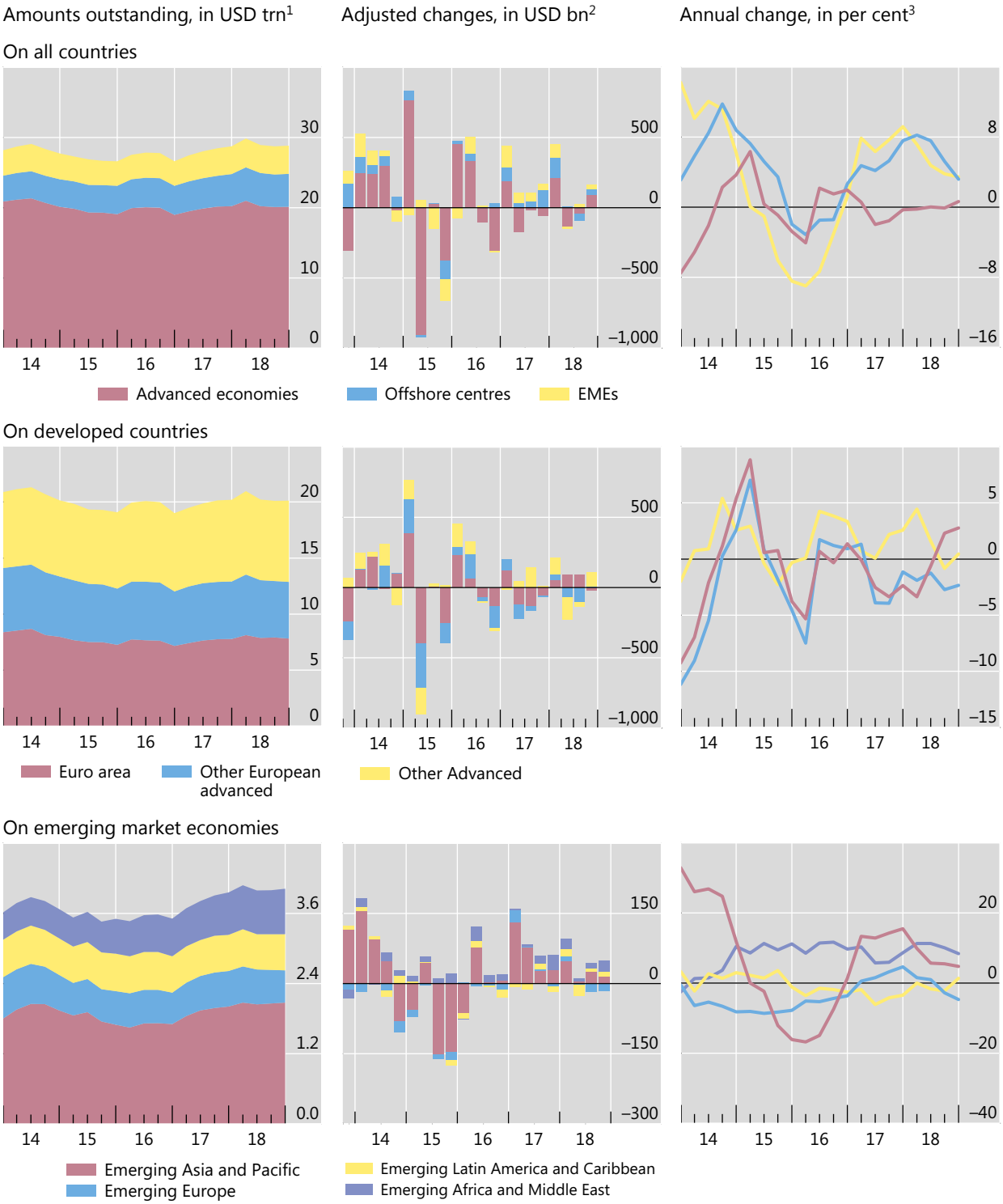
Further information on the BIS locational banking statistics is available at www.bis.org/statistics/bankstats.htm.

[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



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.

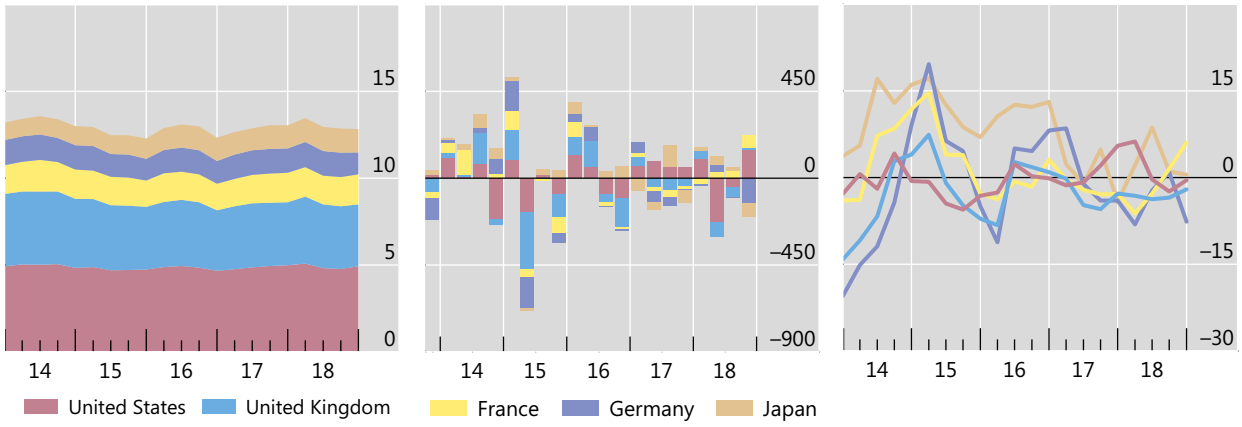
Source: BIS locational banking statistics.

Cross-border claims, by borrowing country

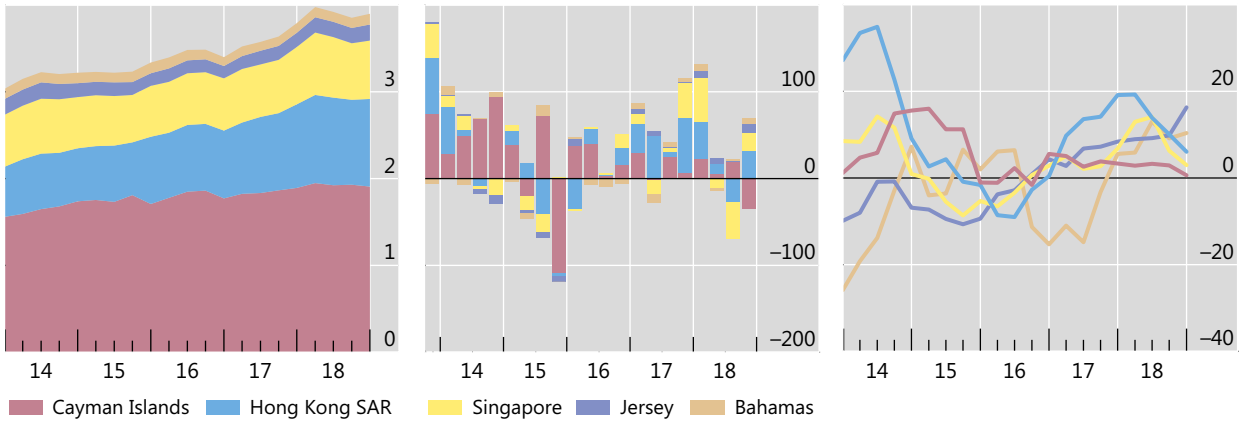
Graph A.3

Amounts outstanding, in USD trn[1] | Adjusted changes, in USD bn[2] | Annual change, in per cent[3]

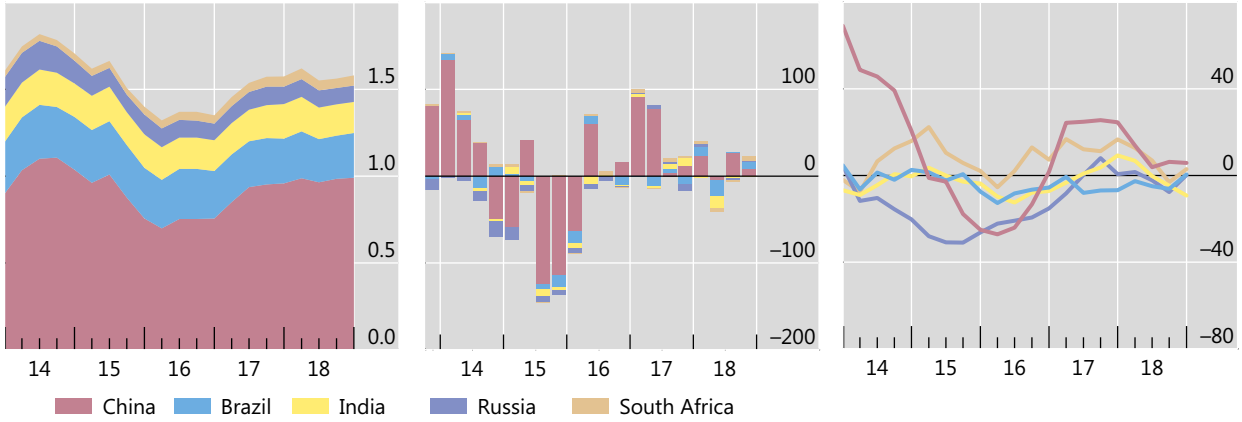
On selected advanced economies



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.

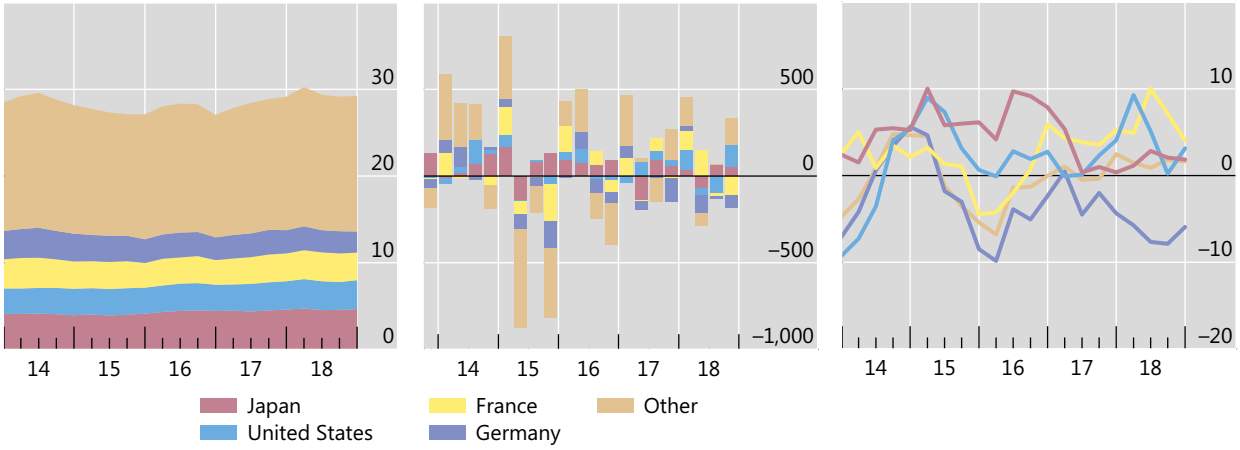
Source: BIS locational banking statistics.

Cross-border claims, by nationality of reporting bank and currency of denomination

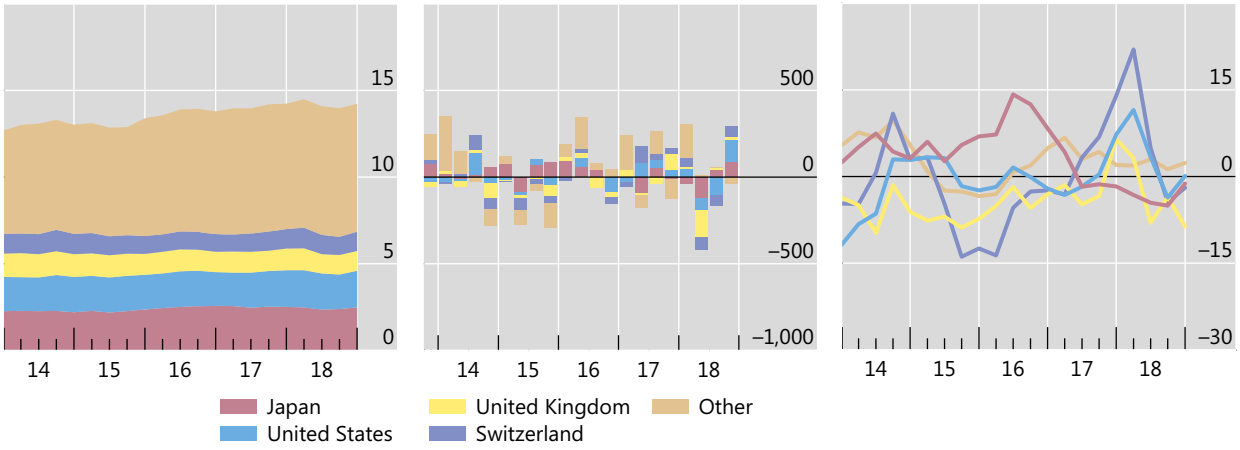
Graph A.4

Amounts outstanding, in USD trn[1] | Adjusted changes, in USD bn[2] | Annual change, in per cent[3]

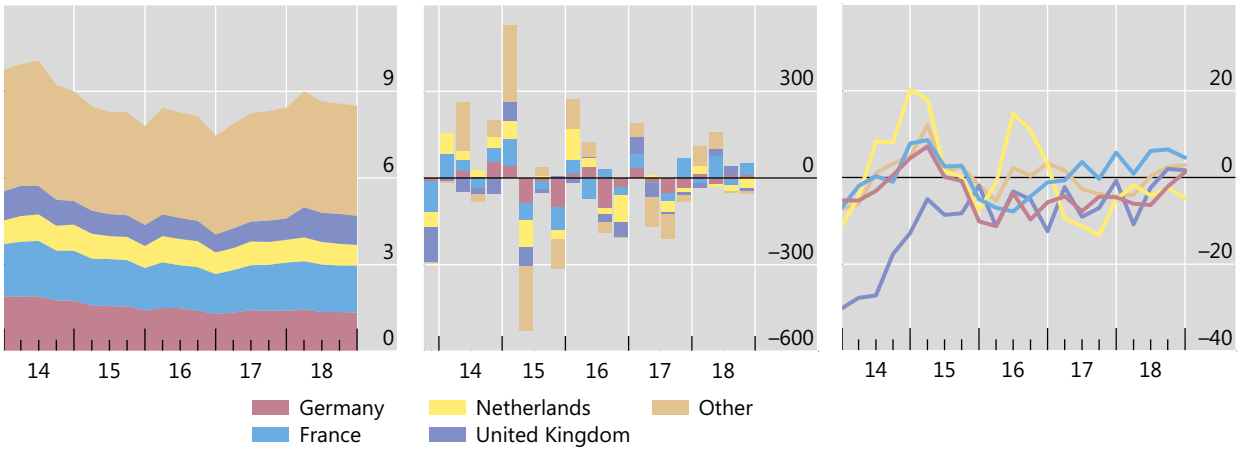
All currencies



US dollar



Euro



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.

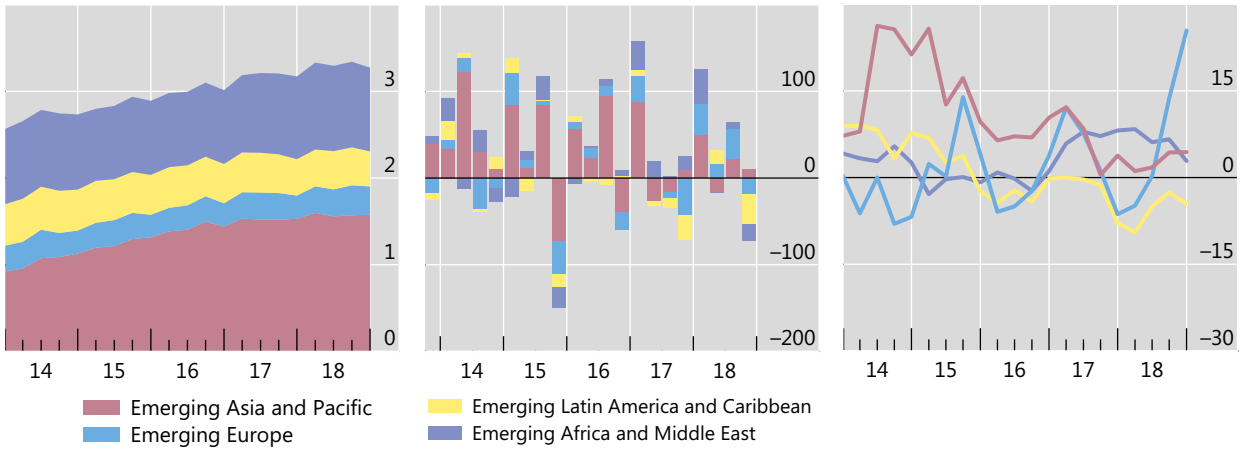
Source: BIS locational banking statistics.

Cross-border liabilities of reporting banks

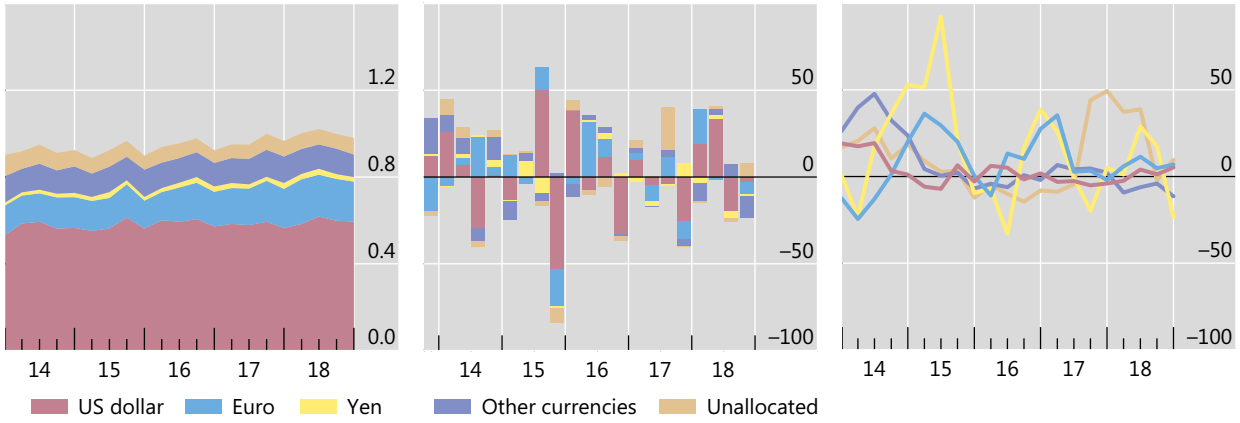
Graph A.5

Amounts outstanding, in USD trn[1] | Adjusted changes, in USD bn[2] | Annual change, in per cent[3]

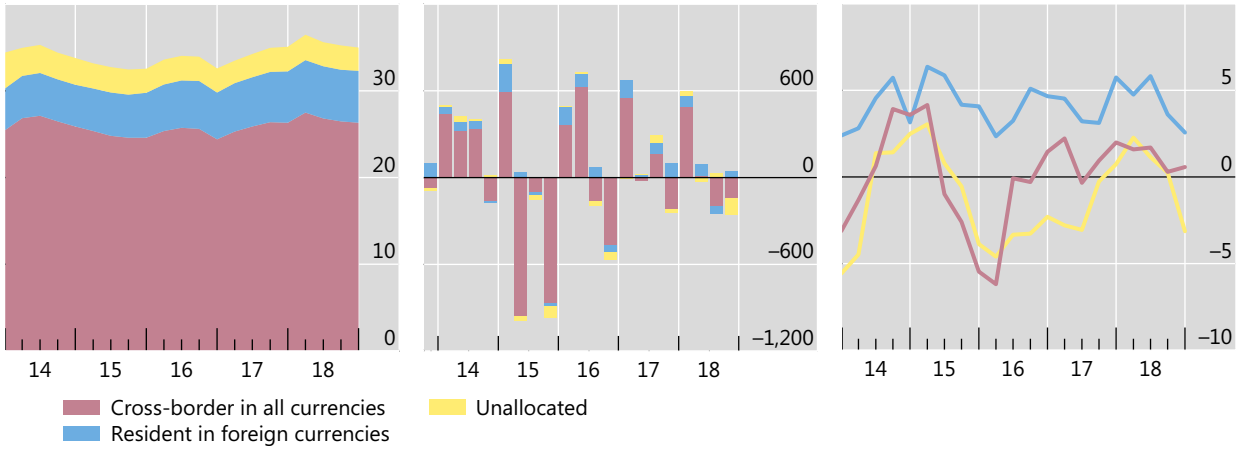
To emerging market economies



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

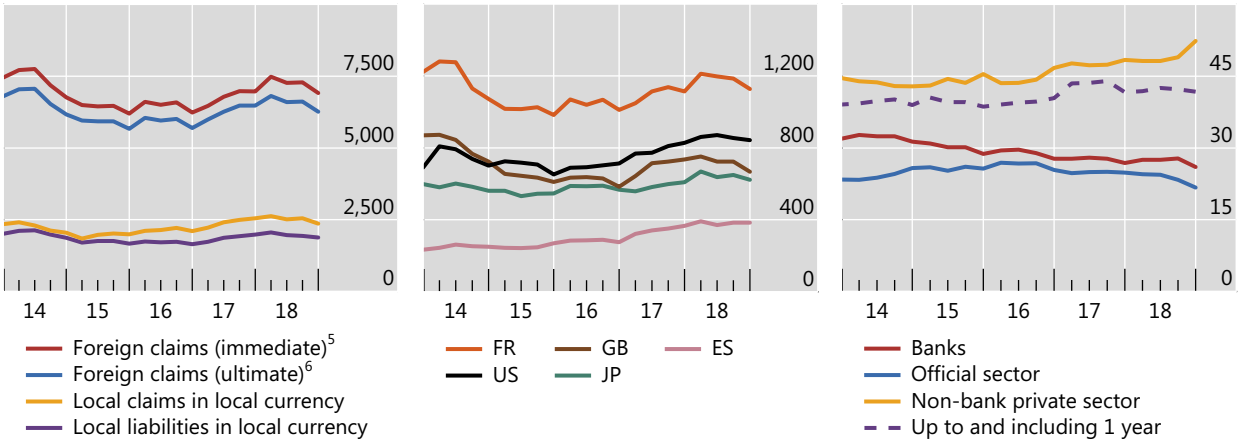
Graph B.1

Foreign claims and local positions, in USD bn[1, 2]

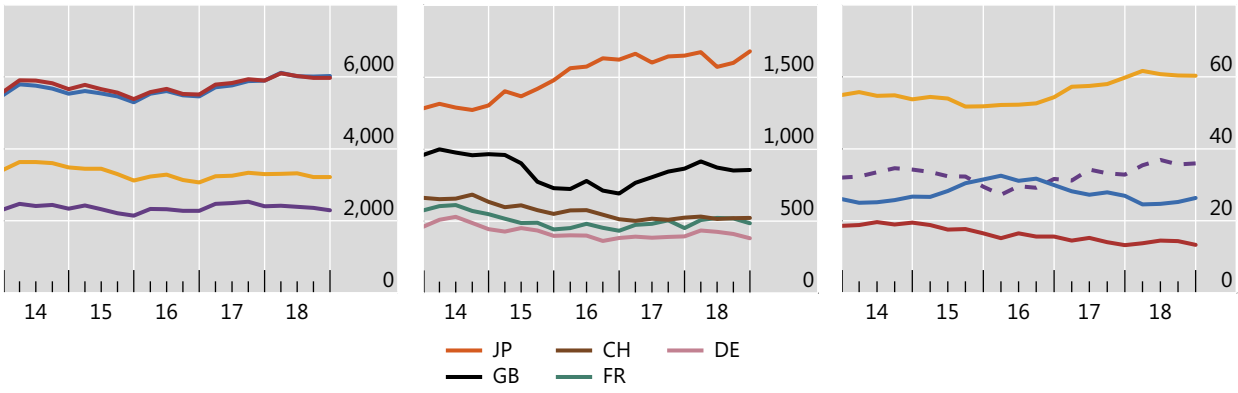
Foreign claims of selected creditors, in USD bn[1, 3]

International claims, by sector and maturity, in per cent[4]

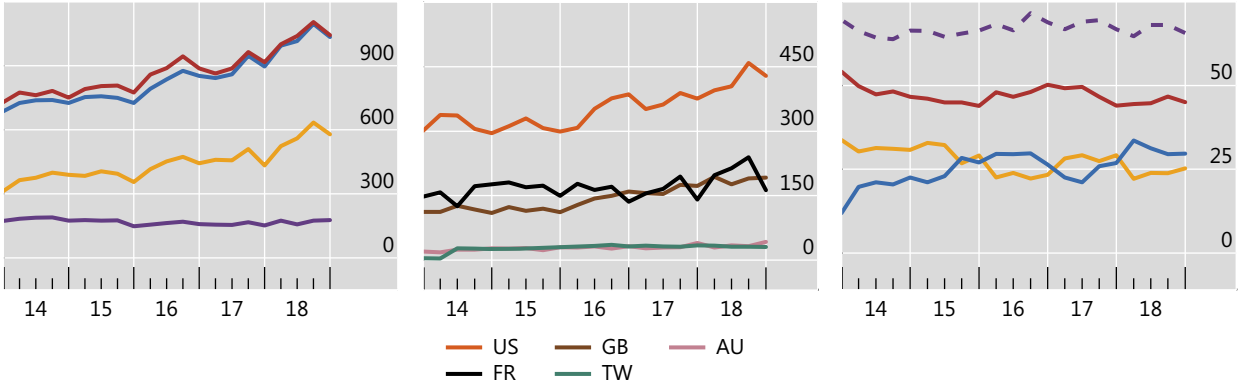
On the euro area



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

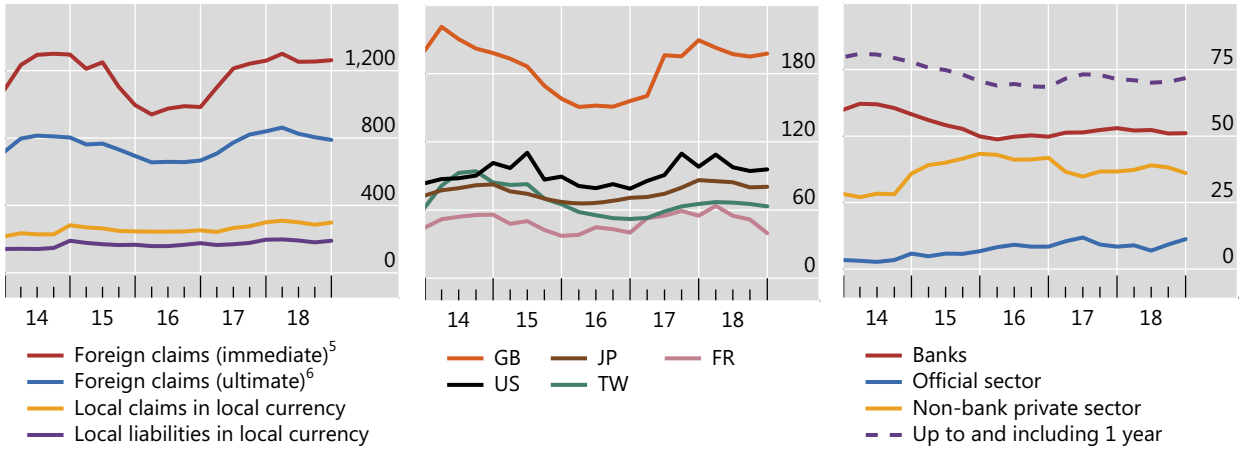
Graph B.2

Foreign claims and local positions, in USD bn[1, 2]

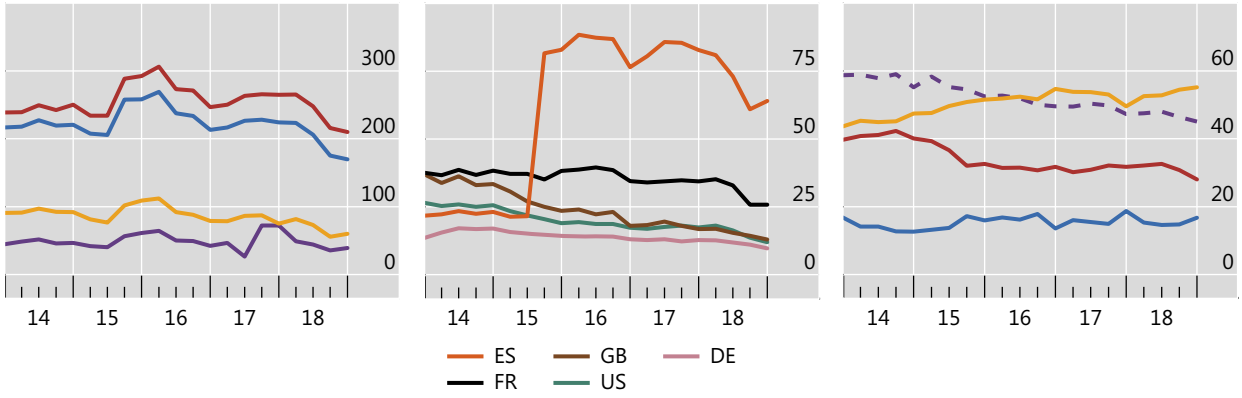
Foreign claims of selected creditors, in USD bn[1, 3]

International claims, by sector and maturity, in per cent[4]

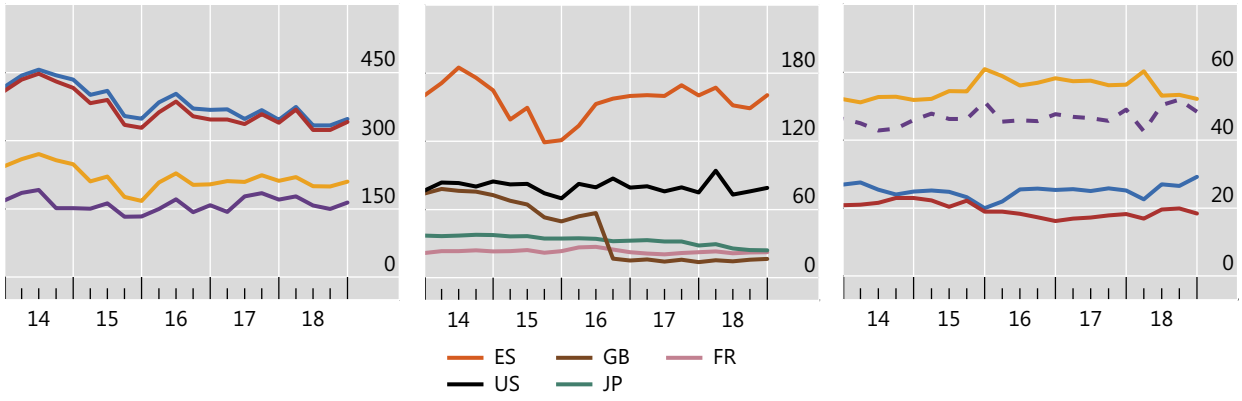
On China



On Turkey



On Brazil



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.

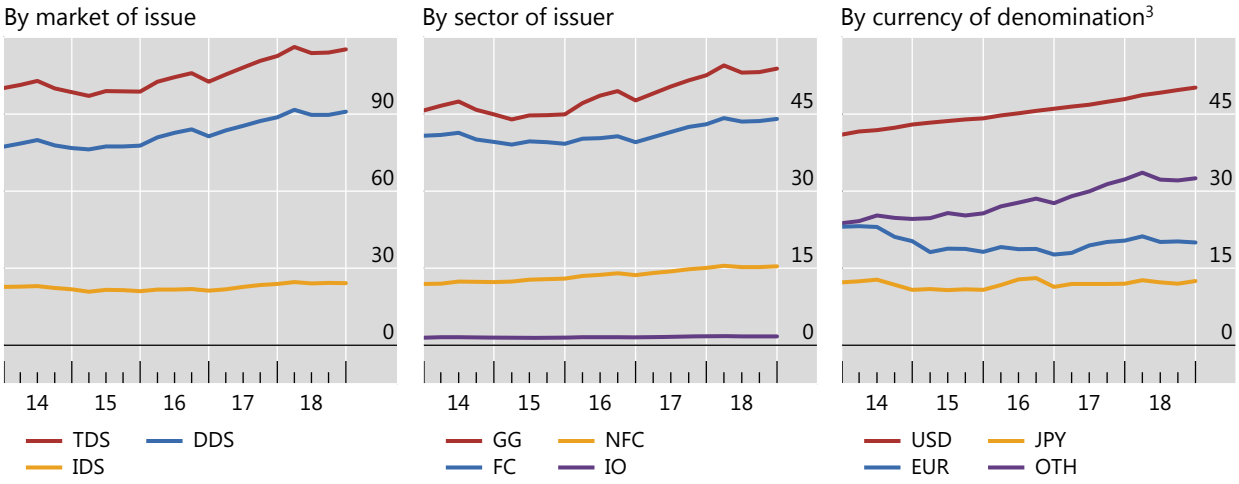
Source: BIS consolidated banking statistics (CBS).

C Debt securities statistics

Global debt securities markets[1]

Amounts outstanding, in trillions of US dollars[2]

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.

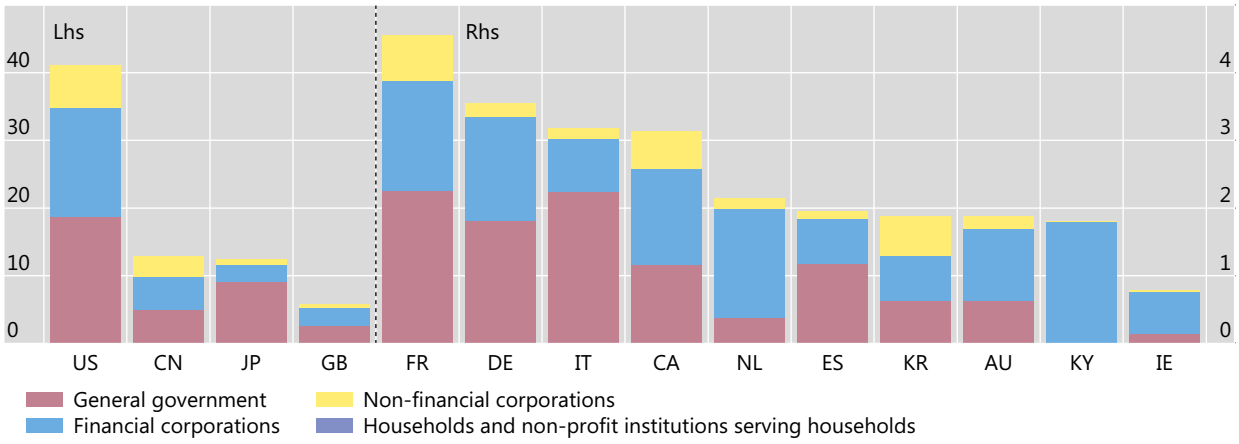
[1] Sample of countries varies across breakdowns shown. For countries that do not report TDS, data are estimated by the BIS as DDS plus IDS. For countries that do not report either TDS or DDS, data are estimated by the BIS as IDS. [2] At quarter-end. Amounts denominated in currencies other than the US 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 issuer[1]

Amounts outstanding for the latest available data, in trillions of US dollars[2]

Graph C.2



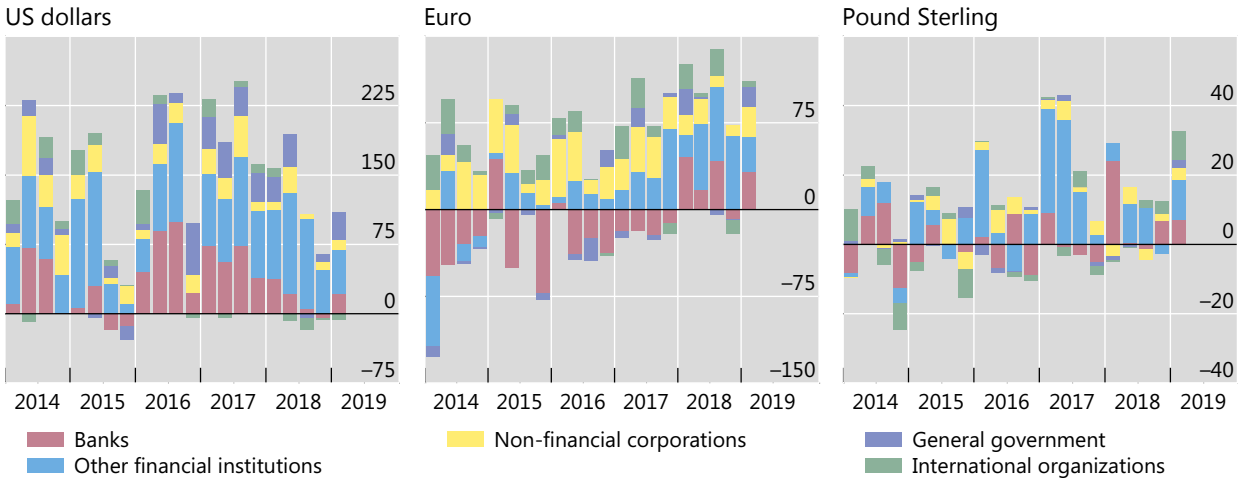
Further information on the BIS debt securities statistics is available at www.bis.org/statistics/secstats.htm.

[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

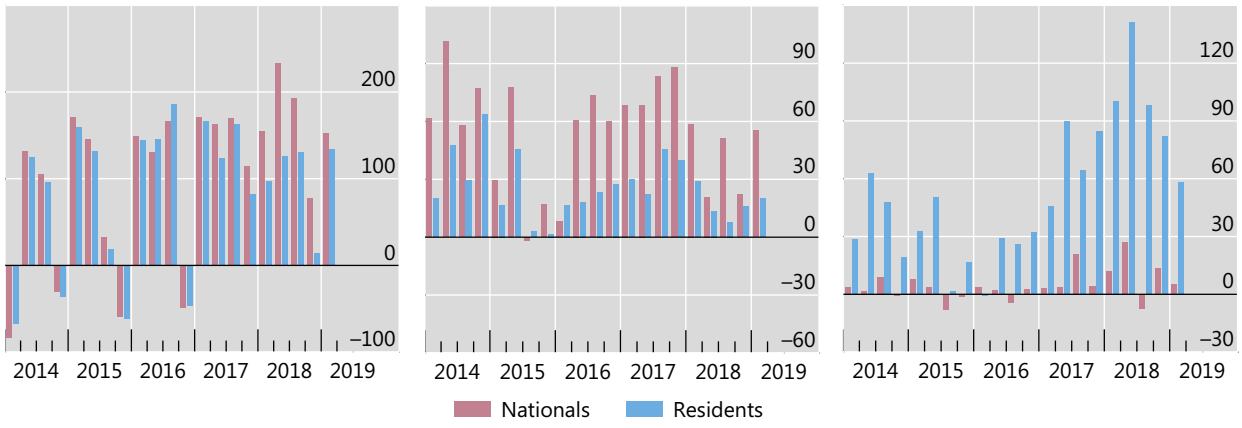


Further information is available at www.bis.org/statistics/secstats.htm.

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

International debt securities issued by financial and non-financial corporations[1]

Net issuance by region, in billions of US dollars[2] — 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

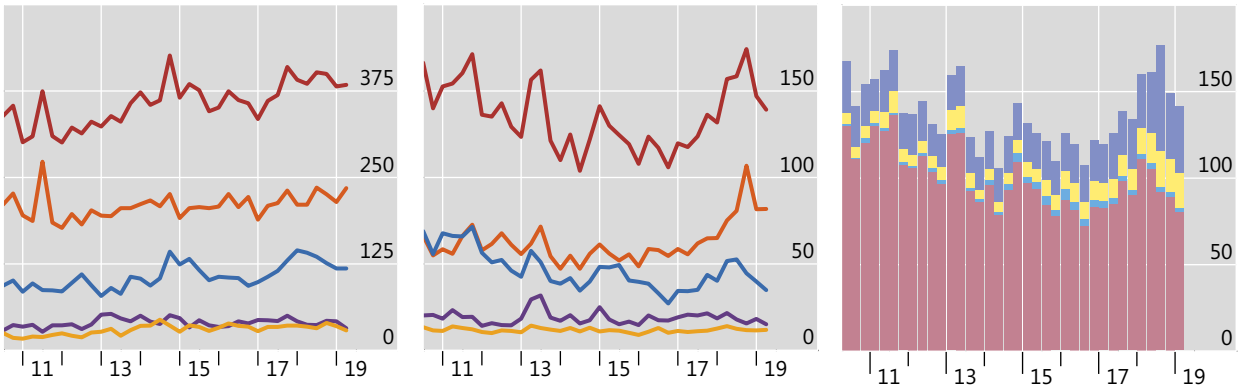
Graph D.1

Open interest, by currency[1]

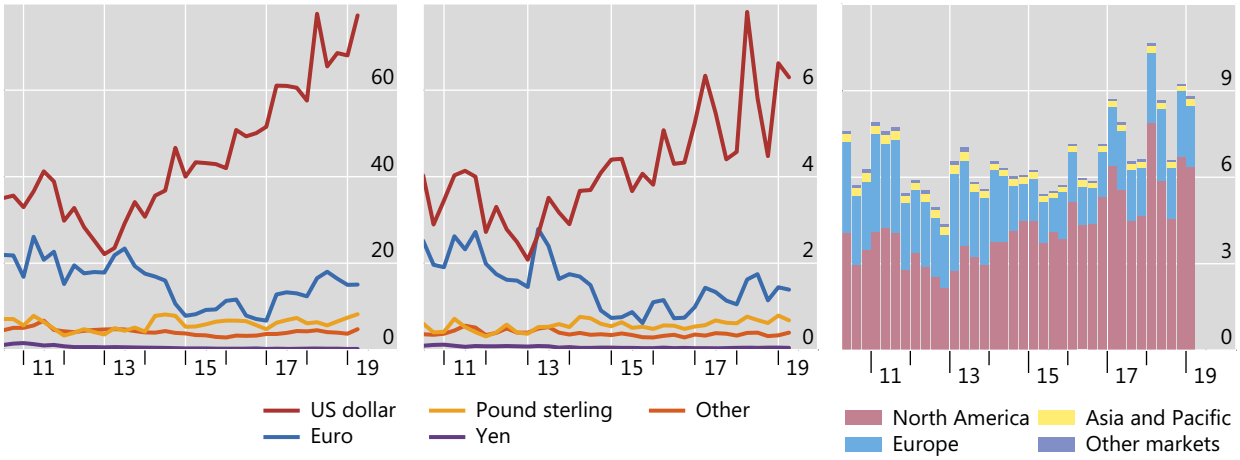
Daily average turnover, by currency[2]

Daily average turnover, by location of exchange[2]

Foreign exchange derivatives, USD bn[3]



Interest rate derivatives, USD trn[3]



US dollar
Euro
Pound sterling
Yen
Other
North America
Europe
Asia and Pacific
Other markets

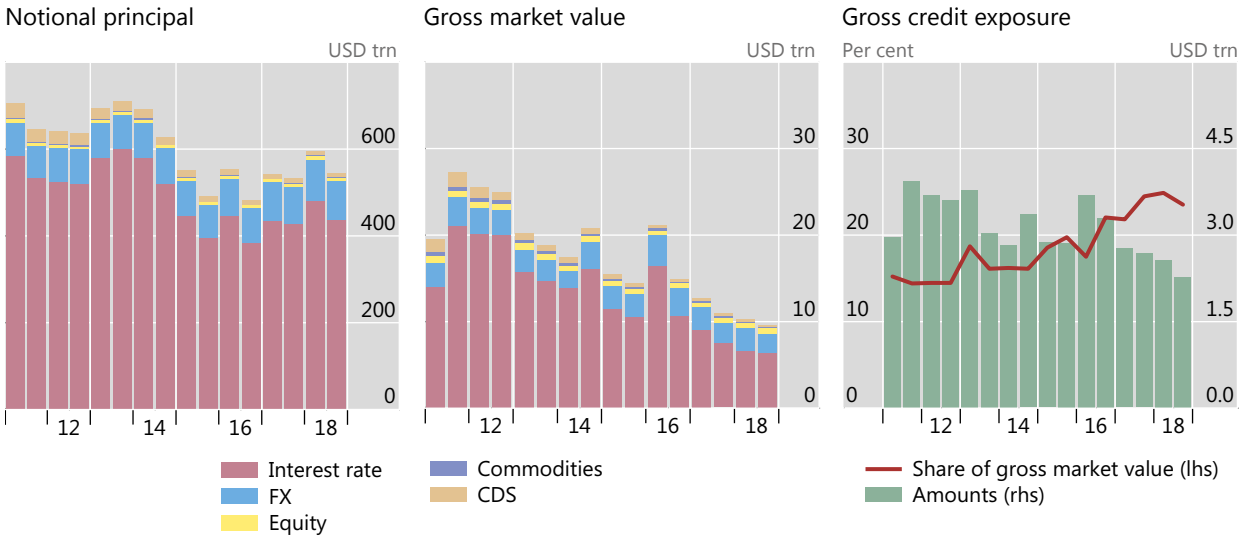
Further information on the BIS derivatives statistics is available at www.bis.org/statistics/extderiv.htm. For definitions, see the online glossary.

[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 markets[1]

Graph D.2



Further information on the BIS derivatives statistics is available at www.bis.org/statistics/derstats.htm. For definitions, see the online glossary.

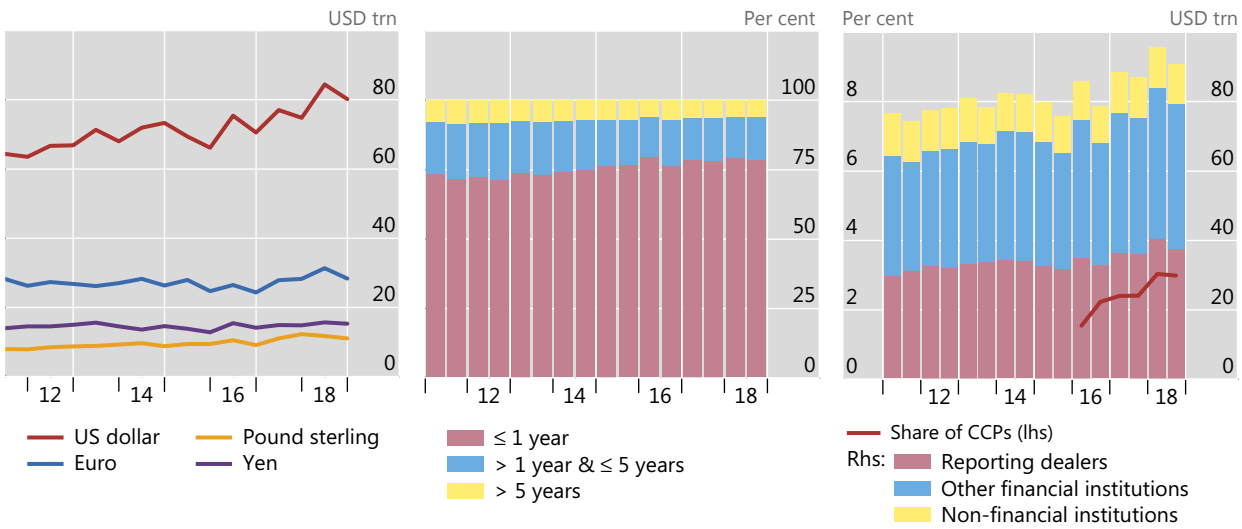
[1] At half-year end (end-June and end-December). Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date.

Source: BIS derivatives statistics.

OTC foreign exchange derivatives

Notional principal[1]

Graph D.3



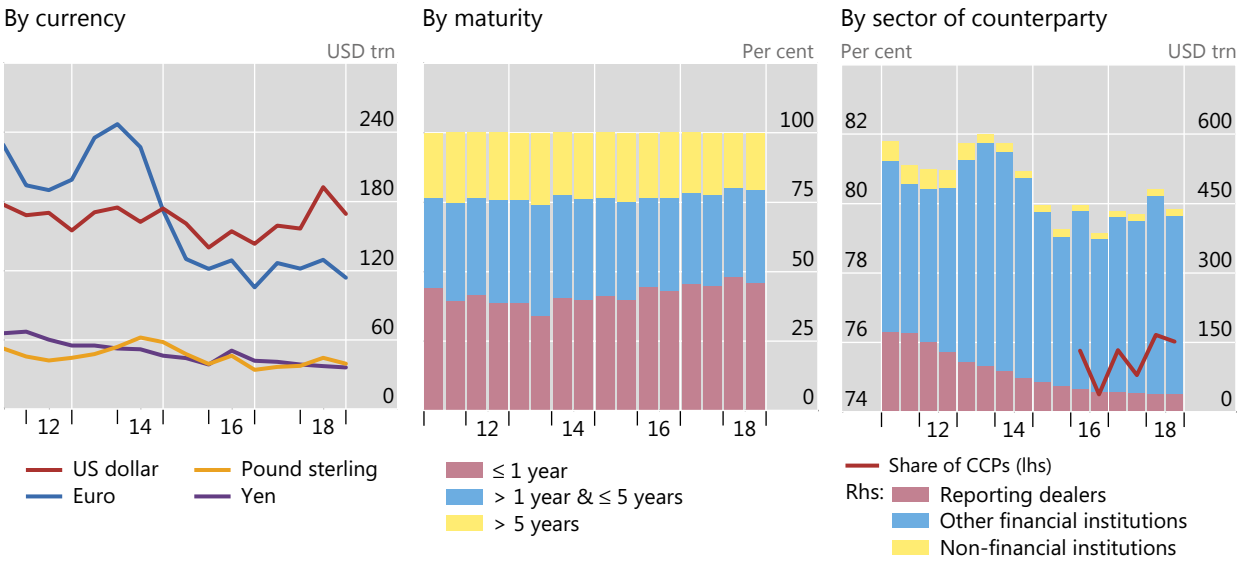
Further information on the BIS derivatives statistics is available at www.bis.org/statistics/derstats.htm. For definitions, see the online glossary.

[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 principal[1] Graph D.4



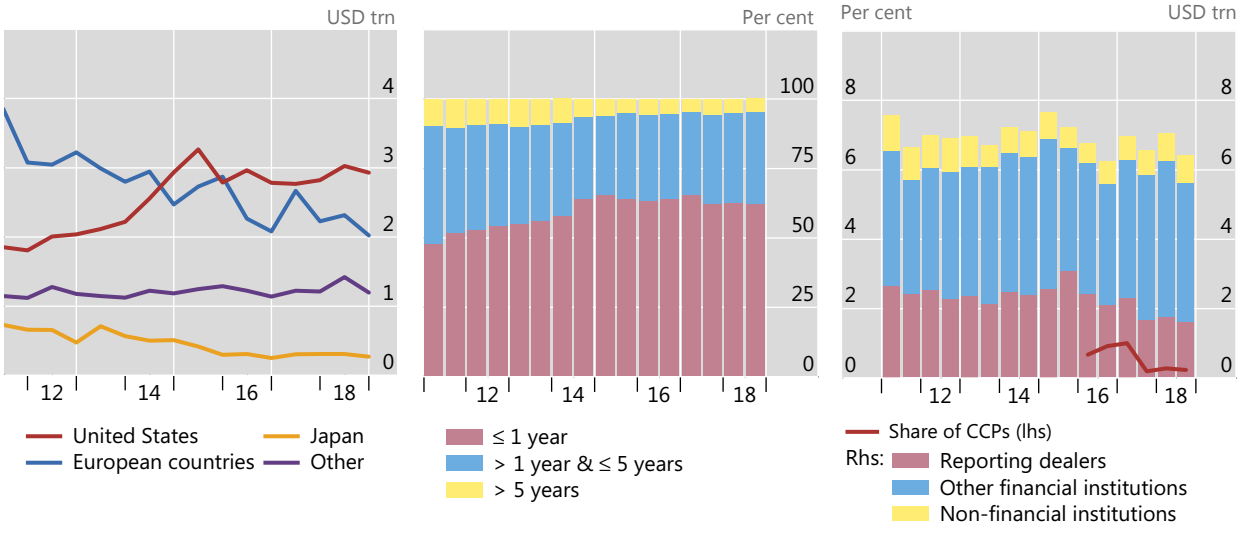
Further information on the BIS derivatives statistics is available at www.bis.org/statistics/derstats.htm. For definitions, see the online glossary.

[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 principal[1] Graph D.5



Further information on the BIS derivatives statistics is available at www.bis.org/statistics/derstats.htm. For definitions, see the online glossary.

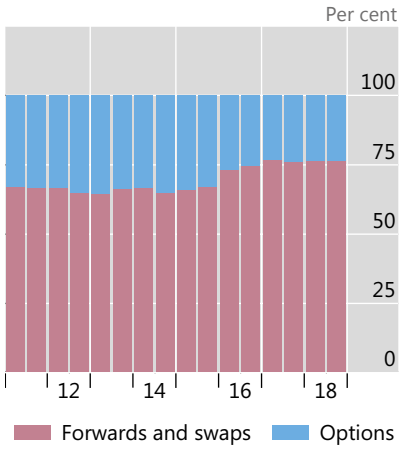
[1] At half-year end (end-June and end-December). Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date.

Source: BIS derivatives statistics.

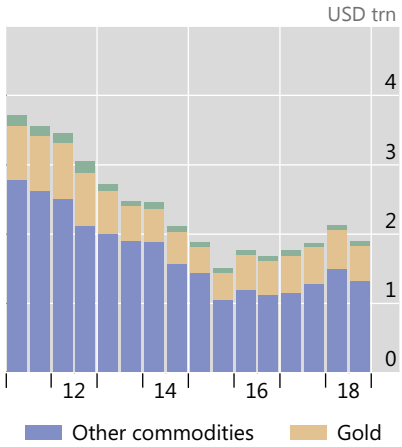
OTC commodity derivatives[1]

Graph D.6

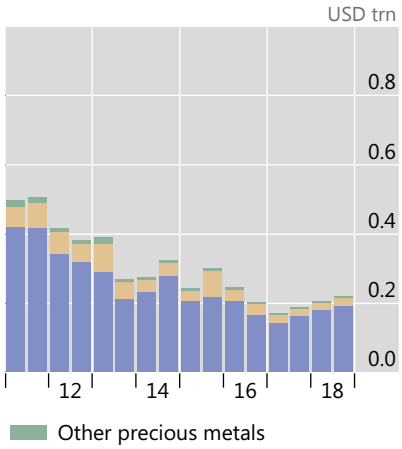
Notional principal, by instrument



Notional principal, by commodity



Gross market value, by commodity



Further information on the BIS derivatives statistics is available at www.bis.org/statistics/derstats.htm. For definitions, see the online glossary.

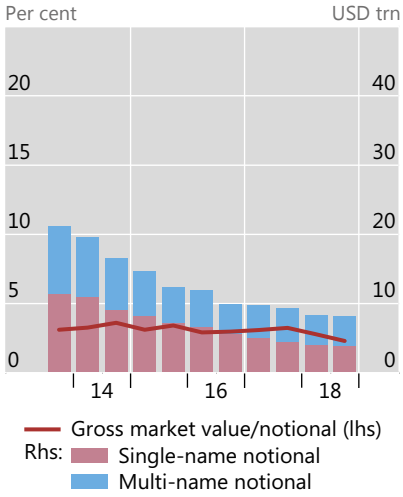
[1] At half-year end (end-June and end-December). Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date.

Source: BIS derivatives statistics.

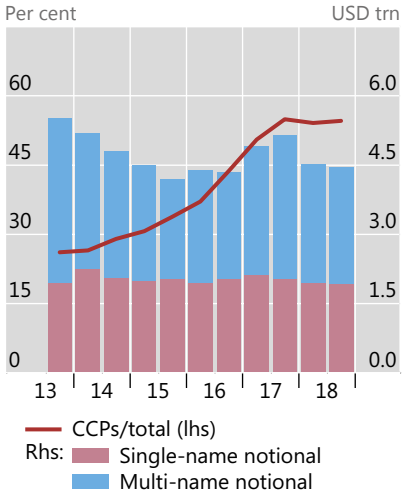
Credit default swaps[1]

Graph D.7

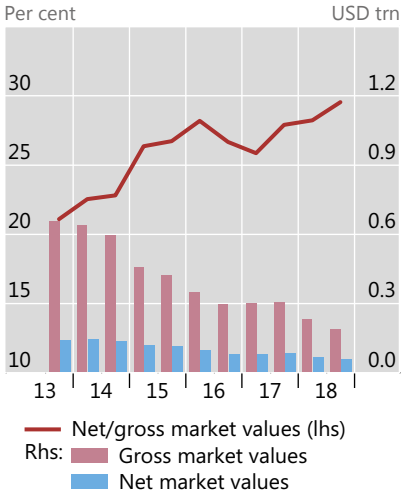
Notional principal



Notional principal with central counterparties (CCPs)



Impact of netting



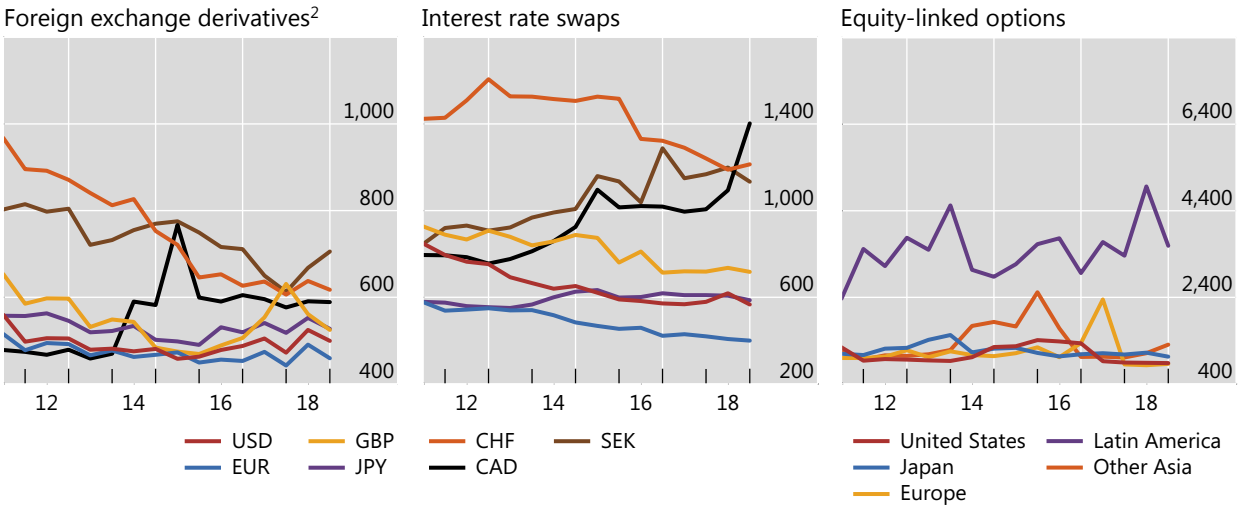
Further information on the BIS derivatives statistics is available at www.bis.org/statistics/derstats.htm. For definitions, see the online glossary.

[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 index[1] Graph D.8



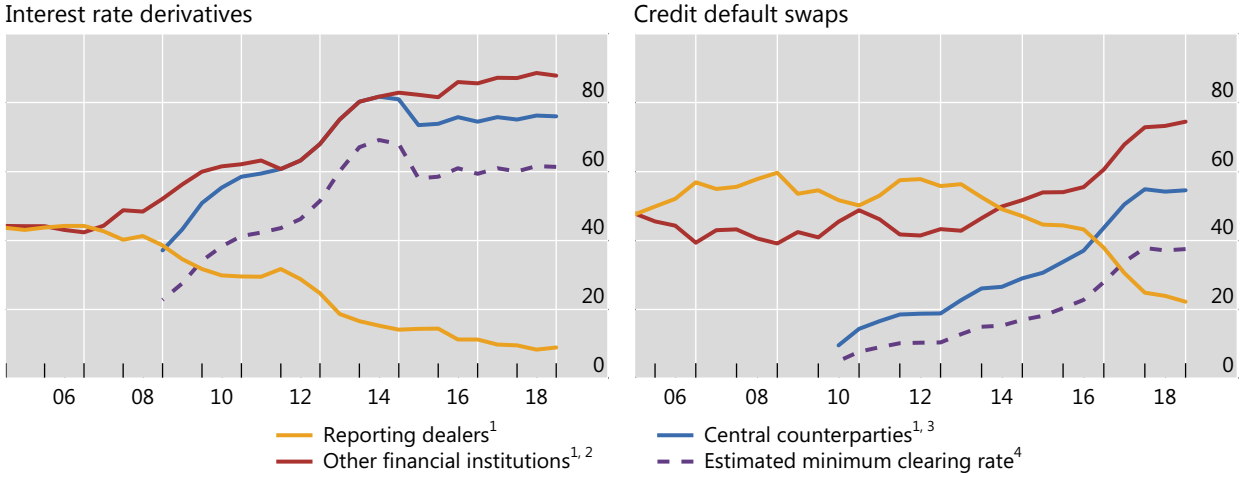
Further information on the BIS derivatives statistics is available at www.bis.org/statistics/derstats.htm. For definitions, see the online glossary.

[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.

Growth of central clearing

Notional amounts outstanding by counterparty, in per cent Graph D.9



Further information on the BIS derivatives statistics is available at www.bis.org/statistics/derstats.htm. For definitions, see the online glossary.

[1] As a percentage of notional amounts outstanding against all counterparties. [2] Including central counterparties but excluding reporting dealers. [3] For interest rate derivatives, data for CCPs prior to end-June 2016 are estimated by indexing the amounts reported at end-June 2016 to the growth since 2008 of notional amounts outstanding cleared through LCH's SwapClear service. [4] Proportion of trades that are cleared, estimated as (CCP / 2) / (1 – (CCP / 2)), where CCP represents the share of notional amounts outstanding that dealers report against CCPs. CCPs' share is halved to adjust for the potential double-counting of inter-dealer trades novated to CCPs.

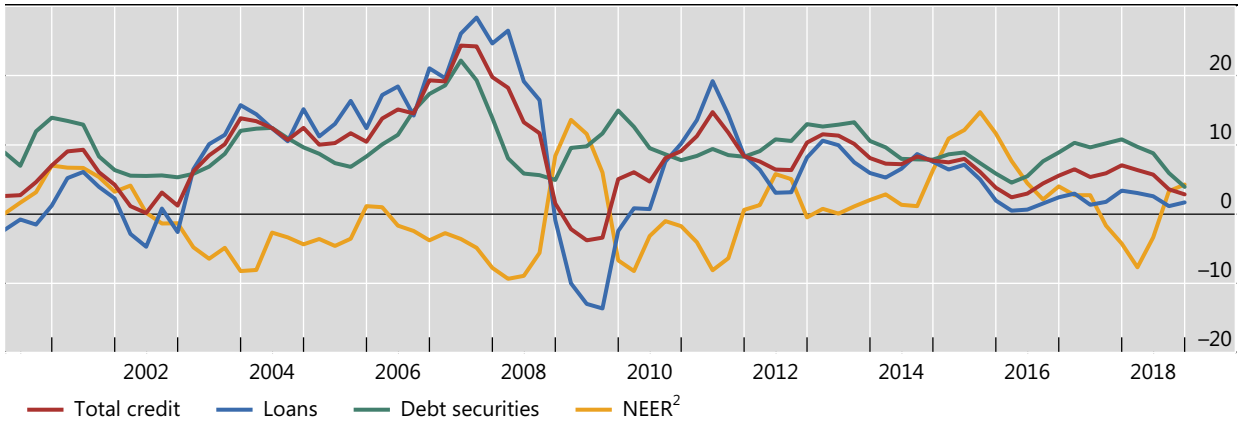
Sources: LCH.Clearnet Group Ltd; BIS OTC derivatives statistics (Table D7 and Table D10.1); BIS calculations.

E Global liquidity indicators

US dollar credit outside the United States[1]

Annual change, in per cent

Graph E.1



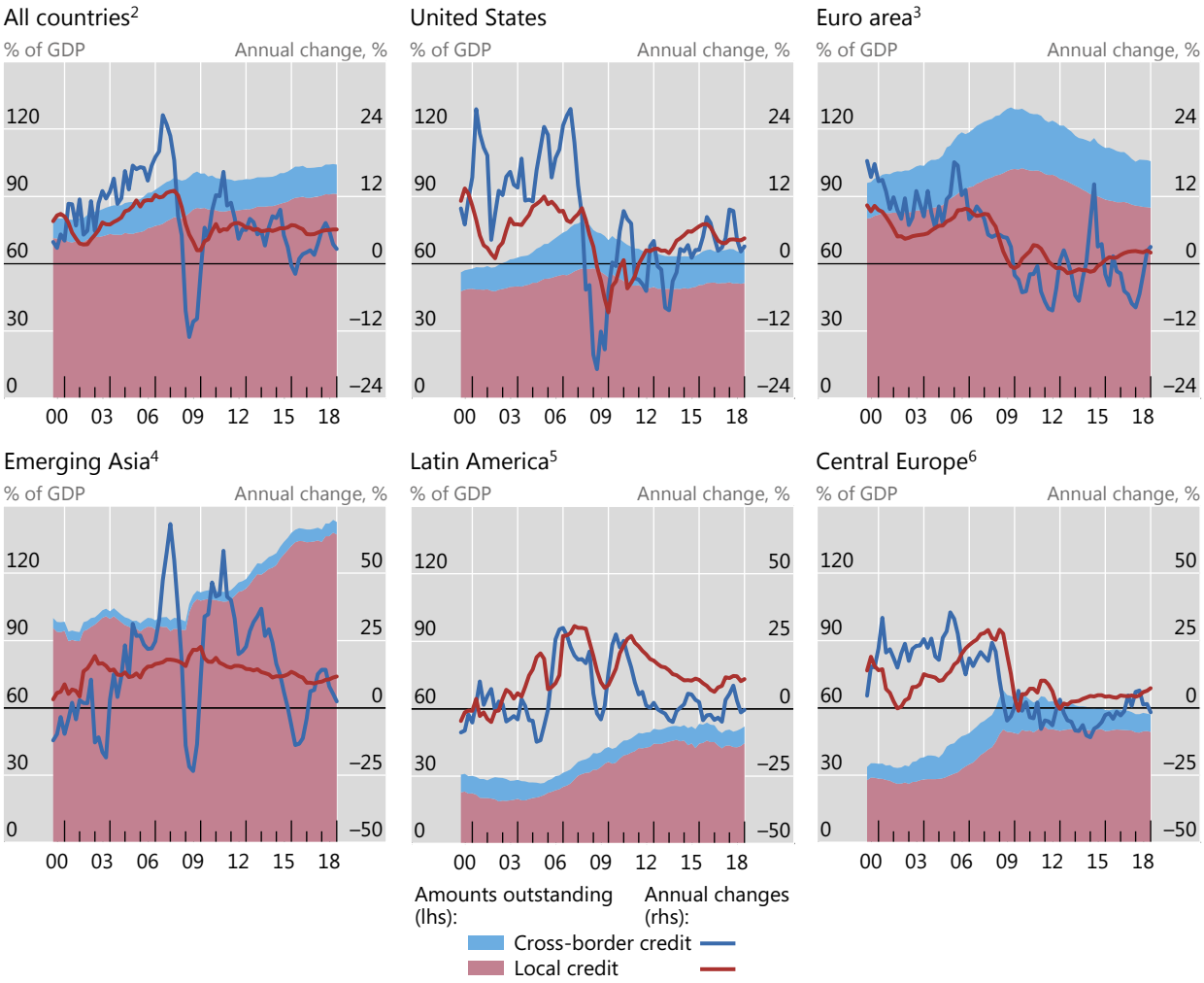
Further information on the BIS global liquidity indicators is available at www.bis.org/statistics/gli.htm.

[1] Annual growth of US dollar-denominated credit to non-banks outside the United States. [2] Annual growth of the US dollar nominal effective exchange rate.

Sources: Datastream; Dealogic; Euroclear; Thomson Reuters; Xtrakter Ltd; national data; BIS locational banking statistics; BIS effective exchange rate statistics; BIS calculations.

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

Banks' cross-border credit plus local credit in all currencies[1] 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.

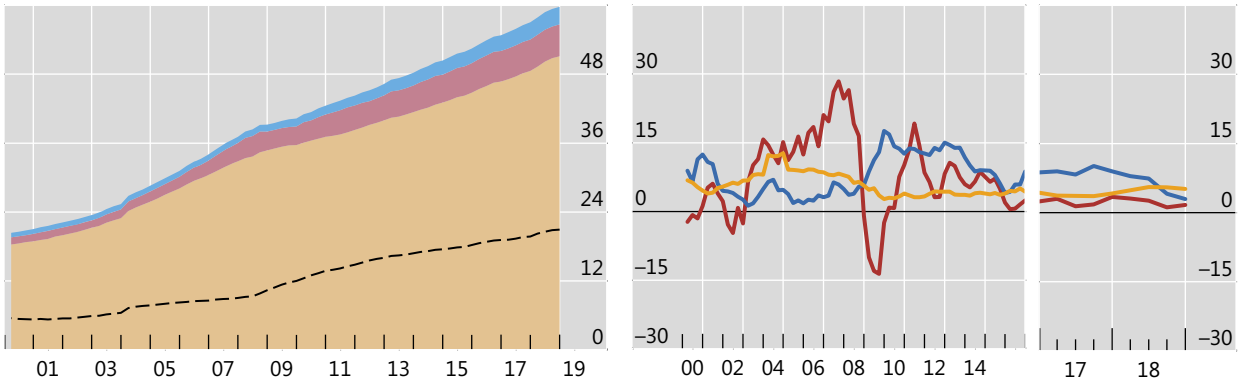
Global credit to the non-financial sector, by currency

Graph E.3

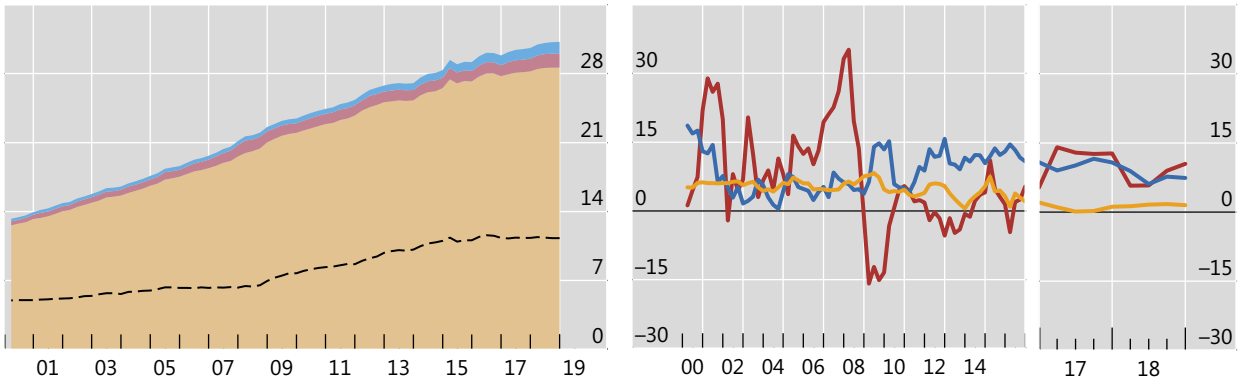
Amounts outstanding, in trillions of currency units[1]

Annual change, in per cent[2]

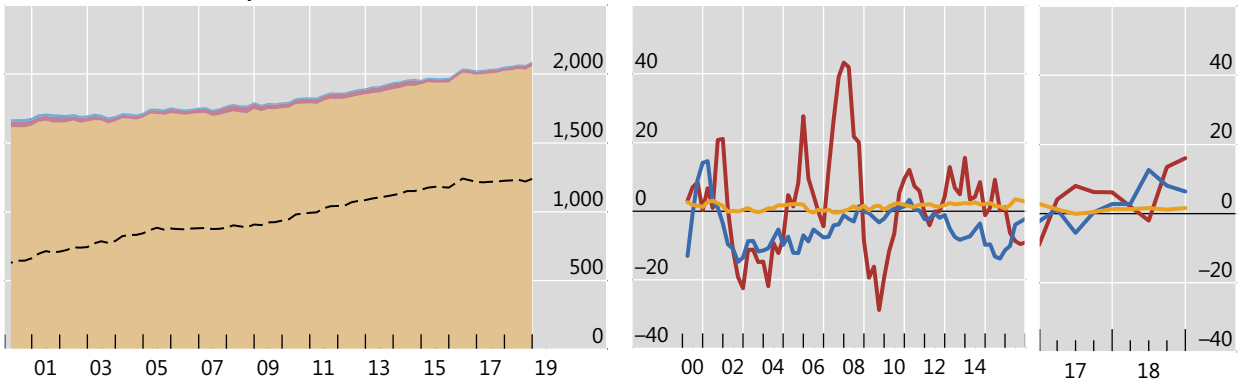
Credit denominated in US dollars (USD)



Credit denominated in euros (EUR)



Credit denominated in yen (JPY)



Credit to residents[3]
Of which:
Credit to government
Credit to non-residents:
Debt securities[4]
Bank loans[5]
Credit to residents[3]
Credit to non-residents:
Debt securities[4]
Bank loans[5]

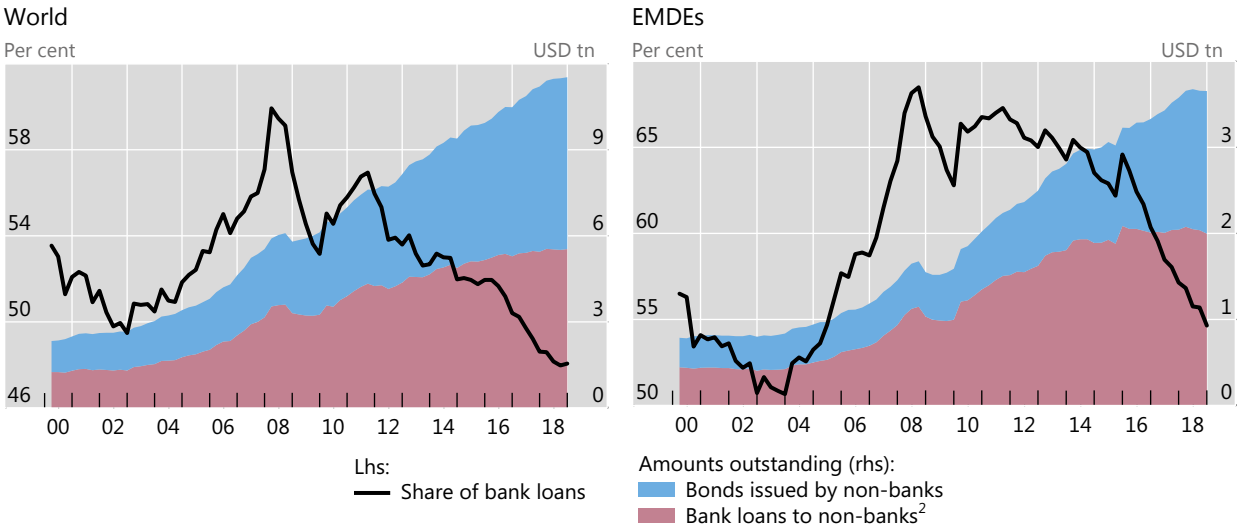
Further information on the BIS global liquidity indicators is available at www.bis.org/statistics/gli.htm.

[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 States[1]

Graph E.4



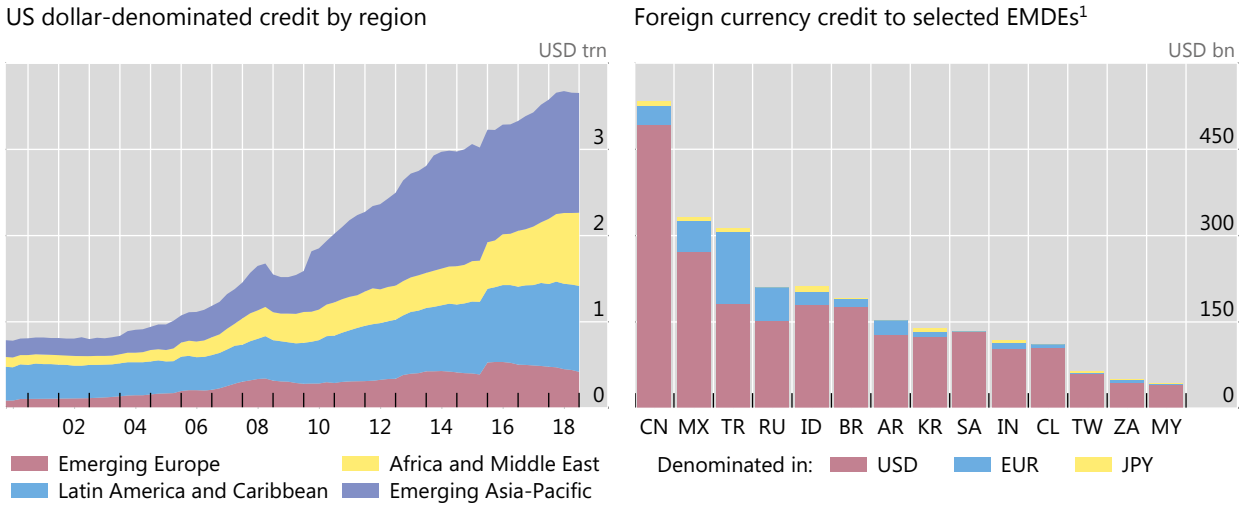
Further information on the BIS global liquidity indicators is available at www.bis.org/statistics/gli.htm.

[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 EMDEs

Graph E.5



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.

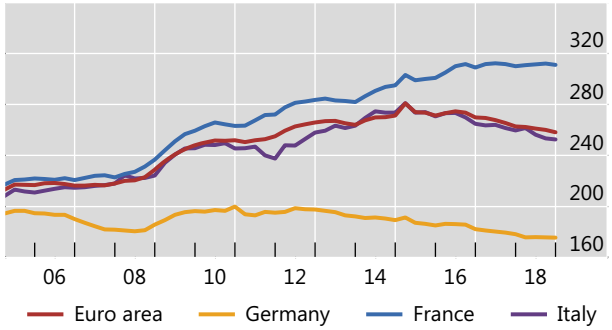
Sources: Datastream; Dealogic; Euroclear; Thomson Reuters; Xtrakter Ltd; national data; BIS locational banking statistics (LBS); BIS calculations.

F Statistics on total credit to the non-financial sector

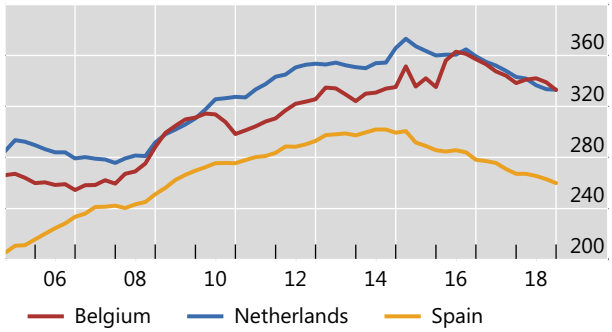
Total credit to the non-financial sector (core debt)

As a percentage of GDP — Graph F.1

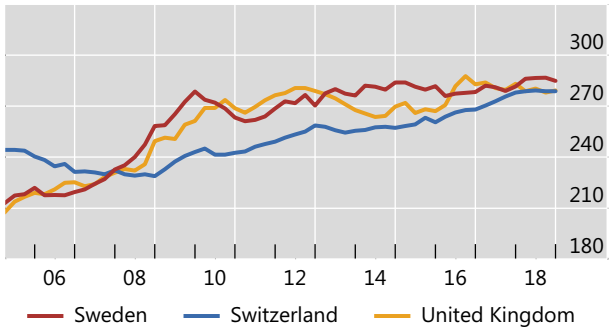
Euro area: aggregate and major countries



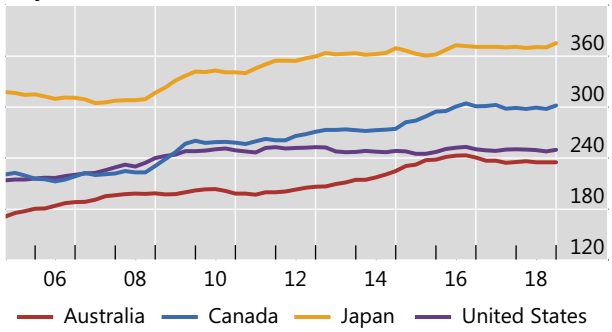
Euro area: other countries



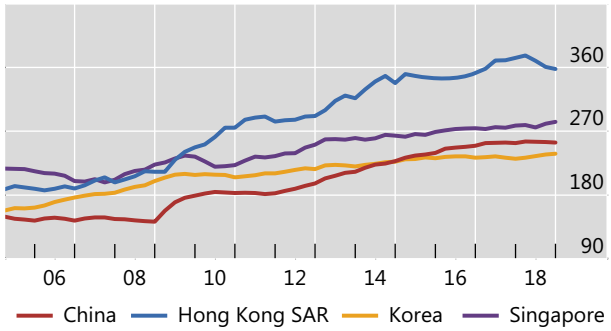
Other European countries



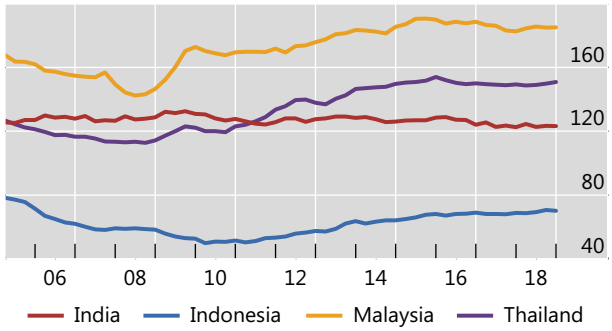
Major advanced economies



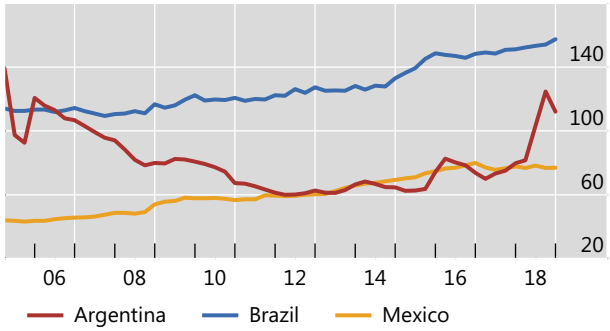
Emerging Asia



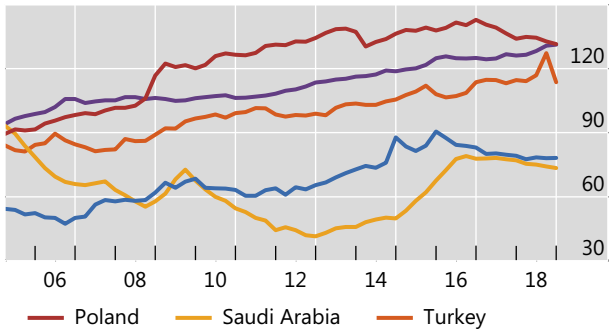
Other emerging Asia



Latin America



Other emerging market economies

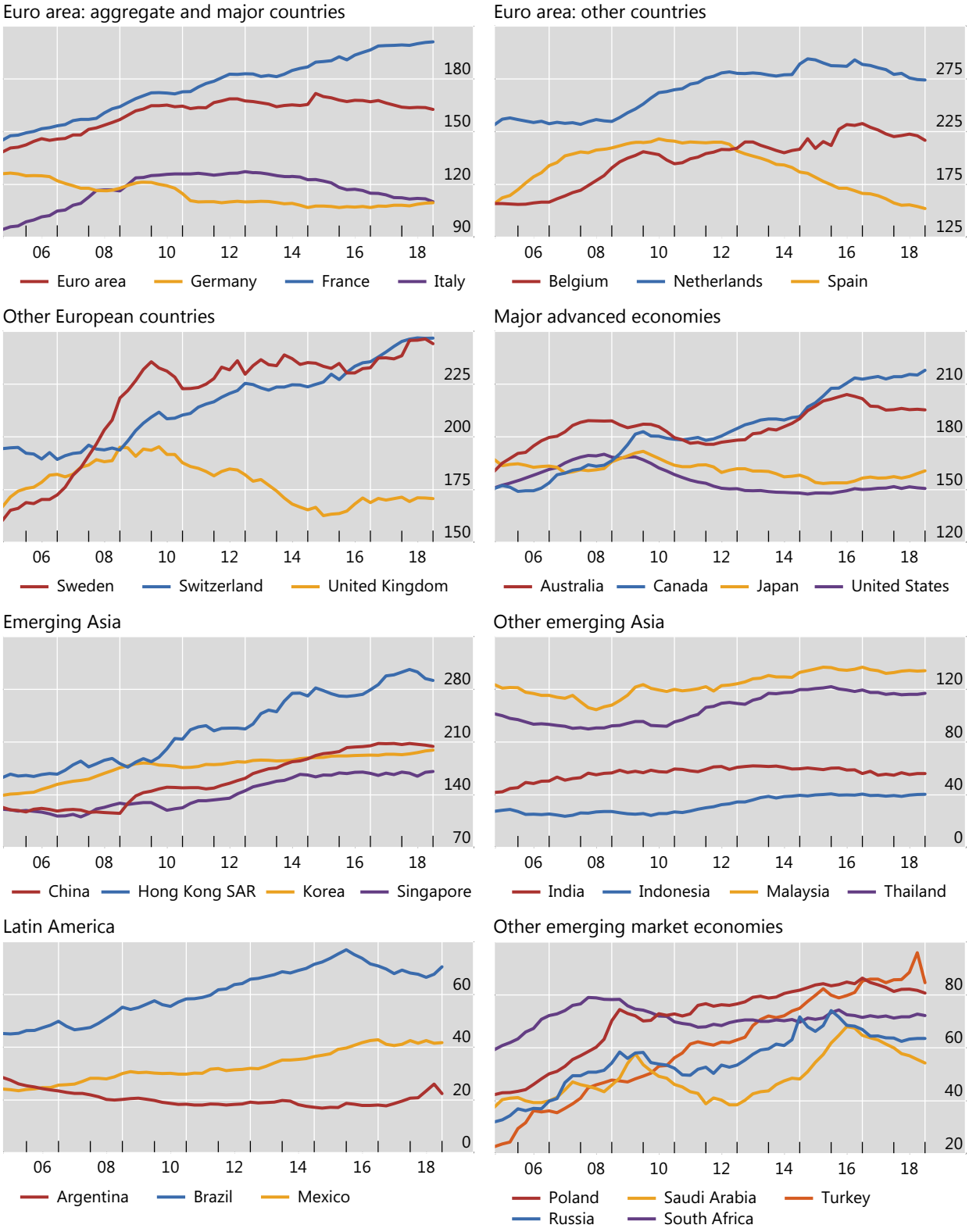


Further information on the BIS credit statistics is available at www.bis.org/statistics/totcredit.htm.

Source: BIS total credit statistics.

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

As a percentage of GDP — Graph F.2

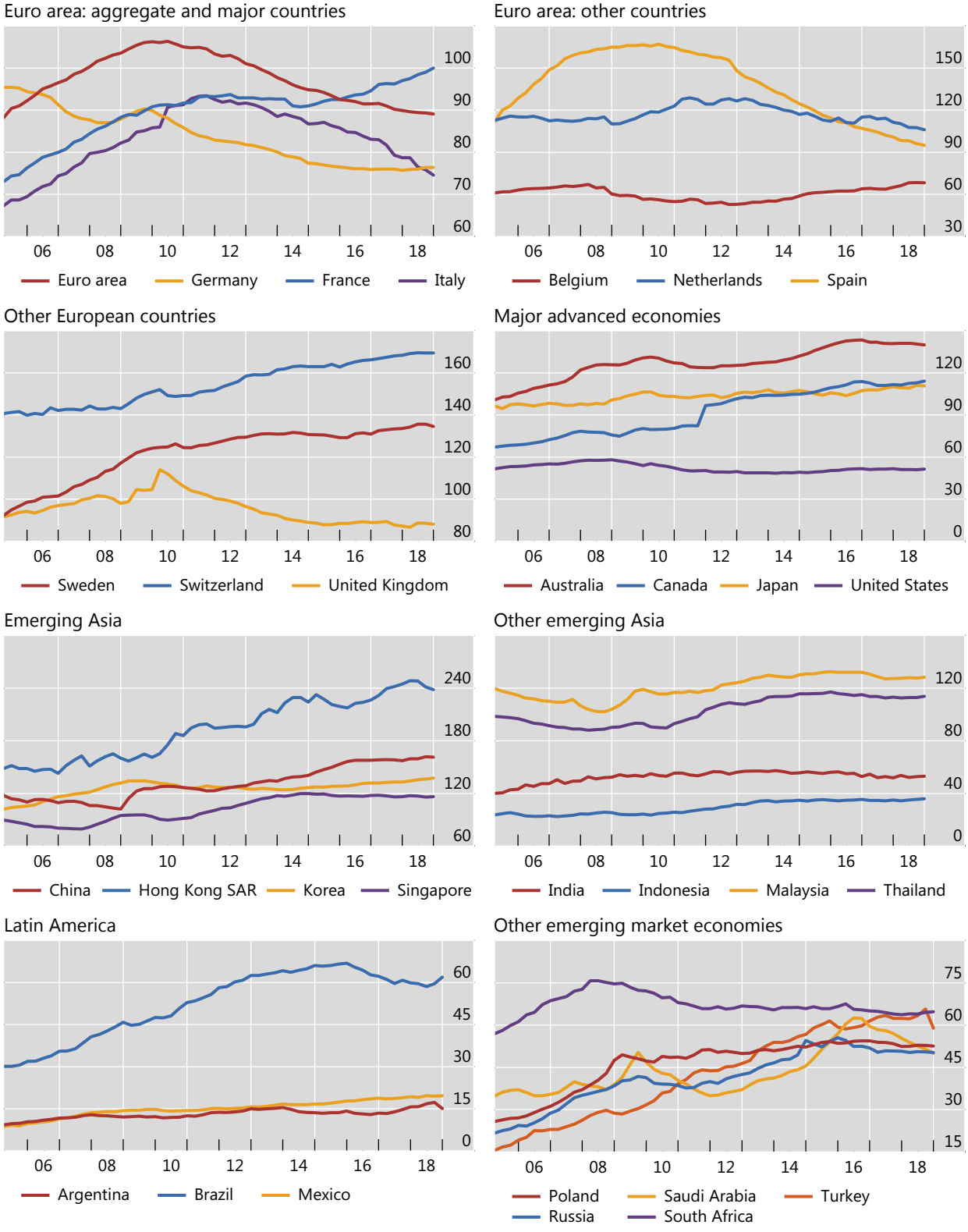


Further information on the BIS credit statistics is available at www.bis.org/statistics/totcredit.htm.

Source: BIS total credit statistics.

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

As a percentage of GDP — Graph F.3



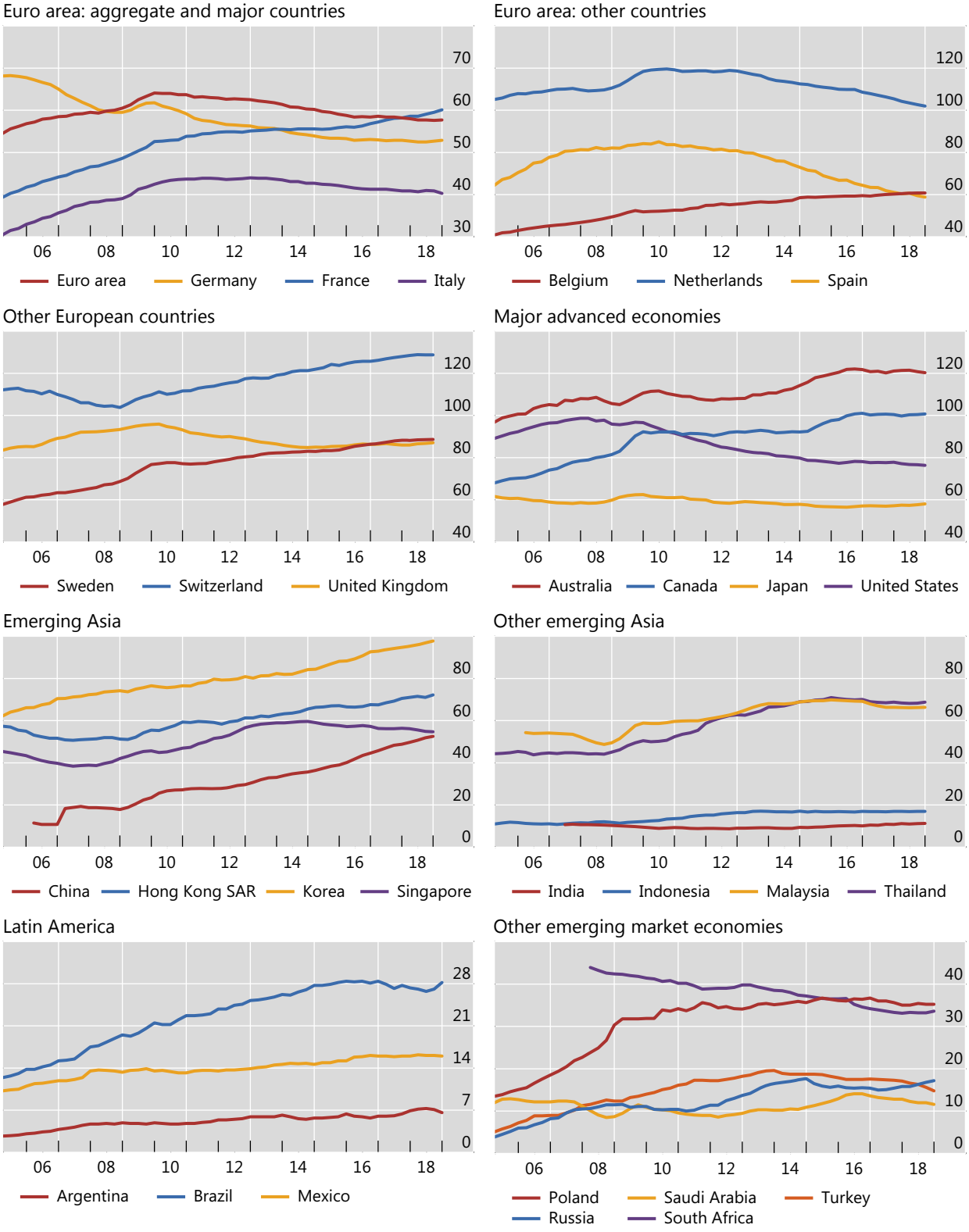
Further information on the BIS credit statistics is available at www.bis.org/statistics/totcredit.htm.

Source: BIS total credit statistics.

Total credit to households (core debt)

As a percentage of GDP

Graph F.4



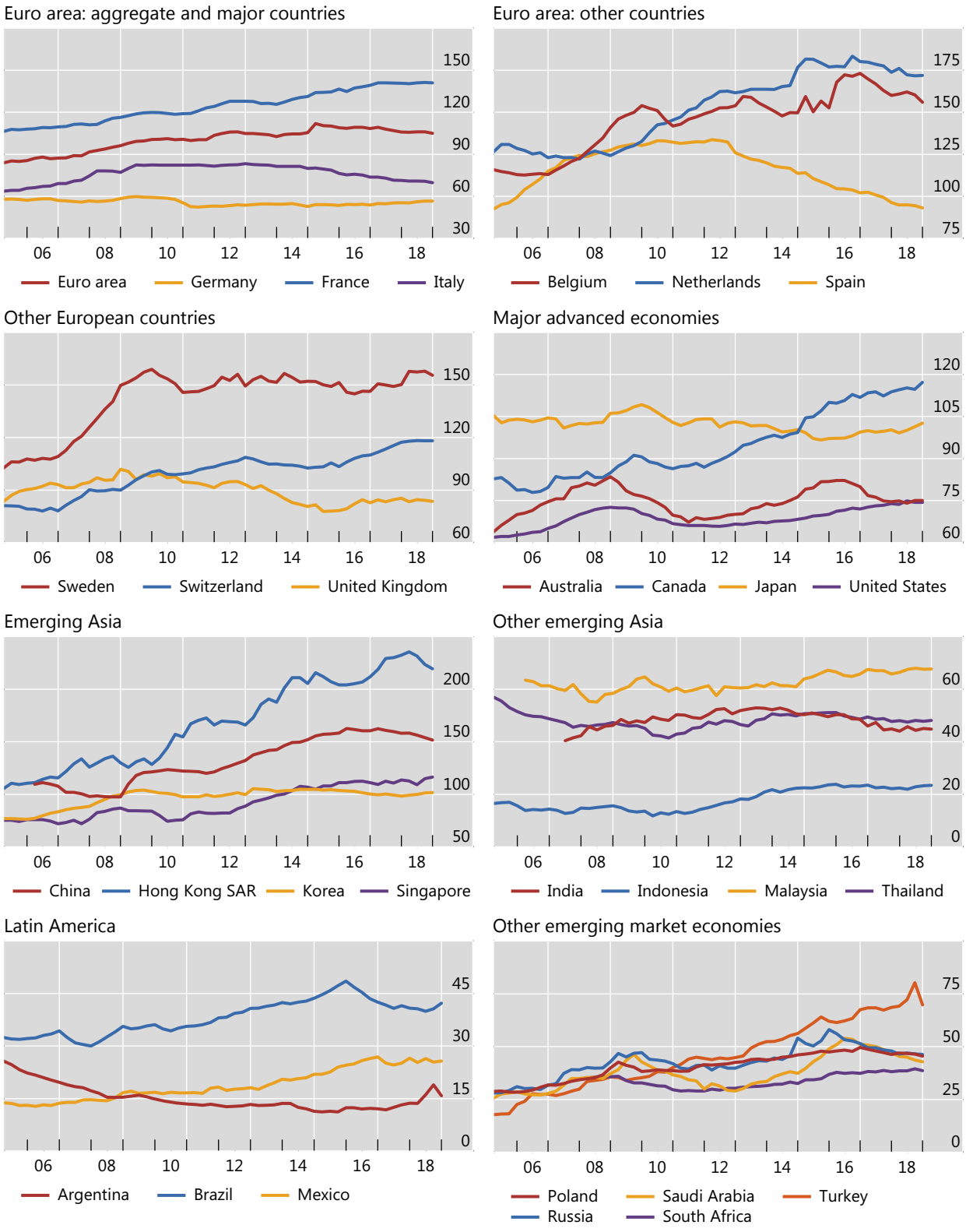
Further information on the BIS credit statistics is available at www.bis.org/statistics/totcredit.htm.

Source: BIS total credit statistics.

Total credit to non-financial corporations (core debt)

As a percentage of GDP

Graph F.5

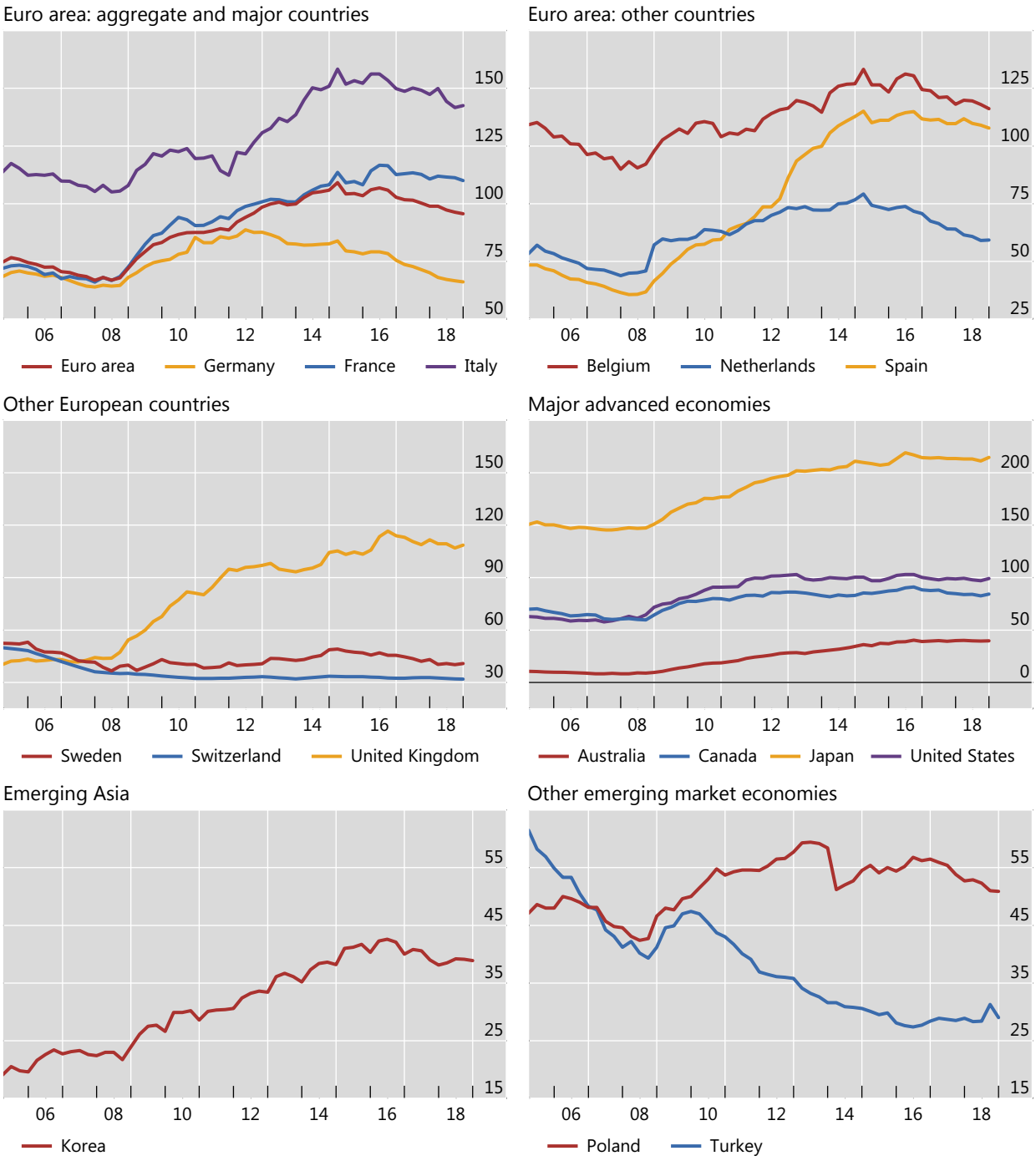


Further information on the BIS credit statistics is available at www.bis.org/statistics/totcredit.htm.

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



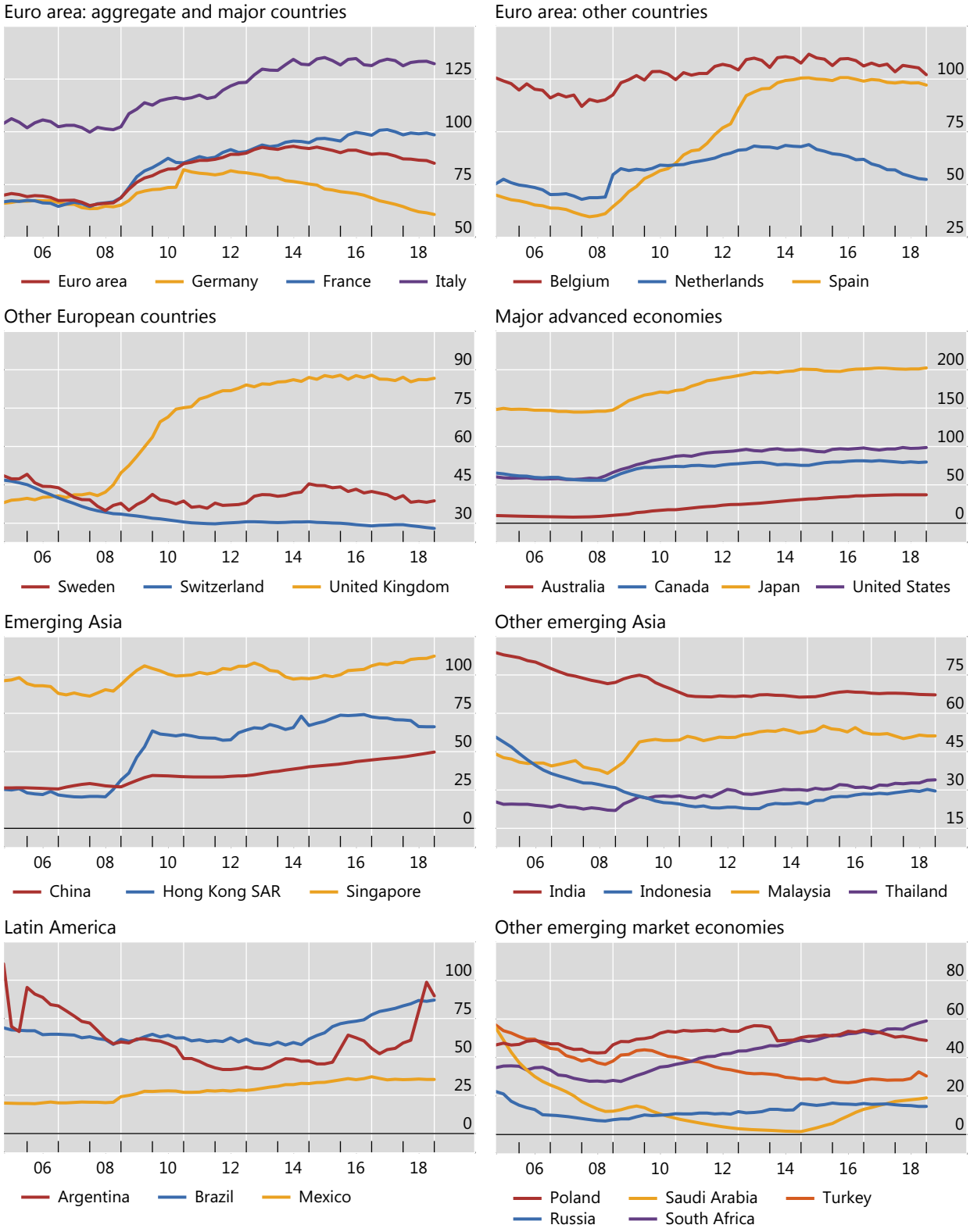
Further information on the BIS credit statistics is available at www.bis.org/statistics/totcredit.htm.

[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



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

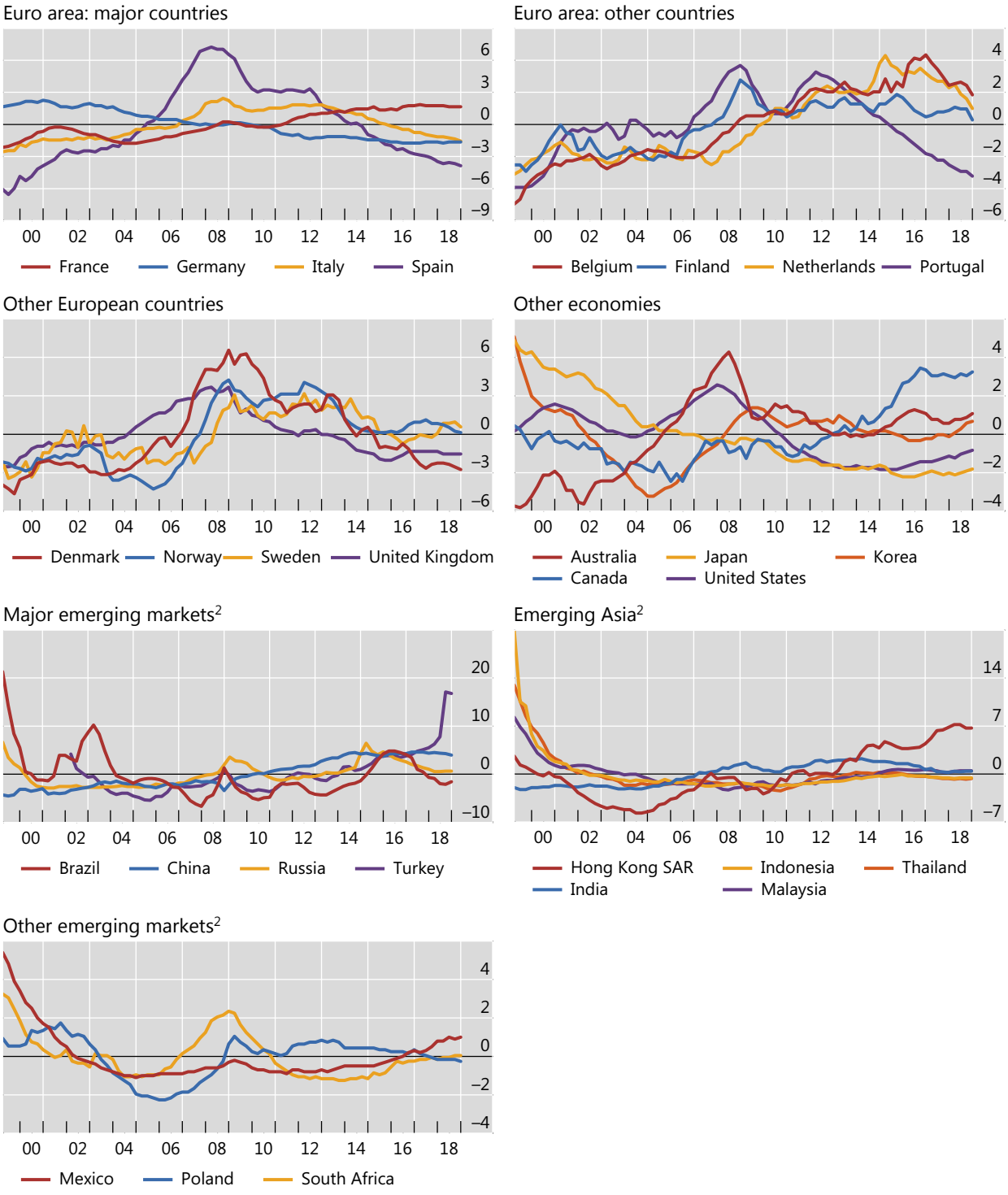
[1] Consolidated data for the general government sector; central government for Argentina, Indonesia, Malaysia, Mexico, Saudi Arabia and Thailand.

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 points[1] Graph G.1



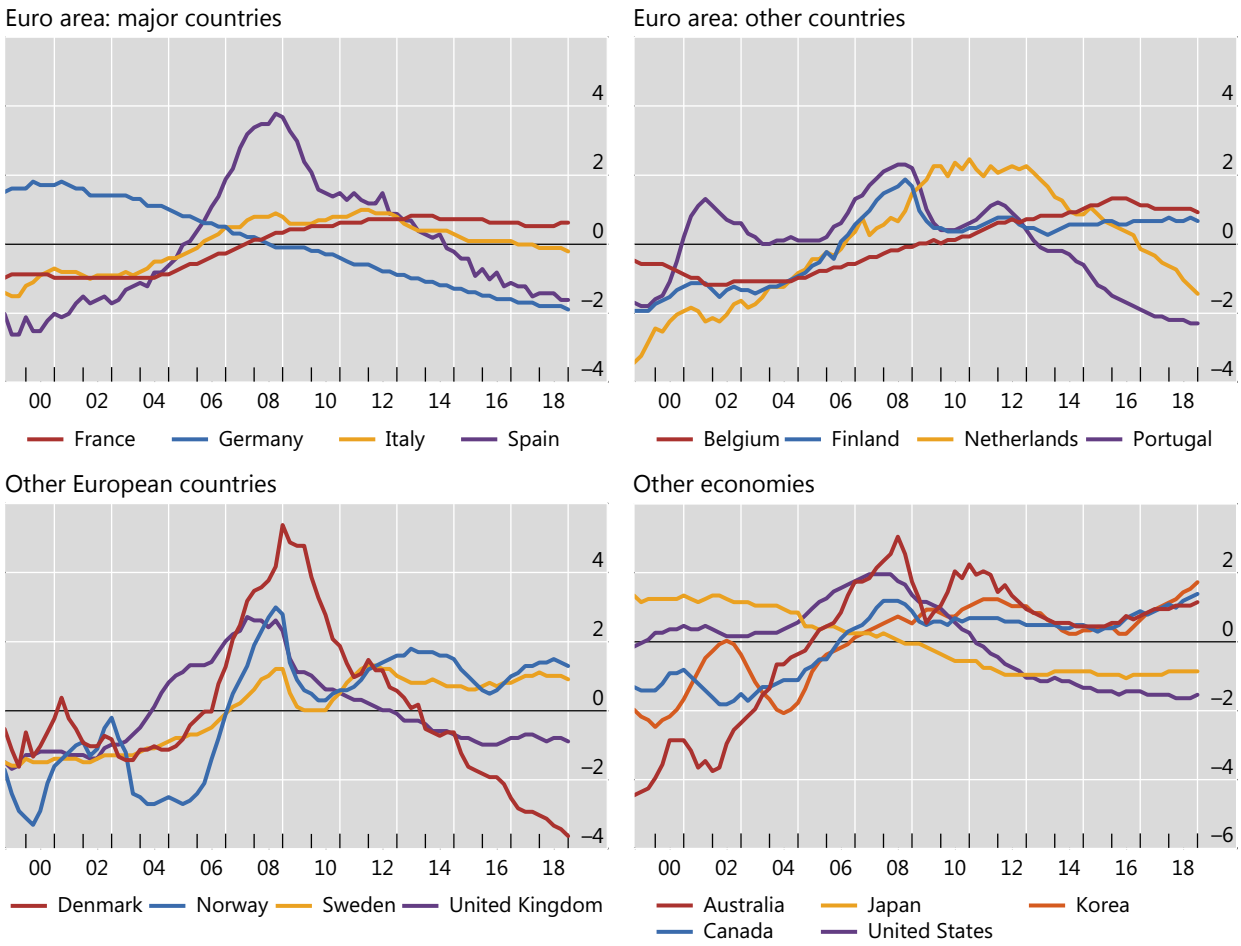
Further information on the BIS debt service ratio statistics is available at www.bis.org/statistics/dsr.htm.

[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 "Metholodogy 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 points[1] Graph G.2



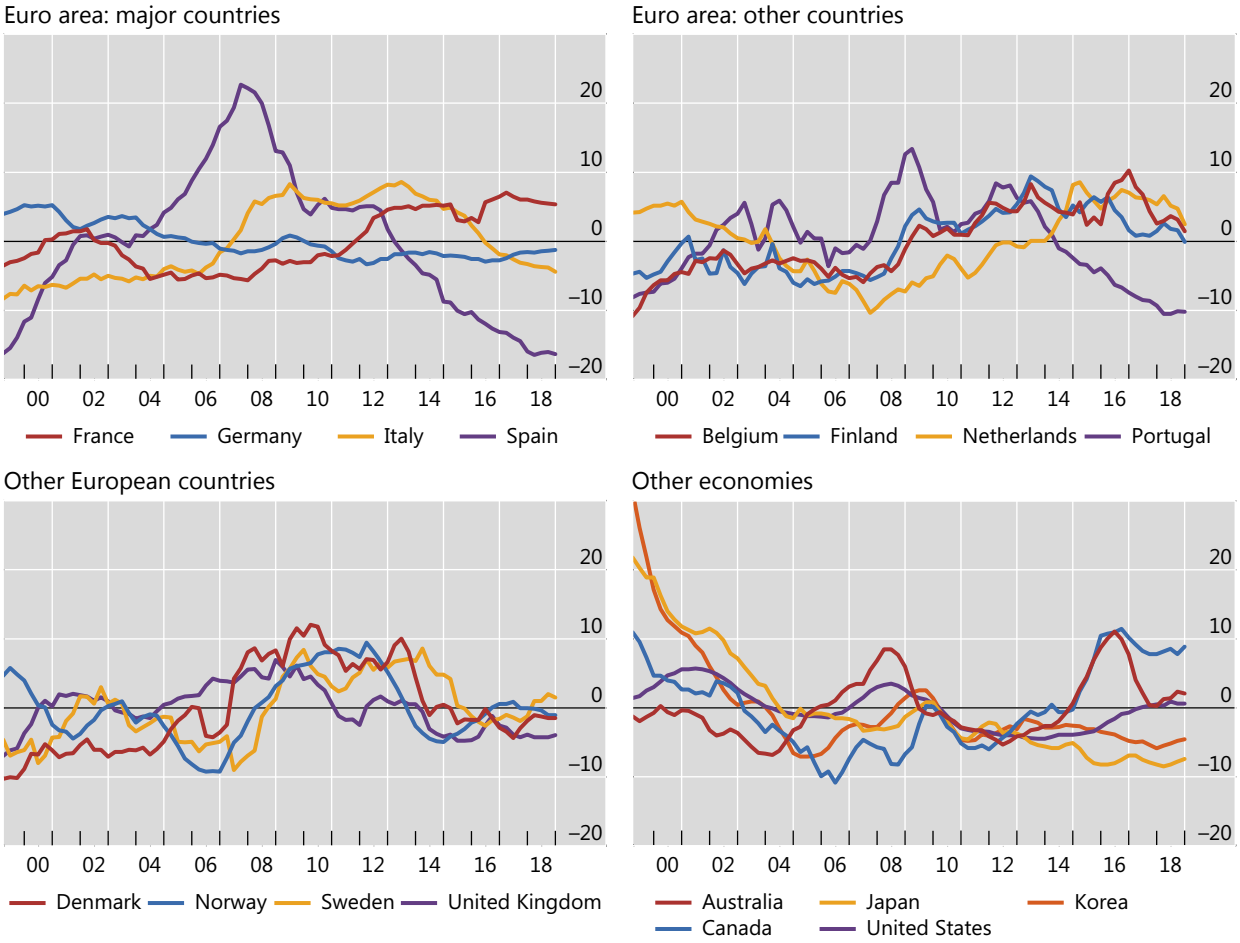
Further information on the BIS debt service ratio statistics is available at www.bis.org/statistics/dsr.htm.

[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 points[1] Graph G.3



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.

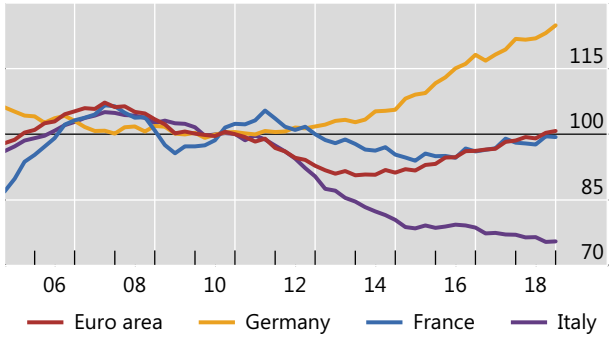
Source: BIS debt service ratios statistics.

H Property price statistics

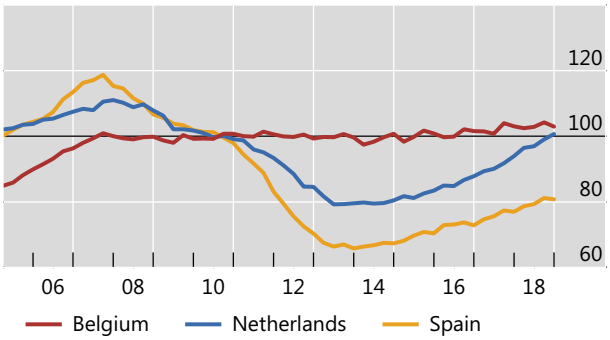
Real residential property prices

CPI-deflated, 2010 = 100 Graph H.1

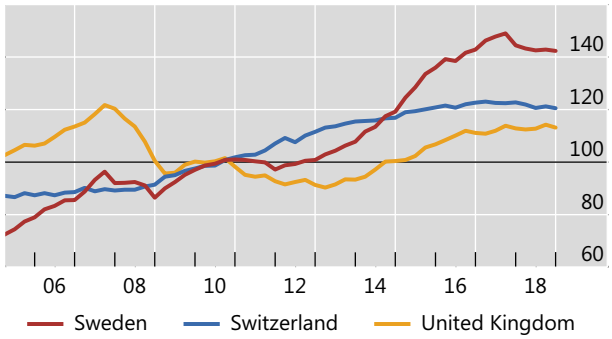
Euro area: aggregate and major countries



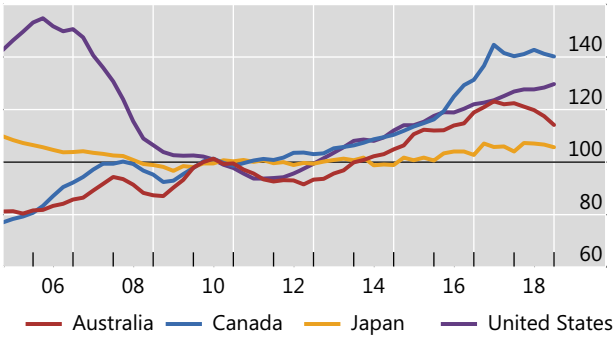
Euro area: other countries



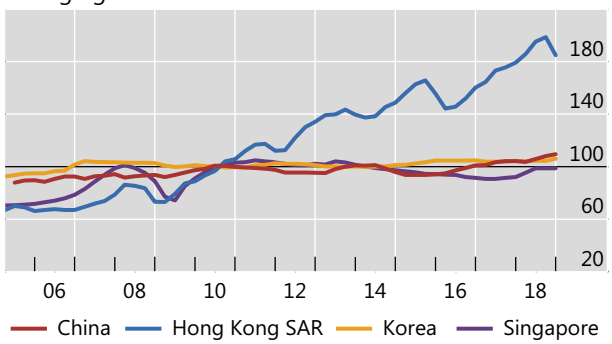
Other European countries



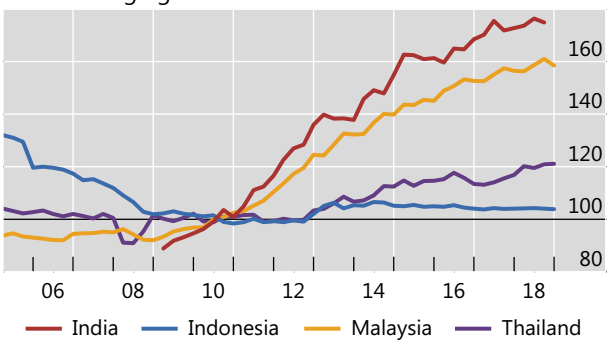
Major advanced economies



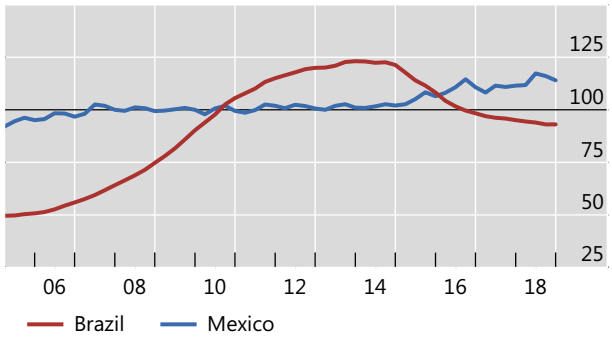
Emerging Asia



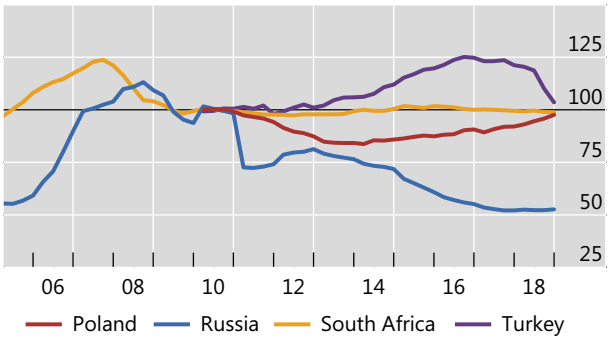
Other emerging Asia



Latin America



Other emerging market economies



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

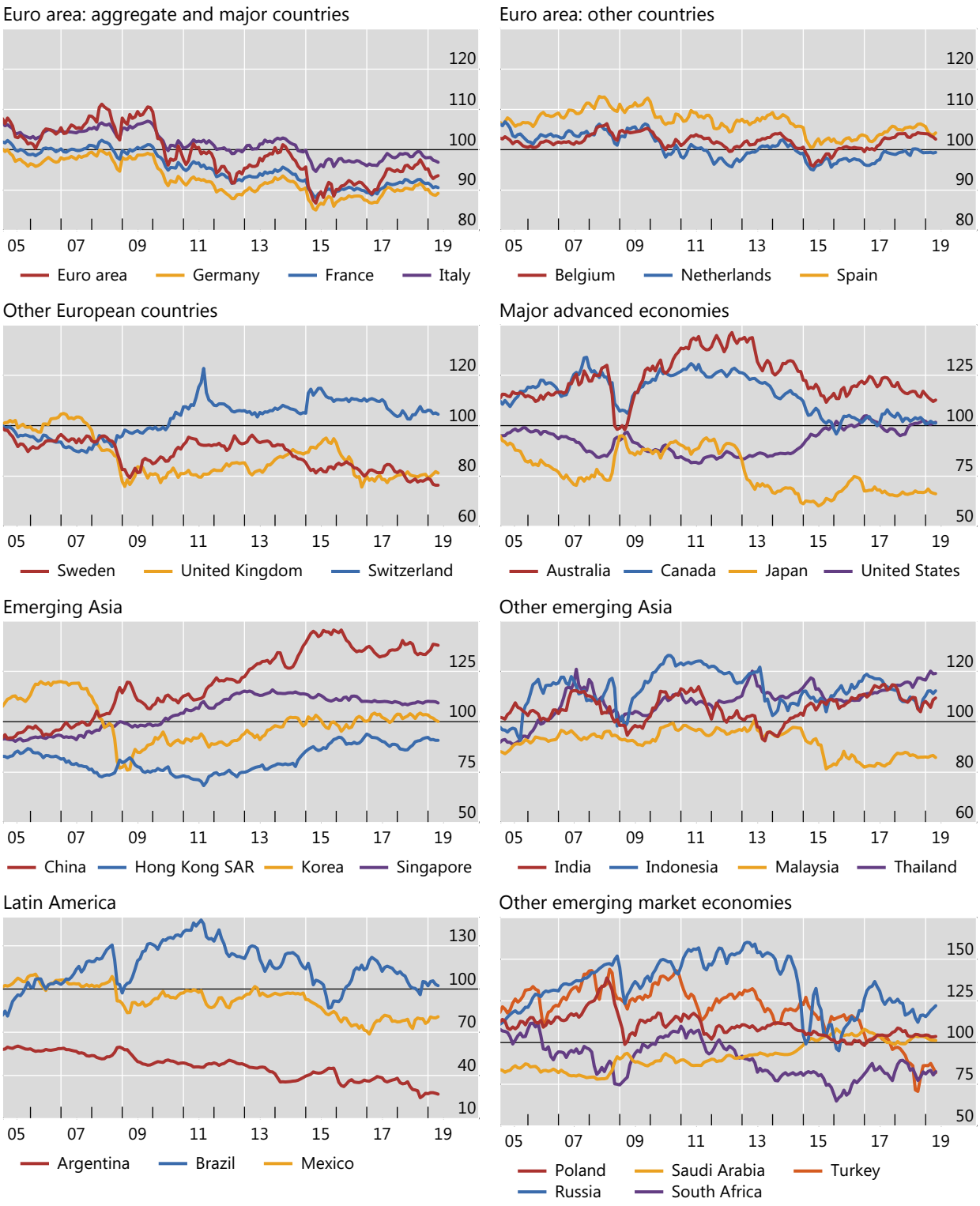
Source: BIS property prices statistics.

I Effective and US dollar exchange rate statistics

Real effective exchange rates

CPI-based, 1995–2005 = 100[1]

Graph I.1



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

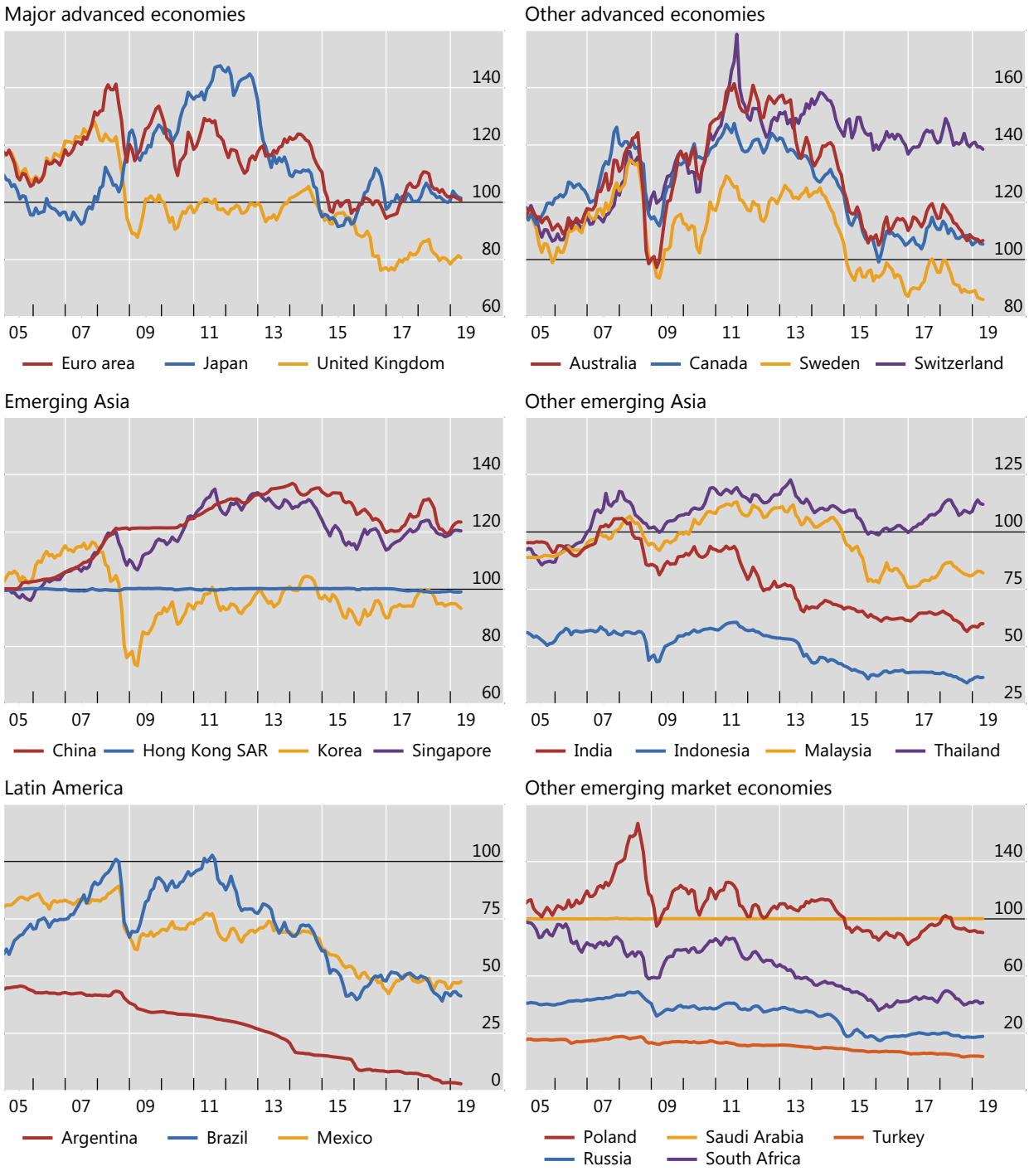
[1] An increase indicates a real-term appreciation of the local currency against a broad basket of currencies.

Source: BIS effective exchange rates statistics.

US dollar exchange rates

Indices, 1995–2005 = 100[1]

Graph I.2



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

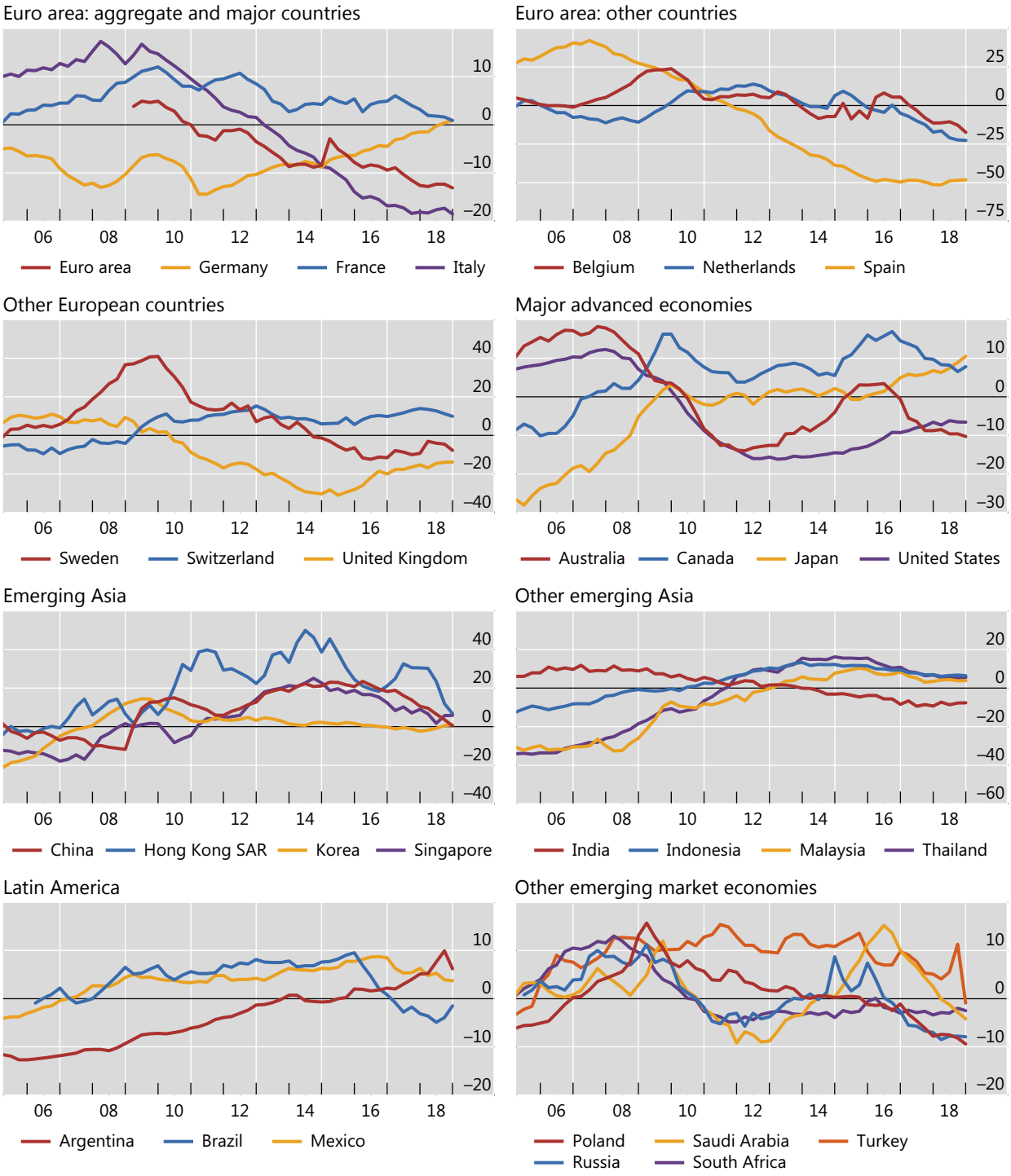
[1] An increase indicates an appreciation of the local currency against the US dollar.

Source: BIS US dollar exchange rates statistics.

J Credit-to-GDP gaps

Credit-to-GDP gaps

In percentage points of GDP — Graph J.1



[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.

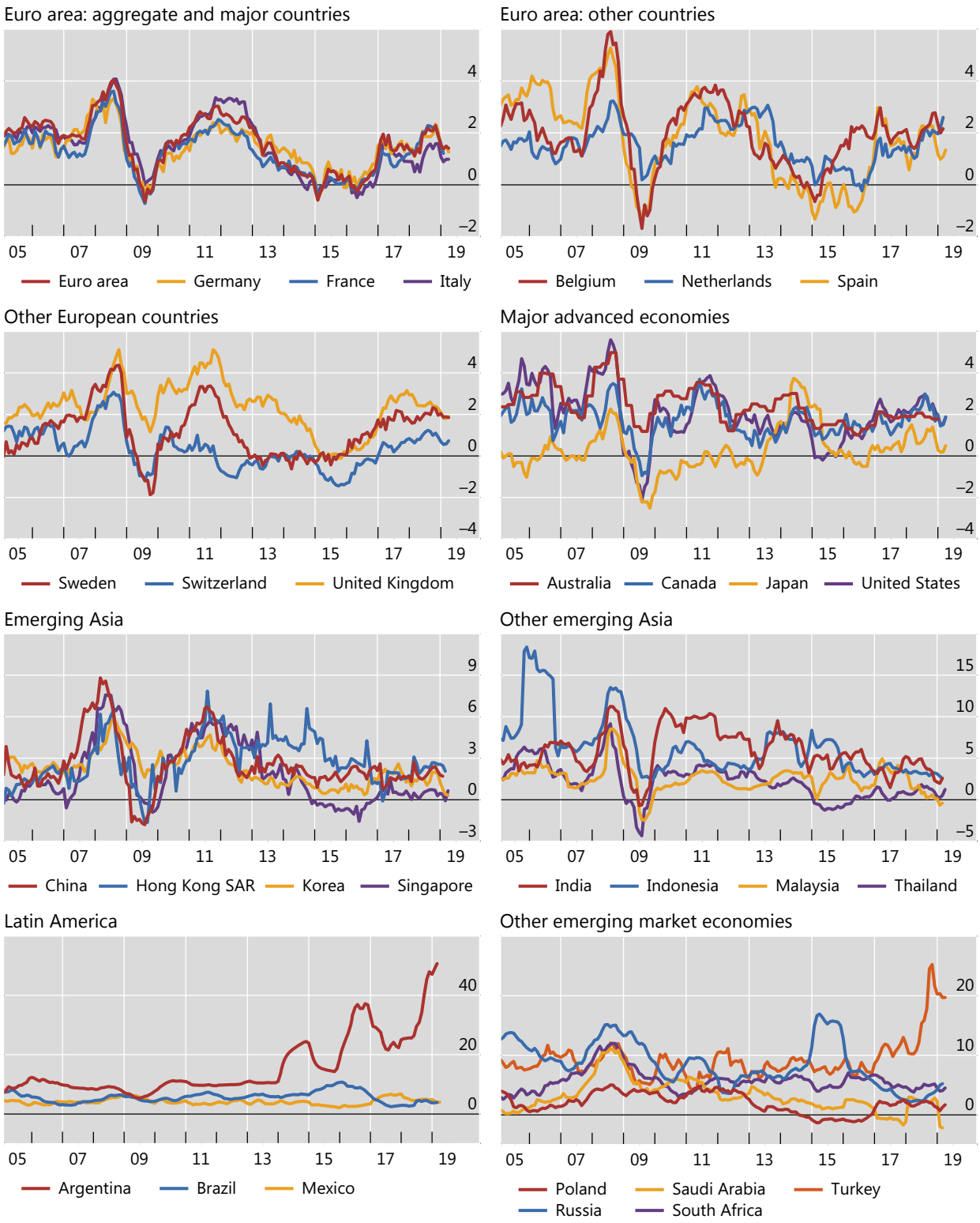
Source: BIS credit-to-GDP gaps statistics.

K Consumer prices

Consumer prices

Year-on-year percentage changes

Graph K.1



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

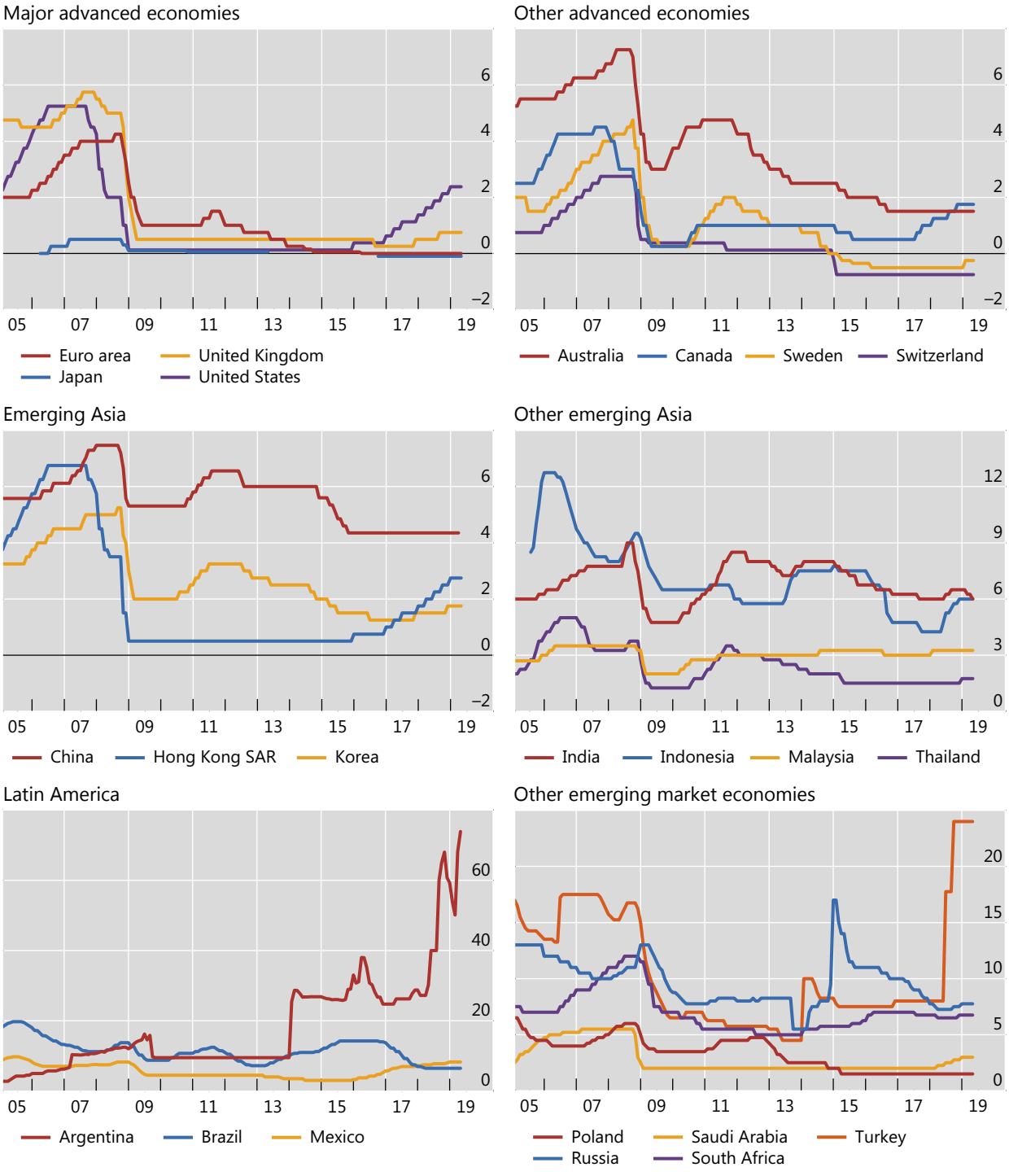
Source: BIS consumer price statistics.

L Central bank policy rates

Central bank policy or representative rates

Month-end; in per cent

Graph L.1



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

March 2019	Beyond LIBOR: a primer on the new reference rates	Andreas Schrimpf & Vladyslav Sushko
March 2019	Impact of financial regulations: insights from an online repository of studies	Frederic Boissay, Carlos Cantú, Stijn Claessens & Alan Villegas
March 2019	Following the imprint of the ECB's asset purchase programme on global bond and deposit flows	Stefan Avdjiev, Mary Everett & Hyun Song Shin
March 2019	The zero lower bound, forward guidance and how markets respond to news	Richhild Moessner & Phurichai Rungcharoenkitkul
December 2018	The growing footprint of EME banks in the international banking system	Eugenio Cerutti, Catherine Koch & Swapan-Kumar Pradhan
December 2018	The 2008 crisis: transpacific or transatlantic?	Robert N McCauley
December 2018	The financial cycle and recession risk	Claudio Borio, Mathias Drehmann & Dora Xia
December 2018	Clearing risks in OTC derivatives markets: the CCP-bank nexus	Umar Faruqui, Wenqian Huang & Előd Takáts
September 2018	Fintech credit markets around the world: size, drivers and policy issues	Stijn Claessens, Jon Frost, Grant Turner & Feng Zhu
September 2018	Regulating cryptocurrencies: assessing market reactions	Raphael Auer & Stijn Claessens
September 2018	The rise of zombie firms: causes and consequences	Ryan Banerjee & Boris Hofmann
September 2018	Term premia: models and some stylised facts	Benjamin H Cohen, Peter Hördahl & Dora Xia

Recent BIS publications[1]

BIS Papers

Asia-Pacific fixed income markets: evolving structure, participation and pricing
BIS Papers No 102, April 2019

The Bank of Korea and the Bank for International Settlements (BIS) co-hosted a conference on "Asia-Pacific fixed income markets: evolving structure, participation and pricing" on 19–20 November 2018 in Seoul, Korea. The conference marked the completion of the BIS Asian Office's two-year research programme on fixed income markets that had been endorsed by the Asian Consultative Council of central bank Governors in May 2017.

BIS Working Papers

Dominant currency debt
Egemen Eren and Semyon Malamud
May 2019, No 783

We propose a "debt view" to explain the dominant international role of the dollar. We develop an international general equilibrium model in which firms optimally choose the currency composition of their nominal debt. Expansionary monetary policy in downturns prevents Fisherian debt deflation through its effects on inflation and exchange rates, and alleviates financial distress. Theoretically, the dominant currency is the one that depreciates in global downturns over horizons of corporate debt maturity. Empirically, the dollar fits this description, despite being a short-run safe-haven currency. We provide broad empirical support for the debt view. We also study the globally optimal monetary policy.

How does the interaction of macroprudential and monetary policies affect cross-border bank lending?
Előd Takáts and Judit Temesvary
May 2019, No 782

We combine a rarely accessed BIS database on bilateral cross-border lending flows with cross-country data on macroprudential regulations. We study the interaction between the monetary policy of major international currency issuers (USD, EUR and JPY) and macroprudential policies enacted in source (home) lending banking systems. We find significant interactions. Tighter macroprudential policy in a home country mitigates the impact on lending of monetary policy of a currency issuer. For instance, macroprudential tightening in the UK mitigates the negative impact of US monetary tightening on USD-denominated cross-border bank lending outflows from UK banks. Vice-versa, easier macroprudential policy amplifies impacts. The results are economically significant.

[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/).

New information and inflation expectations among firms
Serafin Frache and Rodrigo Lluberas
April 2019, No 781

Using data from a unique and novel monthly firm-level survey on inflation expectations in Uruguay we first present stylized facts about the inflation expectation formation process and then show how information acquisition affects firms' inflation expectations. We show that firms' forecasts are close to observed inflation, that a sizable proportion of firms do not revise their expectations, and that there is substantial disagreement about future inflation among firms. We also present evidence on industrial sector effects on inflation forecasts and show that the correlation between inflation expectations and cost expectations increases with the forecast time horizon. We then exploit peculiarities of the collective wage bargaining negotiation mechanism to estimate the impact of acquiring information about past inflation on expected future inflation. Our results imply that firms that adjust wages expect lower inflation, revise their expectations downwards and make smaller forecast errors than firms that do not adjust wages. We find no effect of wage adjustments on firms' own cost expectations and that disagreement among firms is lower in the months of wage adjustment. The latter suggests that inflation expectations tend to converge as firms are more informed about past inflation.

Can regulation on loan-loss-provisions for credit risk affect the mortgage market? Evidence from administrative data in Chile
Mauricio Calani
April 2019, No 780

We argue that financial institutions responded by raising their acceptable borrowing standards on borrowers, enhancing the quality of their portfolio, but also contracting their supply of mortgage credit. We reach this conclusion by developing a stylized imperfect information model which we use to guide our empirical analysis. We conclude that the loan-to-value (LTV) ratio was 2.8% lower for the mean borrower, and 9.8% lower for the median borrower, because of the regulation. Our paper contributes to the literature on the evaluation of macro-prudential policies, which has mainly exploited cross-country evidence. In turn, our analysis narrows down to one particular policy in the mortgage market, and dissects its effects by exploiting unique administrative tax data on the census of all real estate transactions in Chilean territory, in the period 2012–2016.

BigTech and the changing structure of financial intermediation
Jon Frost, Leonardo Gambacorta, Yi Huang, Hyun Song Shin and Pablo Zbinden
April 2019, No 779

We consider the drivers and implications of the growth of "BigTech" in finance - ie the financial services offerings of technology companies with established presence in the market for digital services. BigTech firms often start with payments. Thereafter, some expand into the provision of credit, insurance, and savings and investment products, either directly or in cooperation with financial institution partners. Focusing on credit, we show that BigTech firms lend more in countries with less competitive banking sectors and less stringent regulation. Analysing the case of Argentina, we find support for the hypothesis that BigTech lenders have an information advantage in credit assessment relative to a traditional credit bureau. For borrowers in both Argentina and China, we find that firms that accessed credit expanded their product offerings more than those that did not. It is too early to judge the extent of BigTech's eventual advance into the provision of financial services. However, the early evidence allows us to pose pertinent questions that bear on their impact on financial stability and overall economic welfare.

Does informality facilitate inflation stability?
Enrique Alberola-Ila and Carlos Urrutia
April 2019, No 778

Informality is an entrenched structural trait in emerging market economies, despite of the progress achieved in macroeconomic management. Informality determines the behavior of labour markets, financial access and the productivity of the overall economy. Therefore it influences the transmission of shocks and also of monetary policy. This paper develops a simple general equilibrium closed economy model with nominal rigidities, labor and financial frictions. Informality is captured by a dual labour market where the share of informal workers is

endogenous. Only formal sector firms have access to financing, which is instrumental in their production process. Informality has a buffering effect on the propagation of demand and supply shocks to prices; the financial feature of the model exacerbates the impact of financial shocks in the formal sector while the informal sector is in principle unaffected. As a result informality dampens the impact of demand and financial shocks on wages and inflation but heighten the impact of technology shocks. Informality also increases the sacrifice ratio of monetary policy actions. From a Central Bank perspective, the results imply that the presence of an informal sector mitigates inflation volatility for some type of shocks but makes monetary policy less effective.

What anchors for the natural rate of interest?
Claudio Borio, Piti Disyatat and Phurichai Rungcharoenkitkul
March 2019, No 777

The paper takes a critical look at the conceptual and empirical underpinnings of prevailing explanations for low real (inflation-adjusted) interest rates over long horizons and finds them incomplete. The role of monetary policy, and its interaction with the financial cycle in particular, deserve greater attention. By linking booms and busts, the financial cycle generates important path dependencies that give rise to intertemporal policy trade-offs. Policy today constrains policy tomorrow. Far from being neutral, the policy regime can exert a persistent influence on the economy's evolution, including on the real interest rate. This raises serious conceptual and practical questions about the use of the natural interest rate as a monetary policy guidepost. In developing the analysis, the paper also provides a specific critique of the safe asset shortage hypothesis - a hypothesis that has gained considerable popularity in recent years.

Can an ageing workforce explain low inflation?
Benoit Mojon and Xavier Ragot
March 2019, No 776

Why is wage inflation so weak in spite of the recent sharp reduction in unemployment? We show that this may be due to an ongoing change in the composition of the labor supply. Indeed, the participation rate of workers aged between 55 and 64 has increased steadily over the last decade, from a third to above a half on average across OECD countries. This is most likely the consequence of ageing and the reform of pensions. We show that the participation rate of workers aged 55 to 64 contributes to explain why wage inflation has remained weak over the last five years. Our second result is that Phillips curves are alive and well. When exploiting the cross-country variance of the data, wage inflation remains highly responsive to domestic unemployment rates, including after the Great Recession.

Bond risk premia and the exchange rate
Boris Hofmann, Ilhyock Shim and Hyun Song Shin
March 2019, No 775

In emerging market economies, currency appreciation goes hand in hand with compressed sovereign bond spreads, even for local currency sovereign bonds. This yield compression comes from a reduction in the credit risk premium. Crucially, the relevant exchange rate involved in yield compression is the bilateral US dollar exchange rate, not the trade-weighted exchange rate. Our findings highlight endogenous co-movement of bond risk premia and exchange rates through the portfolio choice of global investors who evaluate returns in dollar terms.

FX intervention and domestic credit: Evidence from high-frequency micro data
Boris Hofmann, Hyun Song Shin and Mauricio Villamizar-Villegas
March 2019, No 774

We employ a rarely available high-frequency micro data set to study the impact of foreign exchange intervention on domestic credit growth. We find that sterilised purchases of dollars by the central bank dampens the flow of new domestic corporate loans in Colombia. Slowing the pace of currency appreciation plays a key role in dampening credit expansion. Our analysis sheds light on the role of FX intervention as part of the financial stability-oriented policy response to credit booms associated with capital inflow surges.

From carry trades to trade credit: financial intermediation by non-financial corporations
Bryan Hardy and Felipe Saffie
March 2019, No 773

We use unique firm level data from Mexico to document that non-financial corporations engage in carry trades by borrowing in foreign currency and lending in domestic currency, largely to related partners (trade credit), accumulating currency risk in the process. The interest rate differential between local and foreign currency borrowing largely drives this behavior at a quarterly frequency, inducing an expansion in gross trade credit and sales. Firms that were active in carry-trade have decreased investment following a large depreciation, independent of currency exposure levels and export status, but maintain their supply of trade credit.

On the global Impact of risk-off shocks and policy-put frameworks
Josef Schroth
March 2019, No 772

Global risk-off shocks can be highly destabilizing for financial markets and, absent an adequate policy response, may trigger severe recessions. Policy responses were more complex for developed economies with very low interest rates after the GFC. We document, however, that the unconventional policies adopted by the main central banks were effective in containing asset price declines. These policies impacted long rates and inspired confidence in a policy-put framework that reduced the persistence of risk-off shocks. We also show that domestic macroeconomic and financial conditions play a key role in benefiting from the spillovers of these policies during risk-off episodes. Countries like Japan, which already had very low long rates, benefited less. However, Japan still benefited from the reduced persistence of risk-off shocks. In contrast, since one of the main channels through which emerging markets are historically affected by global risk-off shocks is through a sharp rise in long rates, the unconventional monetary policy phase has been relatively benign to emerging markets during these episodes, especially for those economies with solid macroeconomic fundamentals and deep domestic financial markets. We also show that unconventional monetary policy in the US had strong effects on long interest rates in most economies in the Asia-Pacific region (which helps during risk-off events but may be destabilizing otherwise -we do not take a stand on this tradeoff).

Basel Committee on Banking Supervision

Sixteenth progress report on adoption of the Basel regulatory framework
May 2019

This updated progress report provides a high-level view of Basel Committee members' progress in adopting Basel III standards as of end-March 2019.

It focuses on the status of adoption of all the Basel III standards, including the finalised Basel III post-crisis reforms published in December 2017, to ensure that they are transformed into national law or regulation according to the internationally agreed time frames. The report is based on information provided by individual members as part of the Committee's Regulatory Consistency Assessment Programme (RCAP).

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.

Consolidated Basel Framework
April 2019

Basel Committee on Banking Supervision launched a new section of its website that sets out a consolidated version of its global standards for the regulation and supervision of banks. The consolidated framework aims to improve the accessibility of the Basel Committee's standards and to promote consistent global interpretation and implementation. The framework has been

published initially in draft form, together with a consultative document to gather feedback on the website and on various proposed technical amendments to the standards.

Basel standards are currently published on the Committee's section of the website of the Bank for International Settlements (BIS), as a series of pdf documents. These publications may replace prior standards, amend existing standards or introduce new ones. But the current publication format, combined with the expanded scope of the Basel Framework in recent years, make it difficult for website users to find the standards that are currently in force, or track how the framework has developed over time and will develop in the future. The Consolidated Basel Framework that has been launched today addresses these issues.

The publication of the standards in the new format of the consolidated framework has focused on reorganising existing requirements. There was no intention to introduce new requirements or otherwise amend the standards previously agreed and published by the Basel Committee. In preparing the framework, the Basel Committee has taken the opportunity to simplify the standards where possible, clarify provisions known to cause confusion, integrate answers to frequently asked questions (FAQs) and delete redundant review clauses and other outdated provisions.

The preparation of the standards in the new format did, however, reveal some inconsistencies between Basel requirements as well as ambiguities that need to be addressed through policy changes. Such policy changes, which are not substantial but which cannot be resolved unambiguously based on the current text, would normally be subject to consultation as technical amendments. The Committee considers it to be most efficient to consult on all such changes together in the context of the launch of the consolidated framework. The proposed changes have been incorporated into the draft version of the consolidated framework, together with various new FAQs.

As the technical amendments proposed in the consultative document are not substantial in nature and, in the Committee's view, contribute to a more coherent prudential framework, the Committee will encourage its members to implement the final requirements as soon as possible, and no later than 1 January 2022.The Committee welcomes comments on the two questions set out in the consultative document. Comments should be uploaded here by Friday 9 August 2019. All comments will be published on the Bank for International Settlements website unless a respondent specifically requests confidential treatment.

Standardised approach - implementing the mapping process
April 2019

This document set out guidelines for supervisors in the process of assigning the credit risk assessments of an eligible external credit assessment institution (ECAI) to the risk weights available under the standardised approach to credit risk. It fully replicates Annex 2 of Basel II (June 2006) and has been issued as a separate publication due to the launch of the Consolidated Basel Framework (see section 1.34 of the consultation document on the consolidated framework for more information).

Towards a sectoral application of the countercyclical capital buffer
April 2019

In May 2017, the Basel Committee's Research Task Force initiated a work stream on sectoral countercyclical capital buffers (CCyBs). It was tasked to produce two deliverables that would contribute to the understanding of the sectoral application of the CCyB: (i) a review of the existing literature; and (ii) a report summarising original research conducted within the work stream.

The literature review was published in March 2018 and shows that there is a justified need for sectoral macroprudential tools. Moreover, it argues that a sectoral CCyB may be a useful complement to both the Basel III CCyB and existing targeted instruments in the macroprudential toolkit. Yet, countercyclical capital buffers, both broad-based and sectoral, remain largely untested and more work is needed to assess their ability to achieve the different objectives attributed to them. Furthermore, a sectoral application of the CCyB entails several challenges with respect to the design of the instrument and its interactions with the Basel III CCyB and other (targeted) instruments.

This research report summarises the RTF-CCyB work stream's findings regarding the open issues identified by the literature review. Two theoretical papers - Galaasen and Solheim (2018) in a partial equilibrium framework and Castro (2018) in a general equilibrium framework - analyse the transmission mechanism of a sectoral CCyB and compare its effectiveness and efficiency to that of the Basel III CCyB. The empirical work conducted by the work stream consists of three papers: two of them - Ferrari and Rovira Kaltwasser (2019) for the United States and Fiori and Pacella (2018) for Italy - focus on the link between sectoral credit cycles and systemic risk, and one - Behncke (2018) - analyses the transmission mechanism of the Swiss sectoral CCyB on banks' lending and risk taking.

Basel III Monitoring Report
March 2019

This report presents the results of the Basel Committee's latest Basel III monitoring exercise, based on data as of 30 June 2018. Through a rigorous reporting process, the Committee regularly reviews the implications of the Basel III standards for banks, and has been publishing the results of such exercises since 2012. 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. However, it does not yet reflect the finalisation of the market risk framework published in January 2019.

Data are provided for a total of 189 banks, including 106 large internationally active banks. These "Group 1" banks are defined as internationally active banks that have Tier 1 capital of more than €3 billion, and include all 29 institutions that have been designated as global systemically important banks (G-SIBs). The Basel Committee's sample also includes 83 "Group 2" banks (ie banks that have Tier 1 capital of less than €3 billion or are not internationally active).

The final Basel III minimum requirements are expected to be implemented by 1 January 2022 and fully phased in by 1 January 2027. On a fully phased-in basis, the capital shortfalls at the end-June 2018 reporting date are €30.1 billion for Group 1 banks at the target level. These shortfalls are more than 70% smaller than in the end-2015 cumulative QIS exercise, thanks mainly to higher levels of eligible capital. For Group 1 banks, the Tier 1 minimum required capital (MRC) would increase by 5.3% following full phasing-in of the final Basel III standards relative to the initial Basel III standards. This compares with an increase of 3.2% at end-2017.

The increases in both shortfalls and the change in MRC over the last six months are driven partly by a higher market risk contribution; this does not yet reflect the finalisation of the market risk framework published in January 2019, which is expected to offset the increases to some extent. By excluding all revisions to the market risk framework, the current end-June 2018 data show increases in Tier 1 MRC of 1.7%, 1.5% and 8.3% for Group 1 banks, G-SIBs and Group 2 banks, respectively, compared to 1.7%, 1.2% and 5.3% six months earlier.

The report also provides data on the initial Basel III minimum capital requirements, total loss-absorbing capacity (TLAC) and Basel III's liquidity requirements.

Proportionality in bank regulation and supervision - a survey on current practices
March 2019

The Basel Committee on Banking Supervision is today publishing the results of a survey it conducted on proportionality practices in bank regulation and supervision. The report summarises the responses received to the survey by Basel Committee member jurisdictions and those of the Basel Consultative Group.

In brief, the majority of respondents to the survey currently apply proportionality measures in their jurisdictions. In most cases, such measures are applied to banks that represent a relatively small share of total banking assets in the relevant jurisdiction, although there is a fair degree of heterogeneity.

Jurisdictions rely on a number of determinants in identifying proportionality thresholds / segments. These include a wide number of balance sheet metrics and differentiation by banks' business models. In most cases, these indicators are coupled with supervisory judgment when determining the scope of banks subject to different requirements.

Most jurisdictions apply some form of proportionality related to capital and liquidity requirements. These generally take the form of a modified / simpler version of existing Basel standards, particularly for the more complex risk categories, or an exemption from such requirements for certain banks. Jurisdictions similarly apply proportionate reporting and disclosure requirements, with some banks subject to less onerous requirements and submission frequencies. Most jurisdictions also apply a proportionate approach to their supervisory practices, including the intensity of on- and off-site examinations, requirements related to risk management controls and governance, and supervisory stress tests.

Survey on the interaction of regulatory instruments: results and analysis
March 2019

This report summarises and analyses the results of the third-wave survey conducted by the Research Task Force on the role of multiple regulatory constraints in the Basel III framework. The latest survey (end-December 2017) retains the format of the end-December 2016 survey: each block of questions tests the impact of a regulatory instrument and provides an indication of the interaction among said instruments and the problems created by the growing complexity of the Basel III framework.

Statement on crypto-assets
March 2019

The past few years have seen a growth in crypto-assets. While the crypto-asset market remains small relative to that of the global financial system, and banks currently have very limited direct exposures, the Committee is of the view that the continued growth of crypto-asset trading platforms and new financial products related to crypto-assets has the potential to raise financial stability concerns and increase risks faced by banks.

While crypto-assets are at times referred to as "crypto-currencies", the Committee is of the view that such assets do not reliably provide the standard functions of money and are unsafe to rely on as a medium of exchange or store of value. Crypto-assets are not legal tender, and are not backed by any government or public authority.1 Through this newsletter, the Basel Committee is setting out its prudential expectations related to banks' exposures to crypto-assets and related services, for those jurisdictions that do not prohibit such exposures and services.

Crypto-assets have exhibited a high degree of volatility and are considered an immature asset class given the lack of standardisation and constant evolution. They present a number of risks for banks, including liquidity risk; credit risk; market risk; operational risk (including fraud and cyber risks); money laundering and terrorist financing risk; and legal and reputation risks. Accordingly, the Committee expects that if a bank is authorised and decides to acquire crypto-asset exposures or provide related services, the following should be adopted at a minimum:

- Due diligence: Before acquiring exposures to crypto-assets or providing related services, a bank should conduct comprehensive analyses of the risks noted above. The bank should ensure that it has the relevant and requisite technical expertise to adequately assess the risks stemming from crypto-assets.
- Governance and risk management: The bank should have a clear and robust risk management framework that is appropriate for the risks of its crypto-asset exposures and related services. Given the anonymity and limited regulatory oversight of many crypto-assets, a bank's risk management framework for crypto-assets should be fully integrated into the overall risk management processes, including those related to anti-money laundering and combating the financing of terrorism and the evasion of sanctions, and heightened fraud monitoring. Given the risk associated with such exposures and services, banks are expected to implement risk management processes that are consistent with the high degree of risk of crypto-assets. Its relevant senior management functions are expected to be involved in overseeing the risk assessment framework. Board and senior management should be provided with timely and relevant information related to the bank's crypto-asset risk profile. An assessment of the risks described above related to direct and indirect crypto-asset exposures and

other services should be incorporated into the bank's internal capital and liquidity adequacy assessment processes.

- Disclosure: A bank should publicly disclose any material crypto-asset exposures or related services as part of its regular financial disclosures and specify the accounting treatment for such exposures, consistent with domestic laws and regulations.
- Supervisory dialogue: The bank should inform its supervisory authority of actual and planned crypto-asset exposure or activity in a timely manner and provide assurance that it has fully assessed the permissibility of the activity and the risks associated with the intended exposures and services, and how it has mitigated these risks.

The Committee continues to monitor developments in crypto-assets, including banks' direct and indirect exposures to such assets. The Committee will in due course clarify the prudential treatment of such exposures to appropriately reflect the high degree of risk of crypto-assets. It is coordinating its work with other global standard setting bodies and the Financial Stability Board.

Regulatory Consistency Assessment Programme (RCAP): Assessment of the Basel Committee's NSFR regulations – Brazil
March 2019

Through its Regulatory Consistency Assessment Programme (RCAP), the Basel Committee monitors the timely adoption of regulations by its members, assesses the regulations' consistency with the Basel framework and examines the consistency of banks' calculation of the prudential ratios across jurisdictions. The RCAP also helps member jurisdictions to identify and assess the materiality of any deviations from the Basel framework.

This report describes the Committee's assessment of Brazil's implementation of the Basel Committee's Net Stable Funding Ratio (NSFR) standard. The Brazilian NSFR has been assessed as compliant, which is the highest possible grade

Regulatory Consistency Assessment Programme (RCAP): Assessment of the Basel Committee's large exposures framework - Brazil
March 2019

This report describes the Committee's assessment of Brazil's implementation of the Basel Committee's large exposures framework. Brazil's large exposures framework has been assessed as compliant, which is the highest possible grade.

Committee on Payments and Market Infrastructure

CPMI publishes new data on correspondent banking networks showing 20% reduction in relationships over seven years
March 2019

The number of correspondent banking relationships has shrunk by 20% over the past seven years, according to analysis of new data, published today by the Committee on Payments and Market Infrastructures (CPMI), the global standard setter for payment, clearing and settlement services.

The new data, which track the size and scope of the network of relationships, show a broad-based and global reduction in their number as their geographical focus narrows.

Correspondent bank networks underpin cross-border payments - vital for global trade and for migrants who send remittances home. Yet these payments are slower, more expensive and more opaque than domestic payments.

"Many families and small businesses rely on remittances to make ends meet but often face a choice between tolerating high costs or risking uncertain delivery of payments. The shrinking correspondent banking network is adding to these concerns. It may push people to use 'shadow' payment services such as cryptocurrencies that put the most disadvantaged at risk,"

said Benoît Cœuré, Chair of the CPMI, on the sidelines of the High-level Meeting on Financial Inclusion hosted by the Bank for International Settlements.

"Collectively, our efforts can enhance financial inclusion by making payments more efficient and by lowering their costs," he added.

To improve access to payments, it is necessary to understand their associated trends and drivers. This requires detailed analysis, which the CPMI is undertaking. The current analysis builds on the 2016 CPMI report on correspondent banking, and is based on payment message data from over 200 jurisdictions provided by SWIFT.

The CPMI and SWIFT plan to update the analysis annually for the next five years.

Jurisdictions move forward towards implementing standards for payment, clearing and settlement
March 2019

The According to the recent update to the Level 1 information made available by the Committee on Payments and Market Infrastructures (CPMI) and the International Organization of Securities Commissions (IOSCO), jurisdictions are making progress on implementing international standards for payment systems, central securities depositories, securities settlement systems, central counterparties and trade repositories.

The Level 1 implementation monitoring is based on self-assessments by individual jurisdictions of how they have adopted measures to implement the 24 Principles for financial market infrastructures (PFMI) and four of the five Responsibilities for authorities that are included in the PFMI.

Today CPMI and IOSCO jointly released updated information on this progress through the Level 1 assessments online tracker, which is accessible on the CPMI and IOSCO websites. The online tracker does not require the publication of a Level 1 assessment report, thereby permitting jurisdictions to update their information more quickly.

Today's update shows that further progress has been made among some participating jurisdictions that had not completely adopted their implementation measures at the time of the Fifth update to Level 1 assessment report, published in July 2018. Notably, Korea and South Africa have completed the process of adopting measures that will enable them to implement the PFMI for all FMI types. Argentina, Chile and Indonesia have also reported progress in adopting measures that will facilitate their implementation of the PFMI, although additional progress is needed to achieve the highest rating for all FMI types. Thus, 23 of the 28 jurisdictions that participate in the implementation monitoring programme have adopted measures for all FMI types.

The CPMI and IOSCO encourage jurisdictions to continue to adopt measures that will enable them to implement the PFMI. To support future progress, the two bodies will continue to update the information on the Level 1 assessments through the online tracker, based on progress reported by participating jurisdictions.

Speeches

What is behind the recent slowdown?

Presentation by Mr Hyun Song Shin, Economic Adviser and Head of Research of the BIS, at the "Public Finance Dialogue" workshop arranged by German Federal Ministry of Finance and Centre for European Economic Research (ZEW), Berlin, 14 May 2019.

Proportionality in financial regulation: where do we go from here?

Speech by Mr Fernando Restoy, Chairman, Financial Stability Institute, Bank for International Settlements, at the BIS/IMF policy implementation meeting on proportionality in financial regulation and supervision, Basel, Switzerland, 8 May 2019.

Exchange rates and monetary policy frameworks in emerging market economies

Speech Lecture by Mr Agustín Carstens, General Manager of the BIS, at the London School of Economics, London, 2 May 2019.

Central banking and innovation: partners in the quest for financial inclusion

Speech by Mr Agustín Carstens, General Manager of the BIS, at the Reserve Bank of India, C D Deshmukh Memorial Lecture, Mumbai, 25 April 2019..

Central banks and financial authorities can promote financial inclusion by pursuing their core objectives. By watching over price stability, they ensure that money keeps its value. By ensuring financial stability, they prevent financial institutions from failing and taking people's savings with them. And, by delivering on these objectives, they reinforce trust in the financial system. Still, achieving financial inclusion requires other elements as well. Innovation can play a crucial role in breaking down barriers to inclusion, for citizens and financial institutions alike. Policymakers can catalyse and shape innovation by providing infrastructure and utilities, as well as rules and guidelines. Central banks and innovators should work together to further financial inclusion.

Market integration: the role of regulation

Speech by Mr Fernando Restoy, Chairman, Financial Stability Institute, Bank for International Settlements, at the IIF Market fragmentation roundtable, Washington DC, United States, 10 April 2019.

Global imbalances and the international footprint of firms: what role for exchange rates?

Speech by Mr Hyun Song Shin, Economic Adviser and Head of Research of the BIS, at the Joint G20/IMF seminar on global imbalances, Washington DC, 10 April 2019.

Firms operating globally and enmeshed in global value chains have powered global growth. One indication of global firms' impact on the current account balance is that corporate saving (ie undistributed profits of firms) is an important determinant of the current account balance. Even merchandise exports need to be seen through a new lens, as balance of payments exports diverge from customs-based exports, sometimes by large amounts.

Above all, the exchange rate loses traction in balancing current accounts when global firms are playing such an important role, and instead the financial channel acquired significance through the financing of working capital such as inventories and receivables. The dollar exchange rate emerges as an indicator of financial conditions, with a strong dollar associated with tighter financial conditions. These insights shed some light on the recent slowdown in manufacturing and trade.

There are two takeaways. First, the accounting basis for macroeconomics is looking increasingly creaky in an age of global firms and global value chains. We need to rethink some key elements.

Second, the financial channel of exchange rates has become more potent, even as the traditional trade channels have waned in importance.

The international role of the euro: down but not out

Speech by Mr Claudio Borio, Head of the Monetary and Economic Department of the BIS, at the public hearing before the European Economic and Social Committee on "Strengthening the international role of the euro: European and international perspectives", Brussels, 4 April 2019.

The euro has suffered numerous setbacks as an international currency. But its heft has increased in three significant and yet underappreciated respects. In the bond market, estimates of transatlantic spillovers suggest that their strength from the euro area to the United States has been intensifying and is now practically on a par with that of spillovers going in the opposite direction. In currency markets, the euro now plays an important role as an anchor for other currencies, including China's renminbi. And in commodity markets, although commodities are mainly priced in dollars, the producer countries' currencies have tended to move with the euro against the dollar, so that commodity prices, notably that of oil, are paradoxically less volatile in euros than in dollars - the exchange rate has acted as a shock

absorber. Regardless of its impact on pricing, denominating commodities in euros would have significant implications in other dimensions.

The work of the Financial Stability Institute: past, present and beyond

Welcoming remarks by Fernando Restoy, Chairman, Financial Stability Institute, Bank for International Settlements, at the Financial Stability Institute's 20th anniversary conference "A cross-sectoral reflection on the past, and looking ahead to the future", Basel, Switzerland, 12 March 2019.

The future of money and payments

Speech by Mr Agustín Carstens, General Manager of the BIS, at the Central Bank of Ireland, 2019 Whitaker Lecture, Dublin, 22 March 2019.

The bitcoin hype is over but attempts to create new forms of money or to engineer new ways to pay still appear almost weekly. Central banks have entered the fray, with about 70 percent either exploring or experimenting with so-called central bank digital currencies (CBDCs). A CBDC would allow ordinary people and businesses to make payments electronically using money issued by the central bank. But what are the consequences of such a system? How would it differ from what we have now? As money and payments form the backbone of the financial system, central banks need to understand the full consequences of opening up the monetary system for major surgery. Hence, central banks are treading cautiously, and only a very few central banks think it is likely that they will issue a CBDC.

Emerging markets aren't out of the woods yet

Extract of an article by Mr Agustín Carstens, General Manager of the BIS, and Mr Hyun Song Shin, Economic Adviser and Head of Research of the BIS, in the magazine Foreign Affairs, published on 15 March 2019.

Emerging markets had a bumpy 2018. Over the summer, Argentina and Turkey saw their currencies fall sharply as their economies ran into trouble. Argentina had to turn to the International Monetary Fund for a $57 billion loan. Commentators sharpened their pencils, ready to draw parallels with the wave of financial crises that swept over emerging markets in the late 1990s.

Yet most emerging-market economies came through the summer's turbulence more or less unscathed. That is largely thanks to big improvements in economic and financial management since the last major wave of crises in the 1990s. Most countries that succumbed to crises then have moved from pegged exchange rates to largely floating exchange rates and have adopted sounder monetary policies. Most also now have more resilient banking systems, the result of a general shift away from risky short-term bank funding in favor of long-term funding from bond markets.

Perhaps the most remarkable change since the crises of the 1990s has come in the way emerging-market countries finance their debt. Governments now borrow much more in their own currencies than in foreign ones, making them less vulnerable to runs and currency crises. But risks remain. Developing countries still have work to do if they are to shield themselves from the vicissitudes of global financial conditions.

The new role of central banks

Speech by Mr Agustín Carstens, General Manager of the BIS, to the Financial Stability Institute's 20th anniversary conference "A cross-sectoral reflection on the past, and looking ahead to the future", Basel, 12 March 2019.

BIS Quarterly Review, March 2019 - media briefing

Remarks by Claudio Borio and Hyun Song Shin.