

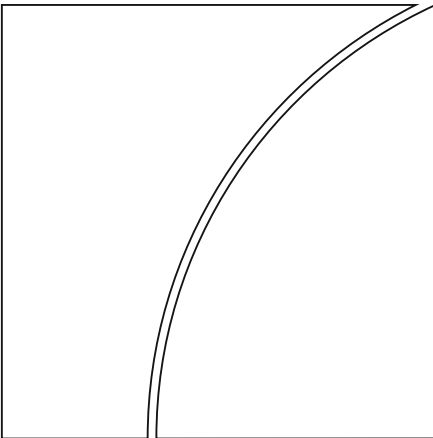


BANK FOR INTERNATIONAL SETTLEMENTS

BIS Quarterly Review

June 2018

International banking
and financial market
developments



BIS Quarterly Review
Monetary and Economic Department

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Notations used in this Review

billion	thousand million
e	estimated
lhs, rhs	left-hand scale, right-hand scale
\$	US dollar unless specified otherwise
...	not available
.	not applicable
–	nil or negligible

Differences in totals are due to rounding.

The term “country” as used in this publication also covers territorial entities that are not states as understood by international law and practice but for which data are separately and independently maintained.

Abbreviations

Currencies

ARS	Argentine peso	LTL	Lithuanian litas
AUD	Australian dollar	LVL	Latvian lats
BGN	Bulgarian lev	MAD	Moroccan dirham
BHD	Bahraini dinar	MXN	Mexican peso
BRL	Brazilian real	MYR	Malaysian ringgit
CAD	Canadian dollar	NOK	Norwegian krone
CHF	Swiss franc	NZD	New Zealand dollar
CLP	Chilean peso	OTH	all other currencies
CNY (RMB)	Chinese yuan (renminbi)	PEN	Peruvian new sol
COP	Colombian peso	PHP	Philippine peso
CZK	Czech koruna	PLN	Polish zloty
DKK	Danish krone	RON	Romanian leu
EEK	Estonian kroon	RUB	Russian rouble
EUR	euro	SAR	Saudi riyal
GBP	pound sterling	SEK	Swedish krona
HKD	Hong Kong dollar	SGD	Singapore dollar
HUF	Hungarian forint	SKK	Slovak koruna
IDR	Indonesian rupiah	THB	Thai baht
ILS	Israeli new shekel	TRY	Turkish lira
INR	Indian rupee	TWD	New Taiwan dollar
JPY	Japanese yen	USD	US dollar
KRW	Korean won	ZAR	South African rand

Countries

AE	United Arab Emirates	GT	Guatemala
AO	Angola	HK	Hong Kong SAR
AR	Argentina	HR	Croatia
AT	Austria	HU	Hungary
AU	Australia	ID	Indonesia
AZ	Azerbaijan	IE	Ireland
BD	Bangladesh	IL	Israel
BE	Belgium	IN	India
BG	Bulgaria	IQ	Iraq
BH	Bahrain	IR	Iran
BM	Bermuda	IS	Iceland
BR	Brazil	IT	Italy
BY	Belarus	JP	Japan
CA	Canada	KE	Kenya
CH	Switzerland	KR	Korea
CL	Chile	KW	Kuwait
CN	China	KY	Cayman Islands
CO	Colombia	KZ	Kazakhstan
CR	Costa Rica	LB	Lebanon
CY	Cyprus	LK	Sri Lanka
CZ	Czech Republic	LT	Lithuania
DE	Germany	LU	Luxembourg
DK	Denmark	LV	Latvia
DO	Dominican Republic	MA	Morocco
DZ	Algeria	MM	Myanmar
EA	euro area	MO	Macao SAR
EC	Ecuador	MT	Malta
EE	Estonia	MU	Mauritius
EG	Egypt	MX	Mexico
ES	Spain	MY	Malaysia
ET	Ethiopia	NG	Nigeria
FI	Finland	NL	Netherlands
FO	Faeroe Islands	NO	Norway
FR	France	NZ	New Zealand
GB	United Kingdom	OM	Oman
GR	Greece	PE	Peru

Countries (cont)

PH	Philippines	TH	Thailand
PK	Pakistan	TR	Turkey
PL	Poland	TW	Chinese Taipei
PT	Portugal	UA	Ukraine
RO	Romania	US	United States
RS	Serbia	UY	Uruguay
RU	Russia	VE	Venezuela
SA	Saudi Arabia	VG	British Virgin Islands
SD	Sudan	VN	Vietnam
SE	Sweden	ZA	South Africa
SG	Singapore	AE	advanced economy
SK	Slovakia	EME	emerging market economy
SI	Slovenia		

The credit default swap market: what a difference a decade makes¹

Over the last decade, the size and structure of the global credit default swap (CDS) market have changed markedly. With the help of the BIS derivatives statistics, we document how outstanding amounts have fallen, central clearing has risen and the composition of underlying credit risk exposures has evolved. Netting of CDS contracts has increased, due to the combination of a higher share of standardised index products and the clearing of such contracts via central counterparties. In turn, this has led to a further reduction in counterparty risk. Underlying credit risks have shifted towards sovereigns and portfolios of reference securities with better credit ratings. The distribution of credit risks across counterparty categories has remained broadly unchanged.

JEL classification: G23, G28.

After its inception in the early 1990s, the credit default swap (CDS) market saw a steady increase in volumes, followed by a rapid surge in growth in the run-up to the Great Financial Crisis (GFC) of 2007–09.² The size of the market and the role it played in the crisis led to calls for strengthened transparency and resilience (CGFS (2009)).

Since then, the market has undergone a series of important changes. Market participants have reduced their exposures and eliminated redundant contracts – a process that started before the GFC but intensified in its immediate aftermath. Post-crisis reforms have included standardisation of contracts, expanded reporting requirements, mandatory central clearing and margin requirements for a wide range of derivatives (FSB (2017)).

This feature builds on BIS derivatives data to take stock of developments in the CDS market from the GFC to end-2017. The emphasis is on the more recent, and ongoing, changes, notably those reflecting the decline in inter-dealer positions and the rise of central counterparties (CCPs). In the first section, we document the continuous decline in outstanding notional amounts. We argue that, in the immediate aftermath of the GFC, this was mostly driven by the compression of contracts and the

¹ The authors would like to thank Stefan Avdjiev, Claudio Borio, Benjamin Cohen, Marco D’Errico, Alex Joia, Cathérine Koch, Paul Lewis, Robert McCauley, Patrick McGuire, Thomas O’Keeffe, Denis Pêtre, Hyun Song Shin, Nikola Tarashev, Nicholas Vause, Laurence White and Philip Wooldridge for helpful comments and Kristina Mičić for excellent research assistance. The views expressed in this article are those of the authors and do not necessarily reflect those of the BIS.

² In a CDS contract, a protection buyer purchases insurance against a credit event of a reference entity (say, the bond of a given sovereign) from a protection seller. For that protection, the buyer pays a regular premium, whereas the seller commits to compensate the buyer if a credit event occurs.

Key takeaways

- Outstanding notional amounts of credit default swap (CDS) contracts fell markedly, from \$61.2 trillion at end-2007 to \$9.4 trillion 10 years later. During the Great Financial Crisis (GFC) and its aftermath this was driven by compression, whereas in recent years it appears to have been driven by the rise of central clearing.
- The share of outstanding amounts cleared via central counterparties has risen rapidly, from 17% in mid-2011 to 55% at end-2017, while the share of inter-dealer trades has fallen, from 53% to 25%. Box A discusses different measures of clearing rates.
- The share of CDS underlying credits rated investment grade has risen post-GFC, to 64% at end-2017. The share of CDS on sovereign entities has also risen (16% as of end-2017).
- Reporting dealers continue to be net buyers of CDS protection (\$258 billion at end-2017). Hedge funds have markedly reduced their net purchases of protection from dealers, to \$16 billion at end-2017.
- Box B reviews global residential property price developments, using data compiled by the BIS.

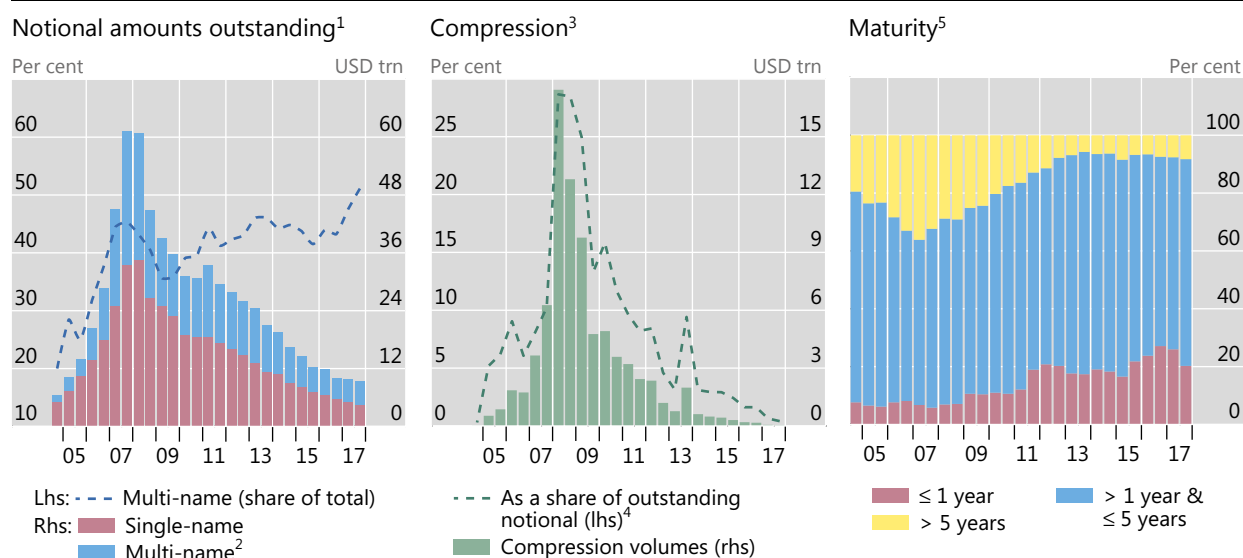
reduction of exposures. In the second section, we turn to the growth of CCPs, which have been a key factor in shaping more recent market developments. Clearing penetration is higher in the multi-name market, and clearing is highly concentrated on a handful of CCPs. The third section analyses how the underlying risks have shifted and argues that the combination of a rapidly rising share of standardised index products and increased clearing via CCPs has helped to reduce counterparty risks. We also document that credit risks have not concentrated at any specific type of counterparty.

The global CDS market: rapid expansion and steady decline

The BIS monitors derivatives markets through several data sets (Wooldridge (2016)). The *semiannual over-the-counter (OTC) derivatives statistics* provide a regular, comprehensive and global overview. These data capture the consolidated positions of about 70 banks and other reporting dealers based in 12 countries (ie each dealer reports the positions of all entities worldwide belonging to its corporate group). As the CDS market tends to be concentrated (Stulz (2010), Abad et al (2016)), these data are representative of global activity. An even more comprehensive view of the market emerges every three years from the *Triennial Central Bank Survey*. The most recent instalment, in 2016, compiled OTC derivatives data from more than 400 reporting institutions in 46 countries. The survey data showed that the dealers reporting to the semiannual statistics covered more than 99% of the global CDS market at end-June 2016.³

After an almost tenfold increase in the run-up to the GFC, the global CDS market has shrunk virtually without interruption since. In terms of *notional amounts outstanding*, the market has seen a continuous decline after peaking at roughly \$61.2 trillion at end-2007 (Graph 1, left-hand panel; see also *online interactive graphs*). A similar pattern can be observed for the *gross market value* of outstanding positions,

³ This ratio was similar in previous vintages of the Triennial Survey. Since May 2018, information from the semiannual statistics and Triennial Surveys is merged and published as one data set (BIS (2018)).



¹ Gross notional values of all contracts concluded but not yet settled on the reporting date. ² CDS contract that references more than one name (ie portfolio or basket CDS or CDS index). ³ At half-year end. Notional amount compressed by triReduce services over the period. ⁴ Share of compressed volumes (TriOptima data) in the total notional amounts outstanding of CDS (BIS derivatives statistics). ⁵ Distribution of notional amounts of outstanding CDS by maturity.

Sources: TriOptima; BIS derivatives statistics.

which capture the cost of replacing contracts at market prices prevailing on the reporting date. Whereas notional amounts reflect the maximum potential counterparty exposure of the protection seller to the protection buyer, gross market values provide an indication of current credit risk exposures.⁴

The post-GFC decline has been broad-based, as seen in the simultaneous reduction of both single-name and multi-name contracts.⁵ In the years immediately before and after the crisis, compression of bilateral and multilateral portfolios accounted for a large share of the decline in notional amounts outstanding.⁶ Compression is a technique through which two or more counterparties tear up existing contracts and replace them with new ones. This reduces both the number of contracts and gross notional amounts while keeping net exposures fixed. Since the immediate post-crisis period, compression outside CCPs has been less common, as it declined substantially from its peak in 2008 (Graph 1, centre panel).⁷

⁴ The term “gross” indicates that contracts with positive and negative replacement values with the same counterparty are not netted.

⁵ Single-name CDS are credit derivatives where the reference entity is a specific debtor such as a non-financial corporation, a bank/dealer, or a sovereign. Multi-name or index CDS refer to contracts where the reference entity is composed of more than one name.

⁶ See eg Ledrut and Upper (2007) or D’Errico and Roukny (2017). Dealers drove both the sharp pre-crisis rise in notional amounts outstanding and the compression that took place around the crisis. For a detailed account of the role of compression in the aftermath of the crisis and how it affected notional amounts outstanding during 2007–09, see Vause (2010).

⁷ Trade compression remains an important activity in other derivatives markets. For a broader overview of compression, see Schrimpf (2015). For more details on compression in [interest rate swaps](#), where most of this activity currently takes place, see Ehlers and Eren (2016).

The market has also become increasingly standardised, reflecting the spread of documentation standards such as the “Big Bang” and “Small Bang” initiatives in 2009 (Augustin et al (2014)). In particular, contract maturity is concentrated around the five-year mark (Abad et al (2016)). Contracts with maturities beyond five years have steadily declined post-GFC (Graph 1, right-hand panel).

The rise of central counterparties

The reduction in notional amounts outstanding has been most pronounced in inter-dealer positions. While these used to dominate the market (Peltonen et al (2014), D’Errico et al (2018)), outstanding inter-dealer positions shrank from around \$17.7 trillion in mid-2011 to \$2.3 trillion at end-2017. Inter-dealer positions fell faster than the overall market in recent years, declining from 57% of outstanding notional at end-2011 to just 25% at end-2017 (Graph 2, left-hand panel).

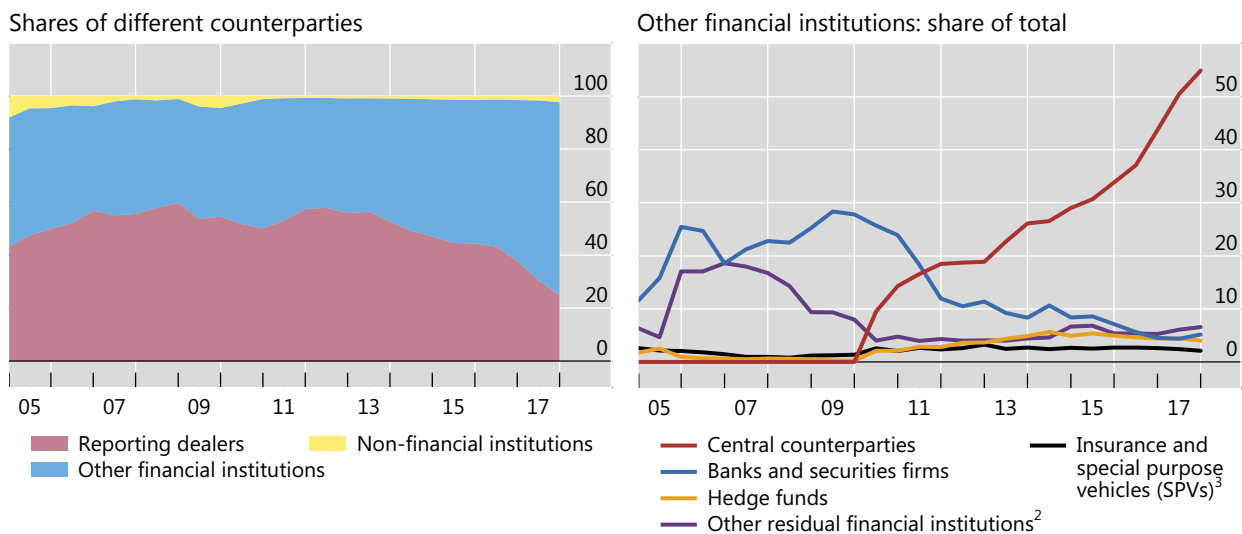
The decline in inter-dealer positions has coincided with the rise of CCPs, as the share of dealers’ positions vis-à-vis CCPs has grown at a remarkable pace. At end-December 2017, the reported amount reached 55% of outstanding notional amounts (Graph 2, right-hand panel), although this figure is likely to overestimate the actual share of cleared outstanding contracts (Box A). The share of positions with non-dealer banks peaked at around 30% during the GFC and has since declined continuously.

This suggests that CCPs are likely to have been a key driver behind the reduction in inter-dealer positions and notional amounts outstanding in recent years. In principle, the reductions could be driven by: (i) the interposition of a CCP as a counterparty between dealers (“novation”); (ii) a reduction in notional through multilateral netting by CCPs; and/or (iii) a contraction in underlying inter-dealer activity.

Changing market structure: retreat of inter-dealer trades and the rise of CCPs

Percentage of notional amounts outstanding¹ at end of period

Graph 2



¹ Gross notional values of all contracts concluded but not yet settled on the reporting date. ² Excluding reporting dealers. ³ Including financial guaranty firms, segregated portfolio companies (SPCs), and special purpose entities (SPEs).

Source: BIS derivatives statistics.

Calculating clearing rates in BIS derivatives statistics

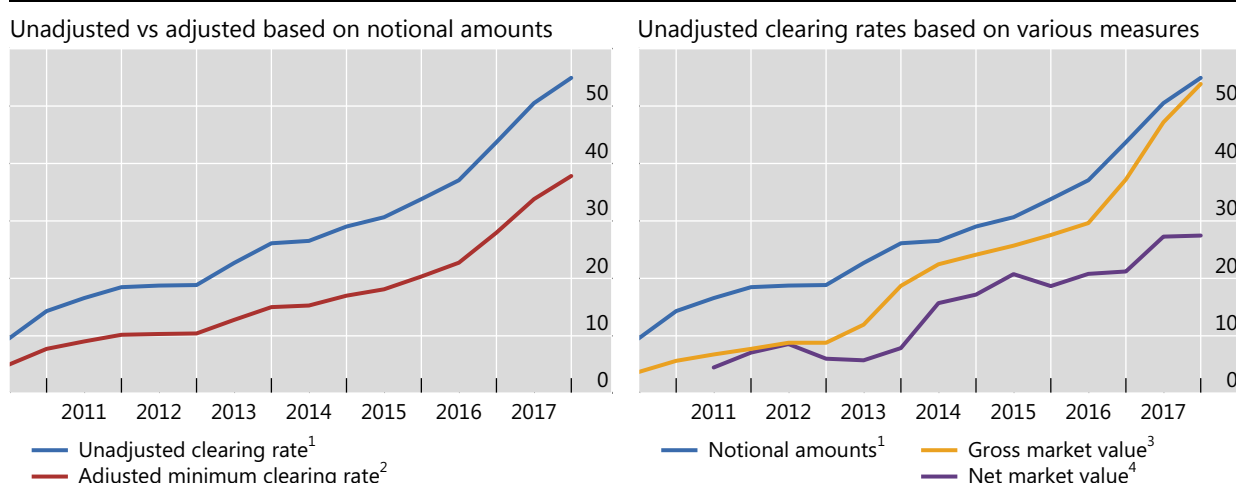
The calculation of clearing rates – the proportion of contracts cleared through CCPs – may seem straightforward, but several complications arise. One fundamental issue relates to whether to use trading activity or outstanding contracts (ie flow or stock data). Clearing rates based on trading activity, such as turnover, can better capture the degree of clearing of current contracts. However, such data overweigh short-term contracts, which are turned over more frequently. For the CDS market, the BIS covers only outstanding contracts.

A second issue is how to address the double-counting of dealer contracts that are novated to CCPs. In the BIS derivatives statistics, dealers report outstanding contracts by counterparty type. Thus double-counting of inter-dealer positions, including cross-border inter-dealer trades, can be eliminated. However, indirect inter-dealer trades – ie those that are novated to a CCP – are still counted twice. Novation effectively replaces one inter-dealer trade with two dealer-to-CCP trades. Since a CCP typically acts as a counterparty to two dealers, counting each dealer's position with the CCP again introduces double-counting. Ignoring this problem, the clearing rate for the CDS market was 55% at end-December 2017, which can be treated as an upper bound (Graph A1, left-hand panel). Dividing the positions with CCPs by two yields an adjusted minimum clearing rate, as it assumes that *all* positions with CCPs are initially inter-dealer contracts.^① This lower bound on the clearing rate was around 38% at end-December 2017.

Clearing rates on the rise, regardless of the measure used

In percentage points, end of period

Graph A1



¹ Calculated as $TNAO \text{ vis-à-vis } CCP / TNAO$, where $TNAO$ denotes total notional amounts outstanding. ² Calculated as $(TNAO \text{ vis-à-vis } CCP / 2) / (TNAO - (TNAO \text{ vis-à-vis } CCP / 2))$. ³ Calculated as total gross market values vis-à-vis CCP / total gross market values. ⁴ Calculated as total net market value vis-à-vis CCP / total net market value.

Source: BIS derivatives statistics.

A third issue is the choice of inputs used to measure clearing rates for outstanding contracts, such as notional amounts, gross market values or net market values. Notional outstanding amounts are a natural, and indeed the most common, choice for computing clearing rates based on outstanding contracts. But using market values instead can provide interesting insights. Gross market values, for instance, are a closer measure of the amount that might be lost in a credit event. If credit risk shrinks, so does the market value of the contract. Net market values, in addition, take into account legally enforceable netting agreements (among CDS contracts and not considering collateral), which further reduces values. Yet market values may introduce a downward bias in clearing rates. Newer, standardised contracts, which have zero market value at inception, are likely to be cleared, whereas legacy and bespoke contracts are more likely to be in the money (ie have a high market value) and less likely to be cleared. While all the different measures yield a rising trend in clearing rates, the steepness of the trend differs (Graph A1, right-hand panel). Recently, clearing rates based on notional amounts and gross market values have converged, as uncleared legacy contracts with high market values have been maturing. Using net market values yields significantly and persistently lower clearing rates, as netting is more common for cleared contracts.

^① This is the most realistic of the two extreme assumptions, as the clearing members of the CCPs engaged in CDS clearing are a subset of BIS reporting dealers. Therefore, for the CDS market at least, the minimum estimated clearing rate is likely to be very close to the actual one.

Novation replaces a single inter-dealer trade with two offsetting trades between the respective dealers and the CCP. This mechanically reduces the share of inter-dealer trades. However, this effect can explain only a relatively small portion of the decline in inter-dealer positions (13% out of the 86% total decline in notional amounts between end-2011 and end-2017).

Netting by CCPs is likely to account for much of the remaining decline in outstanding notional amounts. CCPs net offsetting positions across counterparties, thereby reducing reported gross notional amounts outstanding – in a similar fashion to the workings of compression around the GFC. Dealers have regulatory incentives to take advantage of opportunities for netting, as it reduces margining requirements and alleviates leverage ratio constraints.

Trading activity may also have contributed to the overall decline in notional amounts outstanding, but probably to a smaller extent. Underlying trading activity, especially for index products, does not seem to have declined substantially.⁸ Furthermore, other indicators also point to sustained market activity: liquidity has improved (Loon and Zhong (2014, 2016)), and pricing anomalies reflecting thin markets such as the CDS-bond basis have disappeared (Markit (2016)).⁹

The penetration of clearing has been highest in the multi-name market (Graph 3, left-hand panel), which consists predominantly of CDS indices. At end-December 2017, the share of all single-name contracts (in terms of notional amounts) cleared with CCPs stood at 44%, compared with 65% for multi-name contracts.¹⁰ Multi-name contracts are more standardised, hence easier to clear. Furthermore, in key jurisdictions, such as the United States and the European Union, clearing of CDS index products has become mandatory. In the United States, single-name CDS products have generally remained outside the scope of post-crisis reforms designed to increase central clearing such as central clearing requirements and margin requirements for bilateral uncleared trades (FSB (2017)).

The clearing of CDS contracts is highly concentrated among a small number of major CCPs. ICE Clear Europe, based in the United Kingdom, followed by ICE Clear Credit, based in the United States, dominate euro-denominated contracts (Graph 3, centre panel). LCH CDS Clear has also made inroads into this segment in recent years. ICE Clear Credit, in turn, dominates the dollar segment (Graph 3, right-hand panel).¹¹ Some CCPs specialise in contracts in certain currencies, such as the CME in US dollars or JSCC in Japanese yen.¹²

⁸ Data on the count of outstanding trades from DTCC's Trade Information Warehouse, which is a rough proxy for market activity, show a mild reduction in the index market and a more substantial one in the single-name market (see [ISDA Swapsinfo](#)).

⁹ The CDS-bond basis is the difference between the CDS rate (paid for credit protection) and the credit spread of the underlying bond. The persistent and wide negative basis spread after the GFC and during the euro area crisis presented arbitrage opportunities for institutions with available balance sheet resources, such as hedge funds. A negative basis spread implies that an investor can earn a riskless premium by purchasing credit protection (paying the CDS rate) and interest rate risk protection (paying the swap rate) while holding the underlying bond (receiving the bond rate).

¹⁰ As discussed in Box A, the clearing rates obtained without adjusting for potential double-counting of inter-dealer positions novated to CCPs overestimate the share of cleared positions. The adjusted minimum clearing rates for single-name and multi-name contracts are 29% and 48%, respectively.

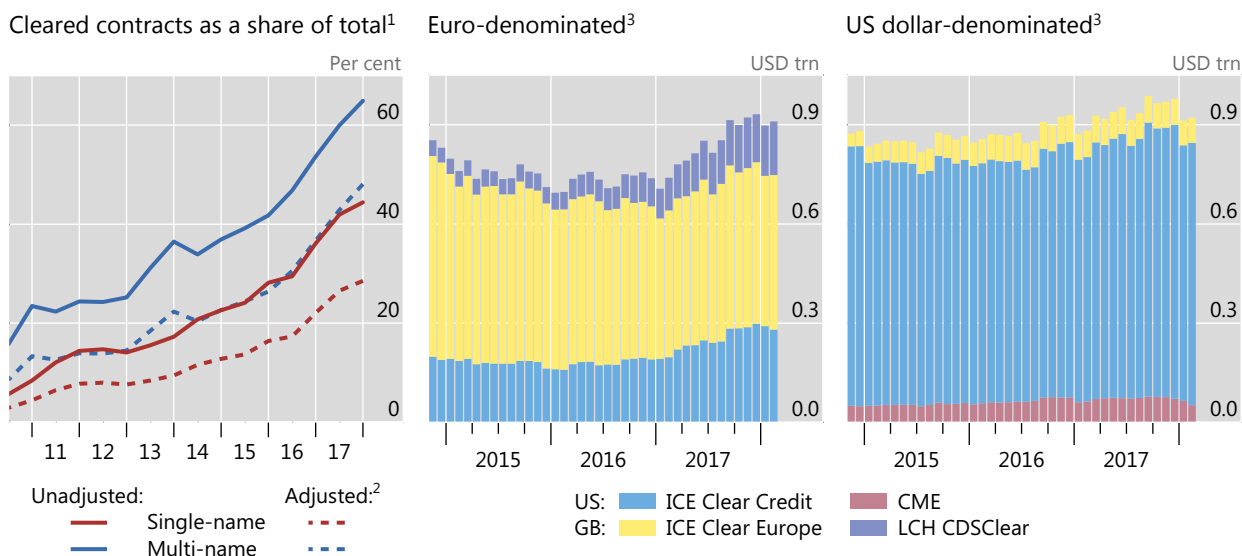
¹¹ The concentration of the market in terms of currencies applies also to the non-cleared segment. The lion's share is taken by trades in US dollars and euros (Abad et al (2016)).

¹² We do not show clearing amounts for the yen, as its overall market share is around 0.1%.

Clearing by instrument, currency and CCP

Notional amounts outstanding

Graph 3



¹ Calculated as the share of contracts cleared with a CCP in the total of a particular type of a contract. Amounts are taken at half-year end. ² Figures are adjusted to avoid potential double-counting of inter-dealer trades novated to CCPs. Adjusted values for each market (single-name and multi-name) are calculated as $(CCP/2) / (Total - CCP/2)$, where *CCP* refers to the notional amounts outstanding vis-à-vis CCPs in the respective market, and *Total* to the total notional amounts outstanding in the respective market. The adjusted figures serve as a lower bound to the actual clearing rate (Box A). ³ At month-end. Notional amounts cleared by CCP.

Sources: Clarus Financial Technology; BIS derivatives statistics.

Where have the risks shifted to?

The overall decline in global outstanding CDS contracts has coincided with significant compositional shifts in risk exposures. CDS entail exposure to two types of risk: the underlying credit risk of the reference entity and the counterparty risk faced by the CDS protection buyer. We argue that, on balance, both types of risk have diminished. Underlying credit risks have shifted towards sovereigns and portfolios of underlying reference securities with overall better credit ratings. The rise of CCPs and the increased standardisation in the CDS market have facilitated the netting of exposures. This, in turn, has helped to lower counterparty risks. Despite these structural changes, credit risks have not concentrated at specific counterparty types.

Underlying reference entities

Outstanding notional amounts on sovereign entities increased substantially in the aftermath of the GFC and during the euro area crisis, from around \$1.6 trillion (3.4% of the market) in mid-2007 to around \$3.3 trillion (13.3%) at mid-2013 (Graph 4, left-hand panel). The timing of this increase points to the role of growing solvency concerns in the euro area in late 2011 and the first half of 2012. In addition, a ban on short sales of European sovereign debt, introduced by Germany in May 2010 and permanently adopted by the European Union in November 2012, may have nudged

investors towards replicating these exposures by buying CDS contracts instead.¹³ The share of sovereign reference entities in the overall market continued to rise, reaching around 16% at end-2017, even though gross notional amounts declined.

Despite the growth of CDS on sovereign entities, those on non-sovereign names still make up the majority of the market. Within the non-sovereign segment, the rise of index products has shifted credit risk exposures away from individual financial and non-financial firms (Graph 4, centre panel).¹⁴

The post-crisis shift towards sovereign and index products went hand in hand with an overall improvement in the credit quality of the underlying reference entities. The share of outstanding notional amounts with investment grade underlying credits increased from 42% at end-2007 to 64% at end-2017 (see *online interactive graphs*).

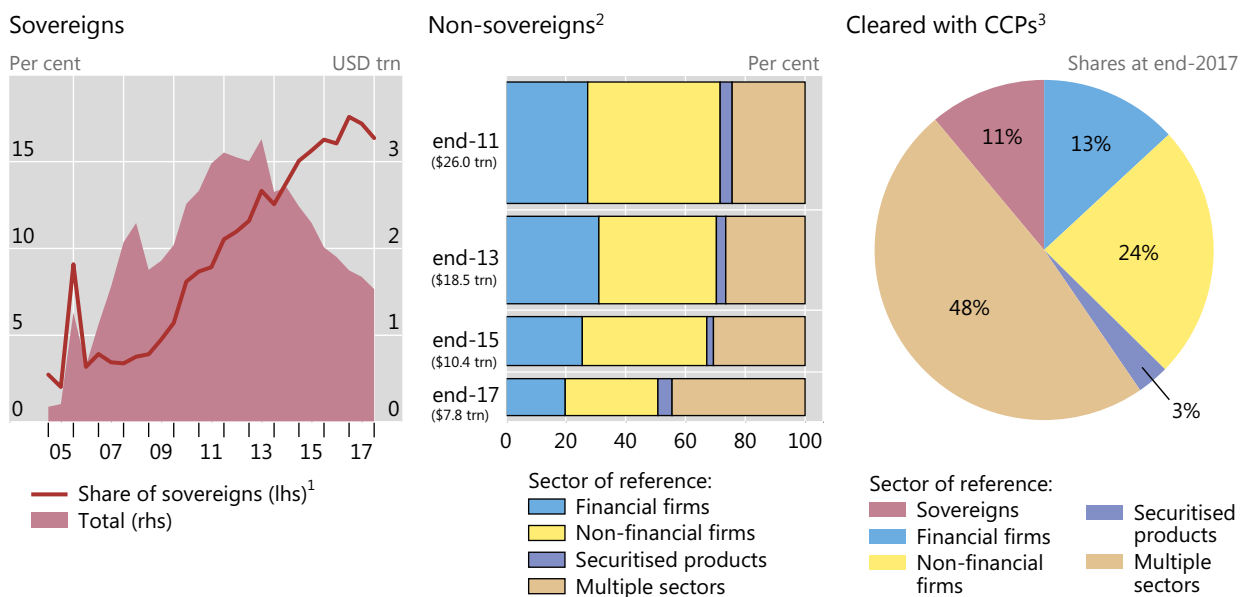
Counterparty risk: standardisation, CCPs and netting

A significant factor behind the rise of index products was the post-GFC drive to reduce counterparty risks through standardisation (Vause (2010)). Standardisation increases the likelihood of a counterparty holding a CDS position with exactly offsetting cash flows, which facilitates netting. The resulting reduction of net credit exposures can be especially large for major CDS dealers, which by the nature of their business tend to have large gross but small net exposures. Clearing via CCPs has

Sectors of reference entities

Notional amounts outstanding at end of period

Graph 4



¹ Share of notional amounts outstanding referencing sovereigns against all sectors of reference. ² The width of the bars indicates the total notional amounts outstanding (in parentheses). ³ Positions reported vis-à-vis CCPs, for all sectors of reference.

Source: BIS derivatives statistics.

¹³ The short-sale ban, which included a ban on CDS protection buying without possession of the underlying reference asset (so-called "naked" CDS), may itself have contributed to wider CDS spreads. See eg Duffie (2010) or Pu and Zhang (2012).

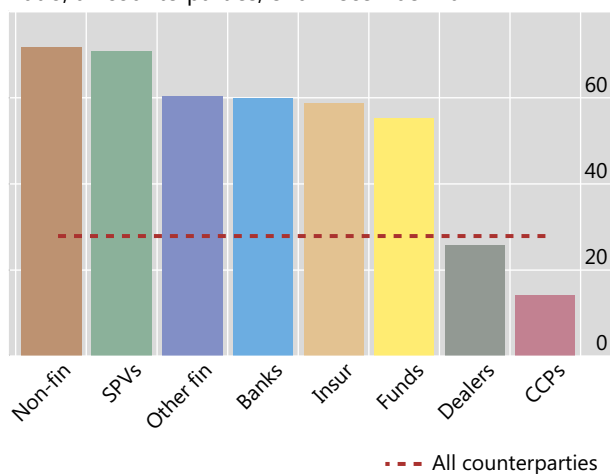
¹⁴ Prior to 2011, the BIS semiannual OTC derivatives statistics do not allow a precise breakdown into the subsectors of non-sovereign exposures.

Ratio of net to gross market values by type of counterparty¹

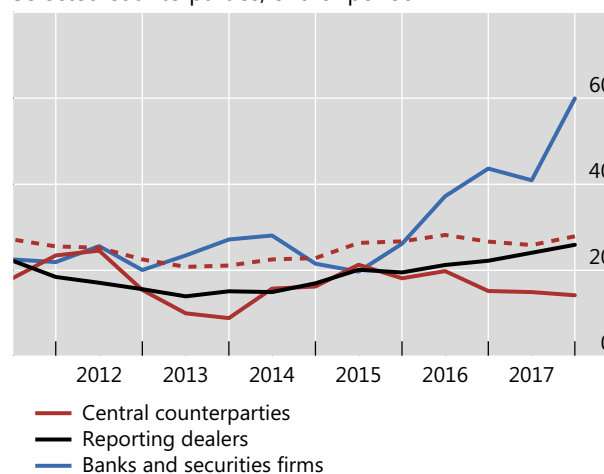
In percentage points

Graph 5

Ratio, all counterparties, end-December 2017



Selected counterparties, end of period



Banks = banks and securities firms; CCPs = central counterparties; Dealers = reporting dealers; Funds = hedge funds; Insur = insurance and financial guaranty firms; Non-fin = non-financial institutions; Other fin = other financial institutions; SPVs = special purpose vehicles, segregated portfolio companies (SPCs) and special purpose entities (SPEs).

¹ For each counterparty type, ratio = net market values/gross market values. Gross market values are the sum of the absolute values of all outstanding derivatives contracts with either positive or negative replacement values evaluated at market prices prevailing on the reporting date. Net market values equal gross market values minus the amounts netted with the same counterparty across all risk categories under legally enforceable bilateral netting agreements (before collateral).

Source: BIS derivatives statistics.

widened the scope for netting further, as it enables netting across different counterparties (Graph 4, right-hand panel).¹⁵

The ratio of net to gross market values of CDS contracts sheds light on the incidence of netting. Net market values¹⁶ adjust gross market values for legally enforceable bilateral netting (not taking into account any posted collateral). The lower the ratio of net to gross market values, the higher the degree of netting.

CCPs and dealers boast the lowest ratios – that is, the highest implicit rate of netting (Graph 5, left-hand panel). For bilateral trades with other counterparties that are not CCP clearing members, netting appears to be significantly lower.¹⁷ Indeed, the emergence of CCPs appears to have reduced netting activity by (non-reporting) banks and securities firms over time (Graph 5, right-hand panel).

¹⁵ CCPs do not necessarily increase the scope for netting. They only allow multilateral netting for a given product, whereas bilateral CDS contracts, which are not cleared through a CCP, allow cross-product netting (eg netting between different CDS products or different types of derivatives). In less standardised markets (eg the interest rate swap market), the scope for bilateral cross-product netting may outweigh that for multilateral netting of a given product through CCPs.

¹⁶ Analysing market values instead of notional amounts outstanding can lead to a downward bias. If contracts with high market values (such as longer-term contracts) are netted to a greater extent, then the ratio of net to gross market values would drop – independently of the actual degree of netting. Whereas this is likely to be the case for interest rate swaps, we do not see any reason why such a bias would emerge in a significant way for the CDS market.

¹⁷ The netting ratios for non-CCP counterparties, however, are likely to understate the true degree of netting, as they do not take into account cross-product netting across different types of derivatives (for instance, CDS and equity-based derivatives). The ratio of net to gross market values presented here reflects only multilateral netting for a given type of product.

Net credit protection bought by reporting dealers vis-à-vis other counterparties

At end-December 2017

Table 1

Counterparty sector ¹	Bought (1)	Sold (2)	Net (1) – (2)	Total (1) + (2)	Net/Total
	USD bn				Per cent
Total	4,805.76	4,548.13	257.63	9,353.89	2.75
Non-financials	121.47	94.83	26.64	216.29	12.32
Other financials	3,522.06	3,294.15	227.90	6,816.21	3.34
Central counterparties	2,579.49	2,556.00	23.49	5,135.49	0.46
Banks	289.49	197.18	92.31	486.67	18.97
Insurers	62.62	61.19	1.43	123.82	1.15
Special purpose vehicles	51.01	25.45	25.56	76.47	33.43
Hedge funds	179.75	195.53	-15.78	375.28	-4.20

¹ Protection bought and sold vis-à-vis a given counterparty sector and all sectors of underlying risk.

Source: BIS derivatives statistics.

On balance, CCPs and standardisation have helped to reduce credit and counterparty risk. Gross exposures have shrunk as the scope for cross-counterparty netting of cleared and standardised contracts has widened. While counterparty risks are now absorbed by CCPs, several safety buffers to reduce those risks have been put in place, such as default funds, multiple levels of margin requirements, and equity and reserve requirements for CCPs.

Credit risk shifting across counterparties

Despite the structural changes in the market, the distribution of exposures across counterparties has remained fairly stable and has not concentrated at specific counterparty types. Reporting dealers continue to be net buyers of protection, which is likely to reflect trading inventories to fulfil their market-making role but also serves to insulate them from adverse effects in case of credit events. With the retreat of monoline insurers from the CDS market, other financials – in particular non-reporting banks – have been absorbing most of those credit risks. Their ratio of net protection bought to total CDS positions is, however, relatively small (Table 1, last column). Non-financial counterparties have also been significant net absorbers of credit risks; but their CDS market share is much smaller (2% at end-2017). The ratios in the last column of Table 1 have been broadly constant post-GFC.

Hedge funds continue to be net buyers of protection from dealers, in particular for single-name CDS. This is likely to be related to arbitrage opportunities that arose around the GFC and the euro area crisis (the negative CDS-bond basis; see Augustin et al (2014) and Gyntelberg et al (2017)). As basis spreads have narrowed in recent years, hedge funds have markedly reduced their net purchases of CDS protection vis-à-vis reporting dealers from around \$307 billion (32% of hedge funds' outstanding amounts) at end-June 2011 to \$15.8 billion (4.2%) at end-2017 (Table 1, last row).¹⁸

¹⁸ Table 1 presents net purchases from the viewpoint of reporting dealers. Positive net purchases of hedge funds are therefore displayed as negative net purchases of dealers vis-à-vis hedge funds.

Global real housing prices

Robert Szemere

Global real residential property prices increased by 2% from end-2016 to end-2017, to stand 7% above their pre-Great Financial Crisis (GFC) level.^①

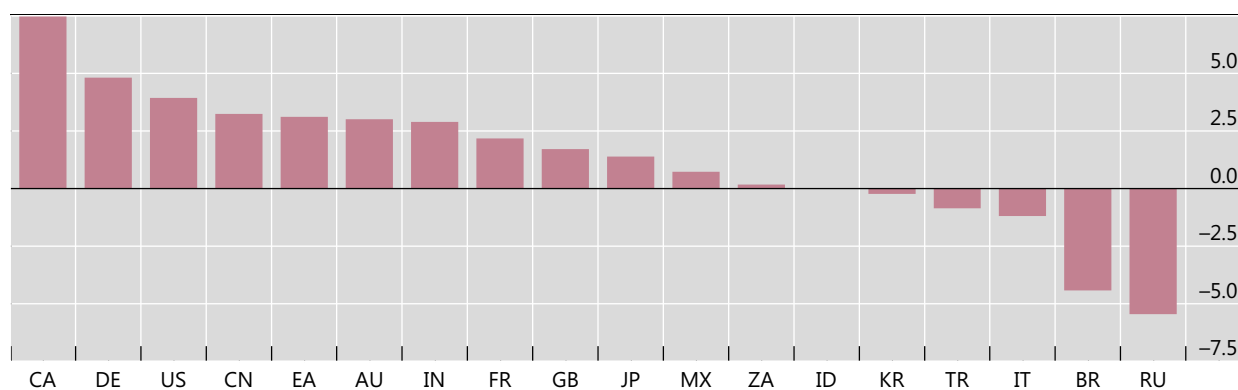
In advanced economies (AEs), prices grew by 5% on average in nominal terms and 3% in real terms – ie deflated by the CPI – from end-2016 to end-2017.^② The rise was particularly marked in Canada; prices rose more moderately in Australia, the United States and the euro area as a whole (Graph B1). Among the euro area countries, real property prices increased significantly in Germany, Ireland and Spain but fell slightly in Italy. Prices increased only slightly in Japan and the United Kingdom.

Turning to emerging market economies (EMEs), prices increased by only 4% in nominal terms and 1% in real terms in 2017. Compared with 2016, real prices decelerated significantly in China and India and broadly stabilised in Indonesia, Korea, Mexico and South Africa. They continued to fall markedly in Brazil and Russia.

Real residential property prices in selected countries in 2017

Year-on-year changes in Q4 2017, in per cent

Graph B1



Source: BIS selected residential property price series.

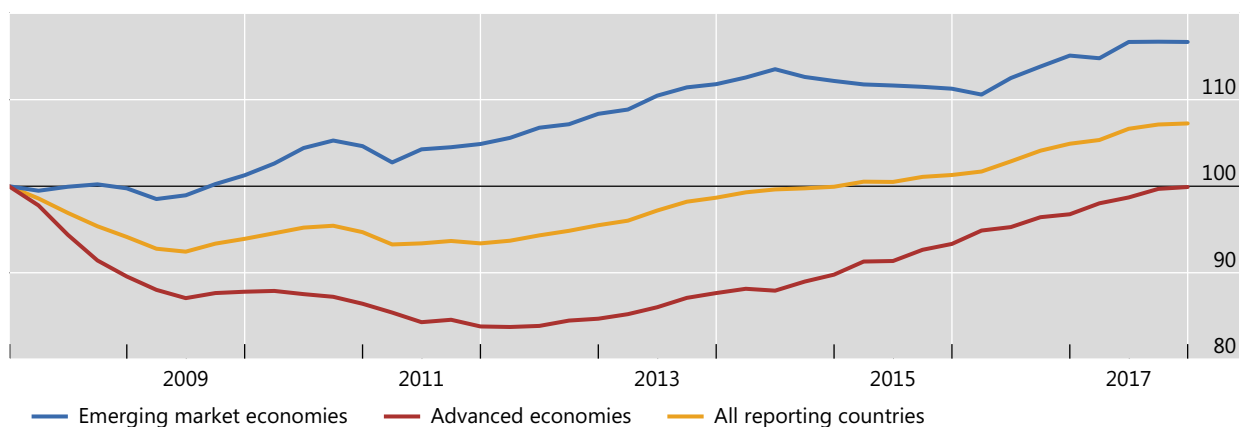
Taking a longer-term perspective, property prices continue to recover slowly worldwide. After a sharp decline in the aftermath of the GFC, average real residential property prices in AEs bottomed out in 2011–12 (Graph B2). Since 2012, they have increased continuously and are now back to their pre-GFC levels. But the situation varies across countries. Real prices are still significantly below their 2007 levels, by 3–7%, in the euro area, the United Kingdom and the United States (Graph B3). Within the euro area, however, there are major disparities. Post-GFC, real property prices have risen by 22% in Germany, fallen by 7% in France, and dropped quite sharply, by 24–33%, in Ireland, Italy and Spain. Regarding the AEs that were less affected by the GFC, real housing prices have almost returned to their pre-GFC levels in Japan, and are significantly above them in Australia and Canada (Graph B3).

Mainly as a result of their marked expansion in the early 2010s, real residential property prices in EMEs are 16% above the levels registered before the crisis (Graph B2). Prices have almost doubled since the crisis in India and are close to 50% higher in Brazil, despite the significant recent decline in that country. They are also above their pre-crisis levels in China, Mexico and Turkey, but below them in Indonesia and South Africa. In Russia, they have fallen by more than 50% compared with 2007 (Graph B3).

Aggregate developments in real residential property prices

Q4 2007 = 100

Graph B2



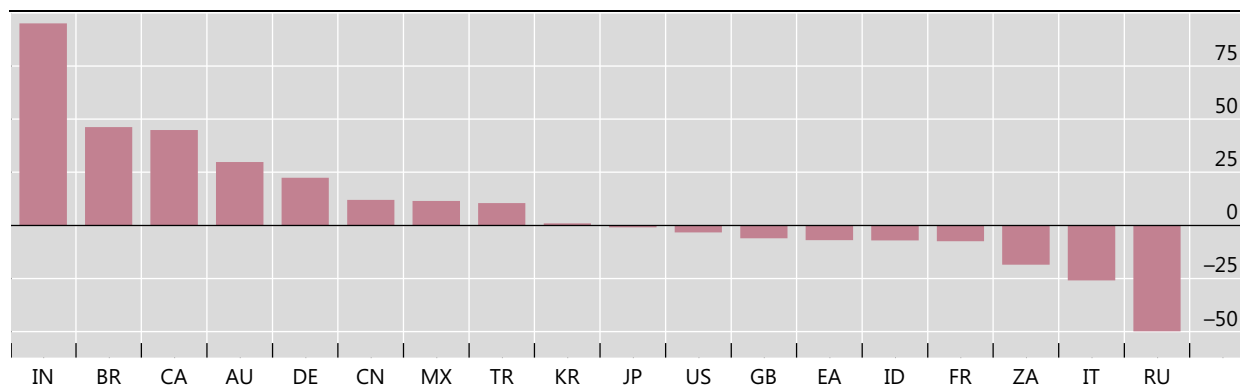
Estimated weighted averages based on rolling GDP and PPP exchange rates.

Sources: BIS selected residential property prices series; BIS calculations.

Real residential property prices in selected countries¹ since 2007

Cumulative changes from end-2007 to end-2017, in per cent

Graph B3



¹ For Turkey, BIS estimates based on market data; for India, cumulative change from Q1 2009; for Japan, cumulative change from Q2 2008 (comparable data not available for earlier periods). For China, the BIS calculation is based on the average of the prices reported for the 70 largest cities.

Source: BIS selected residential property prices series.

① The data discussed here are CPI-deflated, unless otherwise stated. Residential property prices refer to the national average or its closest proxy for each country. Regional aggregates and global data are weighted using GDP numbers adjusted for PPP for the reporting countries. A statistical release focusing on the most recent developments is published on the BIS website every February, August and November. ② GDP-weighted averages using PPP exchange rates.

References:

Scatigna, M and R Szemere (2015): "BIS collection and publication of residential property prices", *Irving Fisher Committee Bulletin*, no 39, April.

Scatigna, M, R Szemere and K Tsatsaronis (2014): "Residential property price statistics across the globe", *BIS Quarterly Review*, September, pp 61–76.

Shim, I and K Kuttner (2013): "Can non-interest rate policies stabilise housing markets? Evidence from a panel of 57 economies", *BIS Working Papers*, no 433, November.

Tissot, B (2014): "Monitoring house prices from a financial stability perspective – the BIS experience", International Statistical Institute Regional Statistics Conference, November.

References

- Abad, J, I Aldasoro, C Aymanns, M D'Errico, L Fache-Rousová, P Hoffmann, S Langfield, M Neychev and T Roukny (2016): "Shedding light on dark markets: first insights from the new EU-wide OTC derivatives dataset", *ESRB Occasional Papers*, no 11, September.
- Augustin, P, M Subrahmanyam, D Tang and S Wang (2014): "Credit default swaps: a survey", *Foundations and Trends in Finance*, vol 9, no 1–2, pp 1–196.
- Bank for International Settlements (2018): "Statistical release: OTC derivatives statistics at end-December 2017", May.
- Committee on the Global Financial System (2009): "Credit risk transfers statistics", *CGFS Papers*, no 35, September.
- D'Errico, M, S Battiston, T Peltonen and M Scheicher (2018): "How does risk flow in the credit default swap market?", *Journal of Financial Stability*, vol 35, April, pp 53–74.
- D'Errico, M and T Roukny (2017): "Compressing over-the-counter markets", *ESRB Working Papers*, no 44, May.
- Duffie, D (2010): "Is there a case for banning short speculation in sovereign bond markets?", Bank of France, *Financial Stability Review*, July.
- Ehlers, T and E Eren (2016): "The changing shape of interest rate derivatives markets", *BIS Quarterly Review*, December, pp 53–65.
- Financial Stability Board (2017): "OTC derivatives market reforms – Twelfth Progress Report on Implementation", June.
- Gyntelberg, J, P Hördahl, K Ters and J Urban (2017): "Arbitrage costs and the persistent non-zero CDS-bond basis: evidence from intraday euro area sovereign debt markets", *BIS Working Papers*, no 631, April.
- Ledrut, E and C Upper (2007): "Changing post-trading arrangements for OTC derivatives", *BIS Quarterly Review*, December, pp 83–95.
- Loon, Y C and Z Zhong (2014): "The impact of central clearing on counterparty risk, liquidity and trading: evidence from the credit default swap market", *Journal of Financial Economics*, vol 112, no 1, April, pp 91–115.
- (2016): "Does Dodd-Frank affect OTC transaction costs and liquidity? Evidence from real-time CDS trade reports", *Journal of Financial Economics*, vol 119, no 3, March, pp 645–72.
- Markit (2016): "CDS bond-basis tightens as sentiment improves", March.
- Peltonen, T, M Scheicher and G Vuillemeij (2014): "The network structure of the CDS market and its determinants", *Journal of Financial Stability*, vol 13(C), August, pp 118–33.
- Pu, X and J Zhang (2012): "Sovereign CDS spreads, volatility, and liquidity: evidence from 2010 German short sale ban", *Financial Review*, vol 47, January, pp 171–97.
- Schrimpf, A (2015): "Outstanding OTC derivatives positions dwindle as compression gains further traction", *BIS Quarterly Review*, December, pp 24–5.
- Stulz, R (2010): "Credit default swaps and the credit crisis", *Journal of Economic Perspectives*, vol 24, no 1, pp 73–92.

Vause, N (2010): "Counterparty risk and contract volumes in the credit default swap market", *BIS Quarterly Review*, December, pp 59–69.

Wooldridge, P (2016): "Comparison of BIS derivatives statistics", *Proceedings of the Eighth IFC Conference*, Basel, 8–9 September.

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).

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A Locational banking statistics

Cross-border claims, by sector, currency and instrument

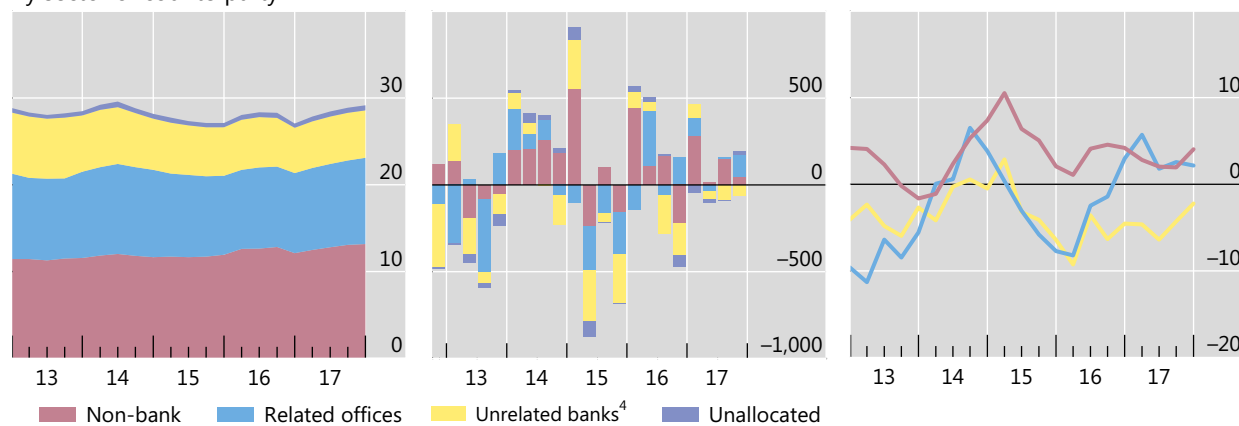
Graph A.1

Amounts outstanding, in USD trn¹

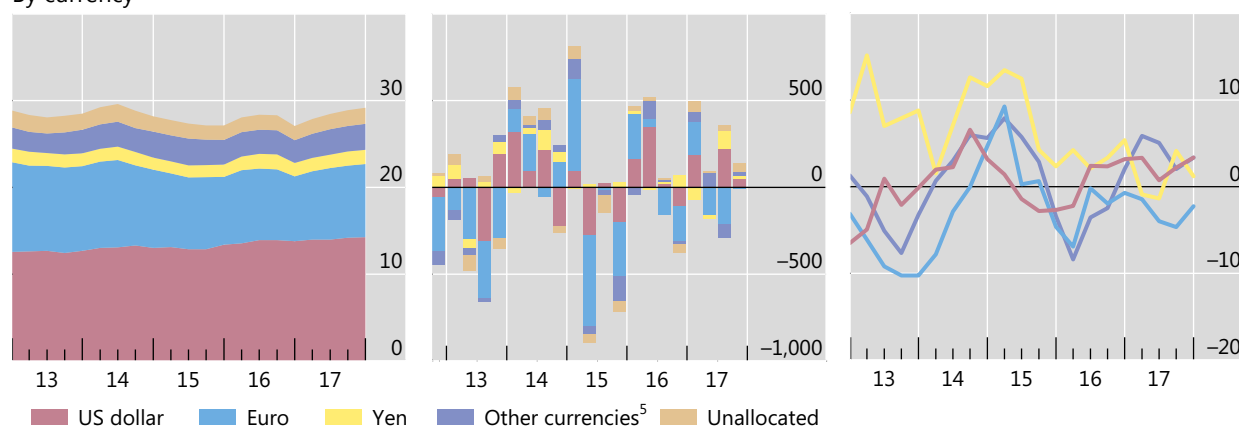
Adjusted changes, in USD bn²

Annual change, in per cent³

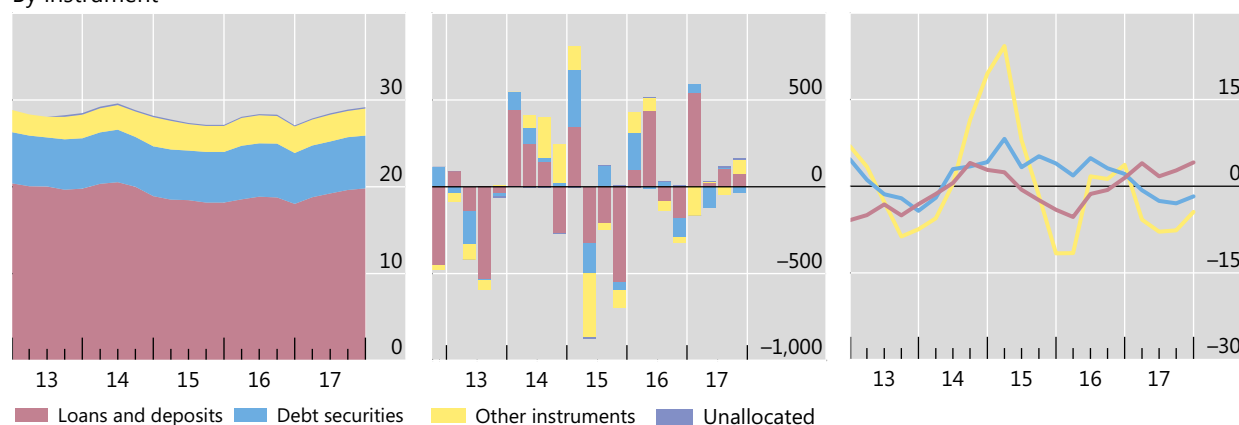
By sector of counterparty



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

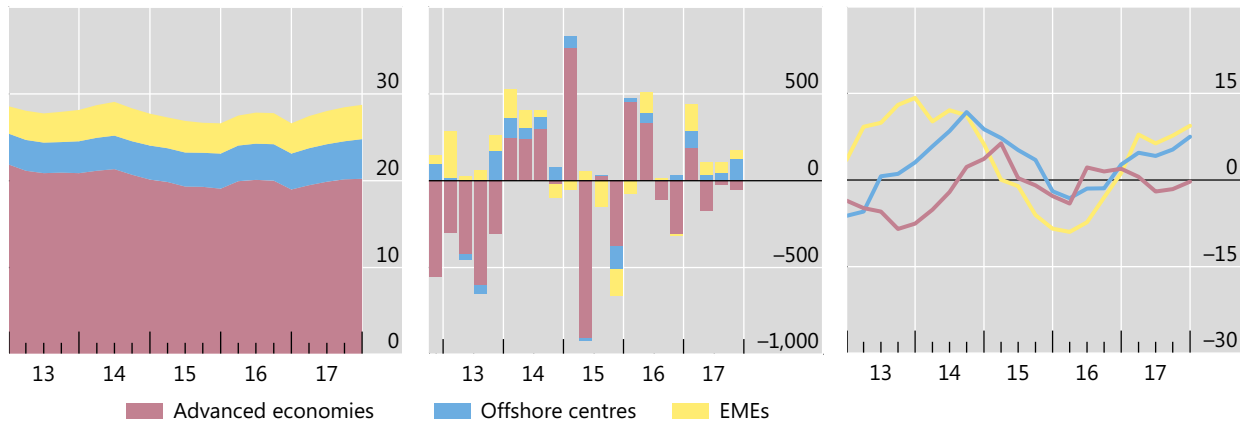
Graph A.2

Amounts outstanding, in USD trn¹

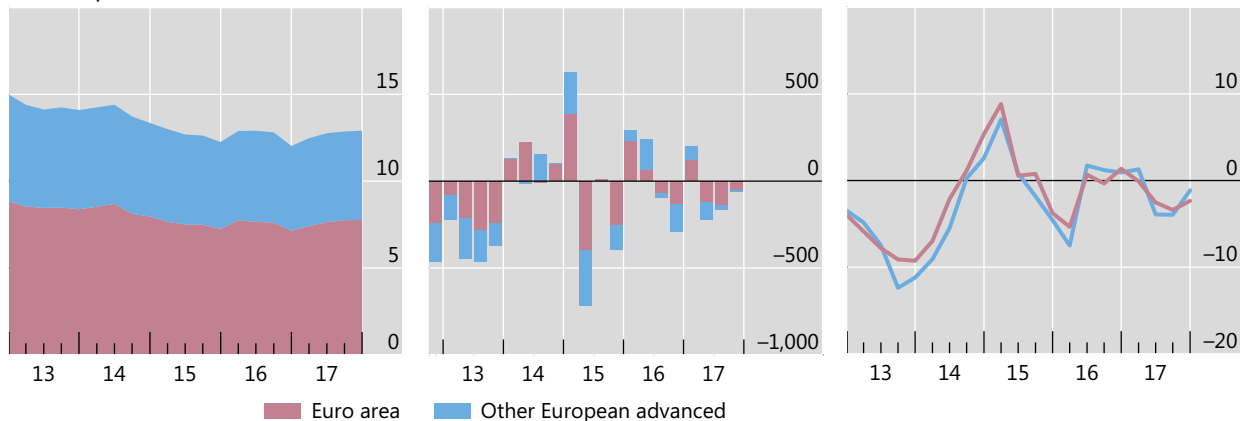
Adjusted changes, in USD bn²

Annual change, in per cent³

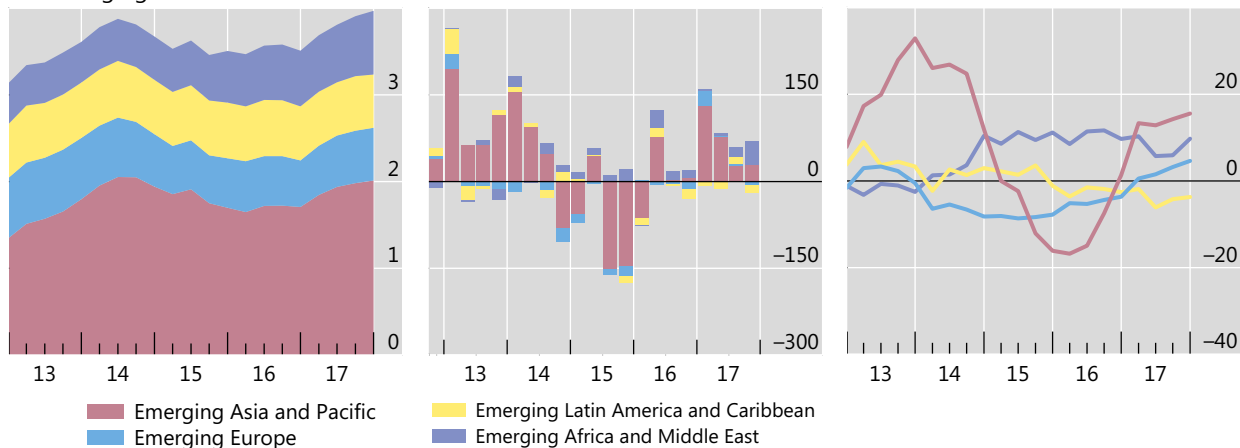
On all countries



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

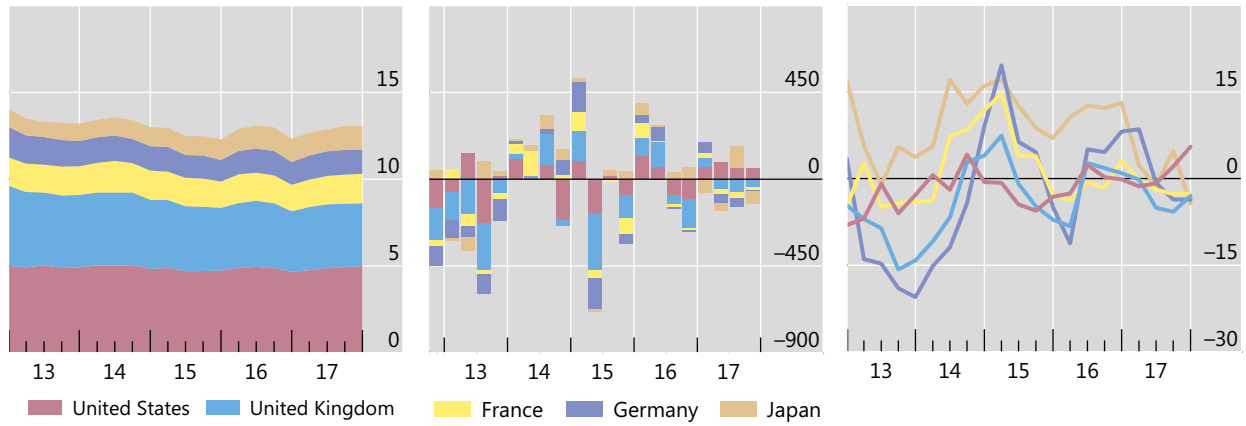
Graph A.3

Amounts outstanding, in USD trn¹

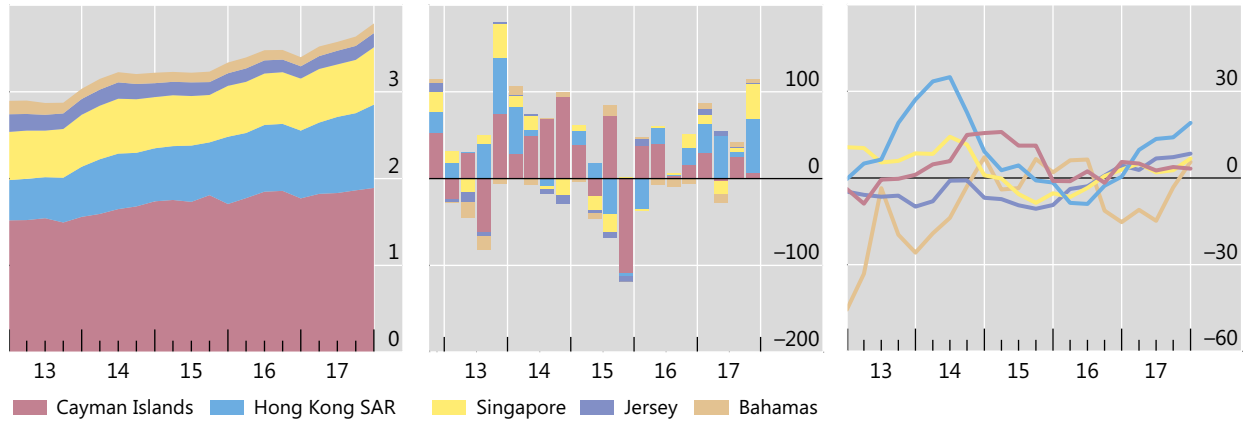
Adjusted changes, in USD bn²

Annual change, in per cent³

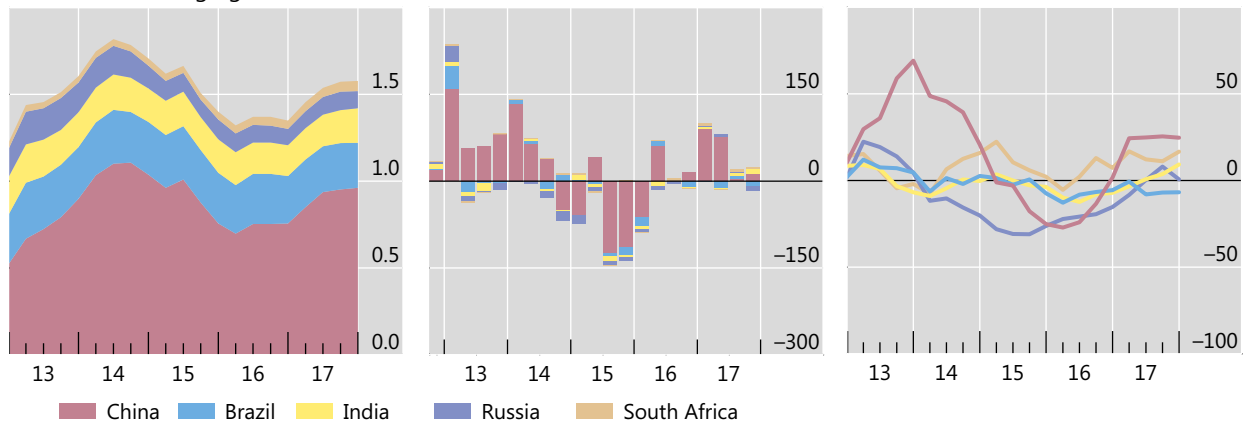
On selected advanced economies



On selected offshore centres



On selected emerging market economies

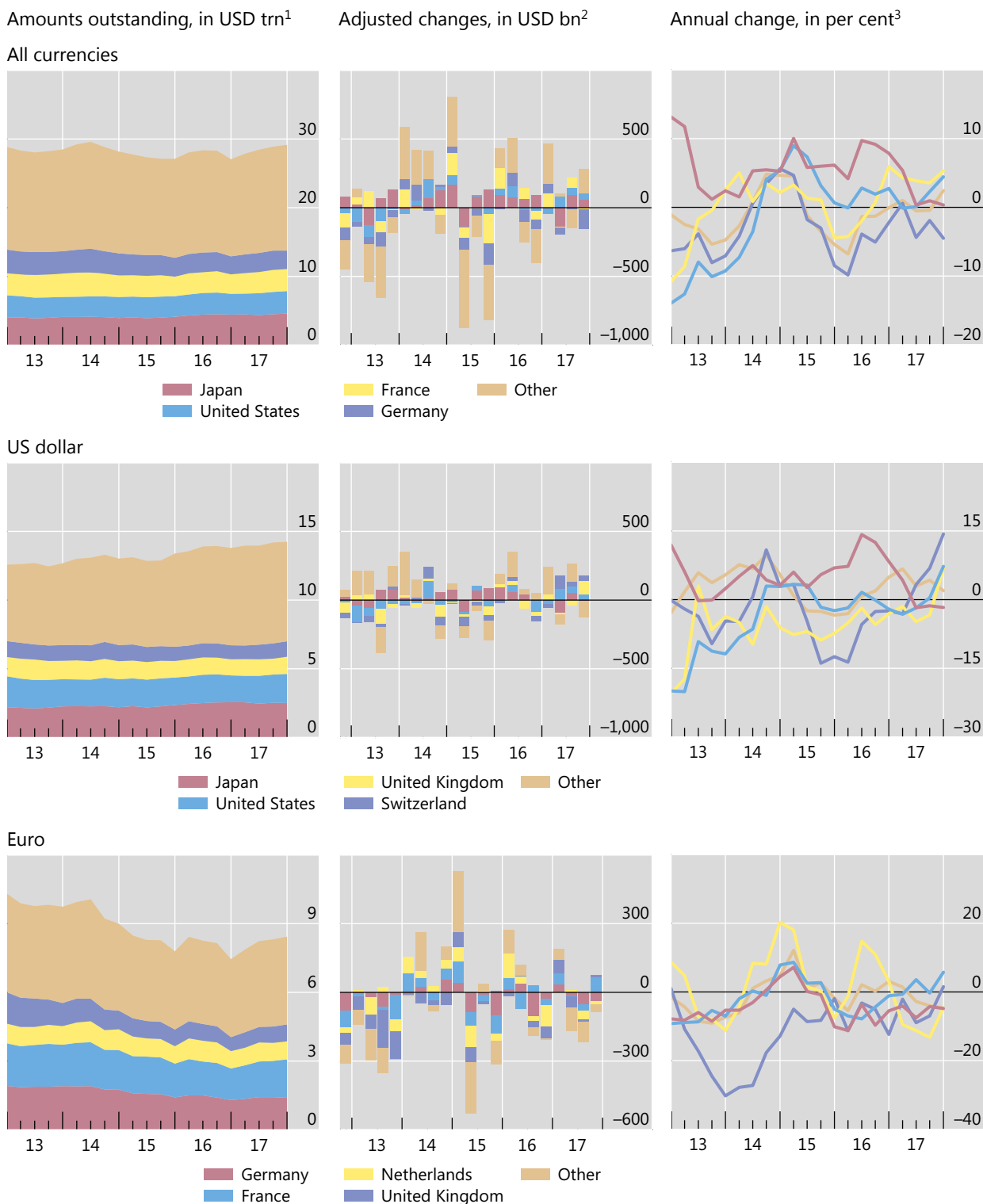


Further information on the BIS locational banking statistics is available at www.bis.org/statistics/bankstats.htm.

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

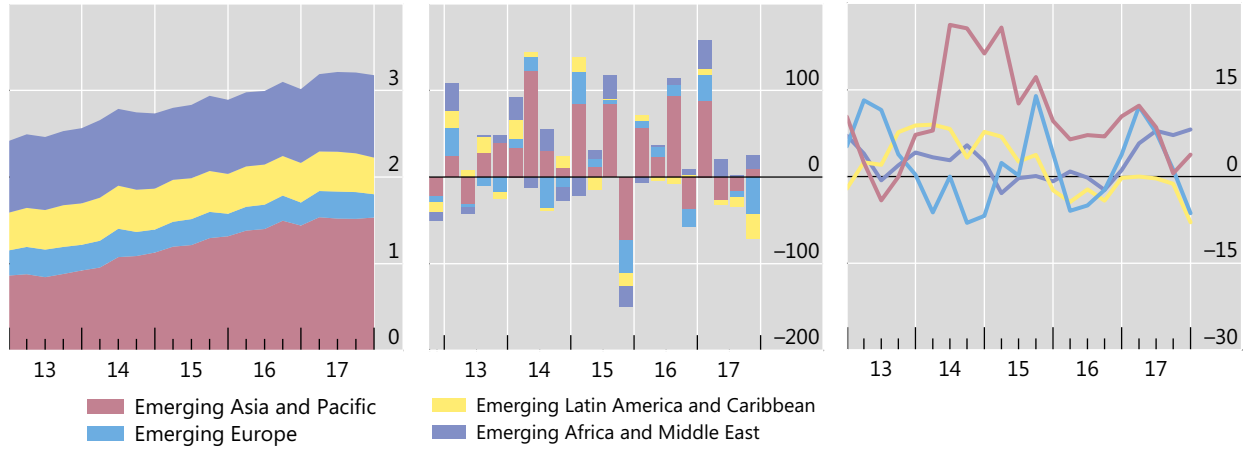
Graph A.5

Amounts outstanding, in USD trn¹

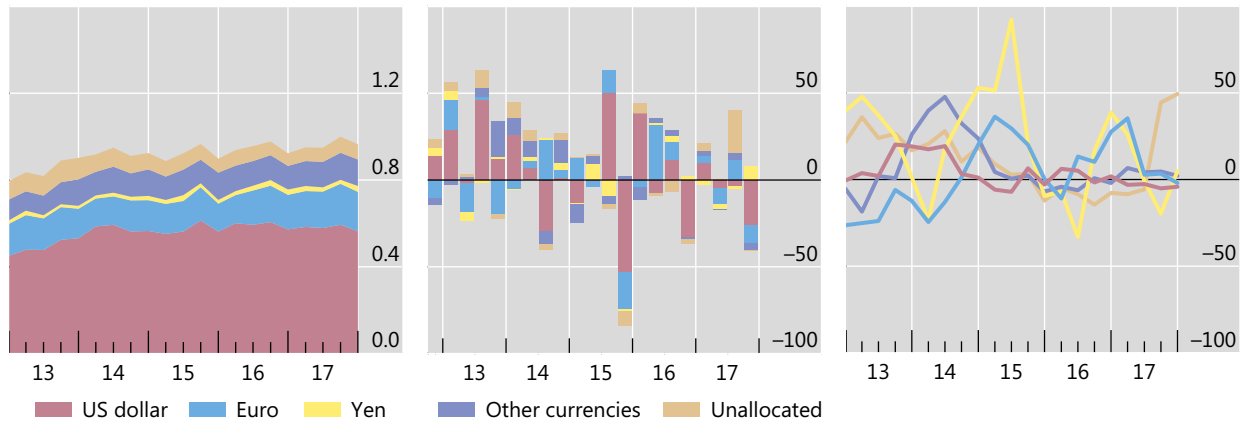
Adjusted changes, in USD bn²

Annual change, in per cent³

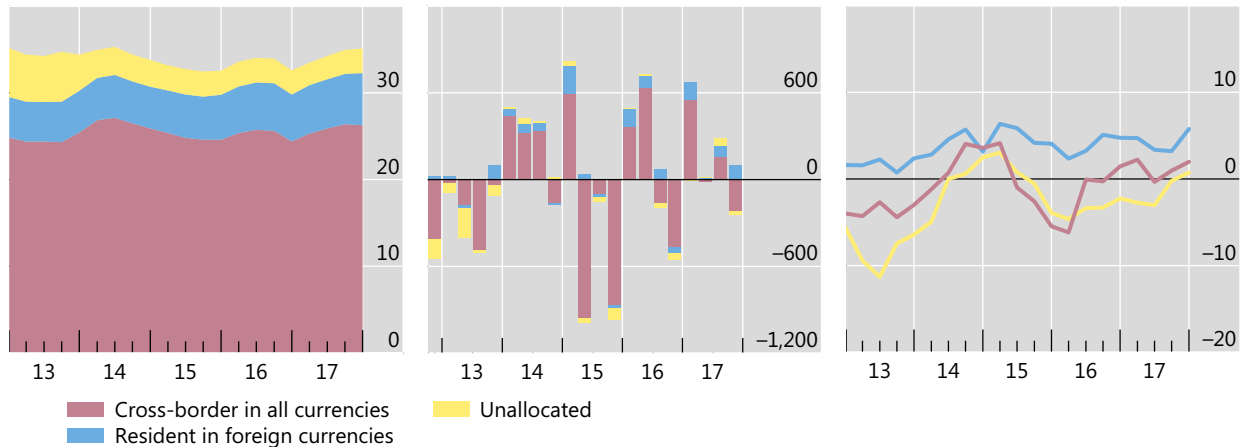
To emerging market economies



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

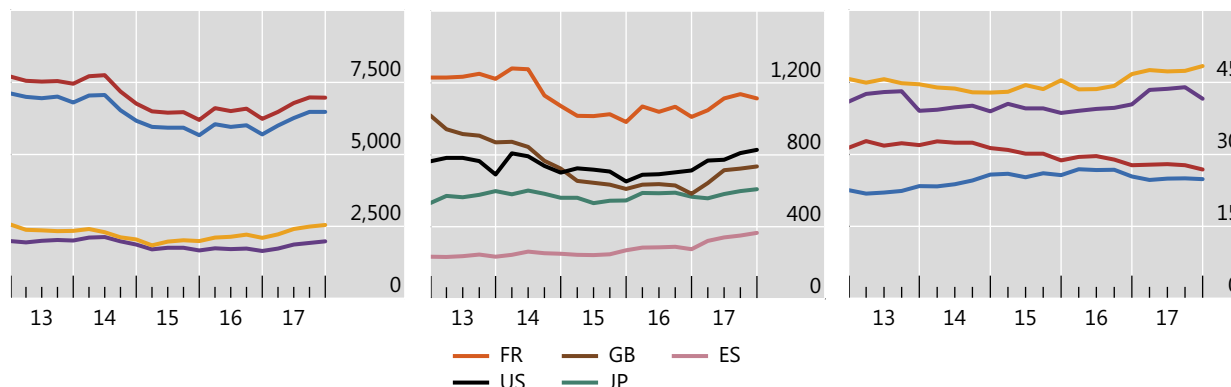
Graph B.1

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

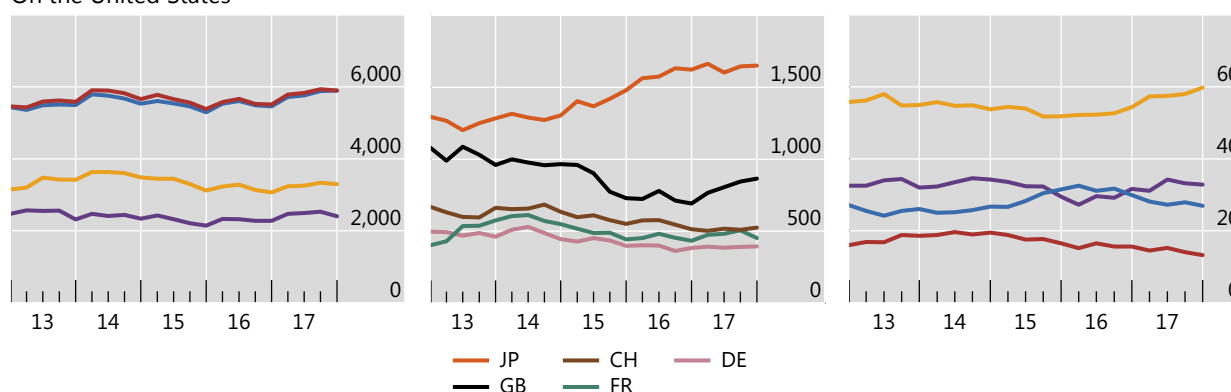
Foreign claims of selected creditors, in USD bn^{1,3}

International claims, by sector and maturity, in per cent⁴

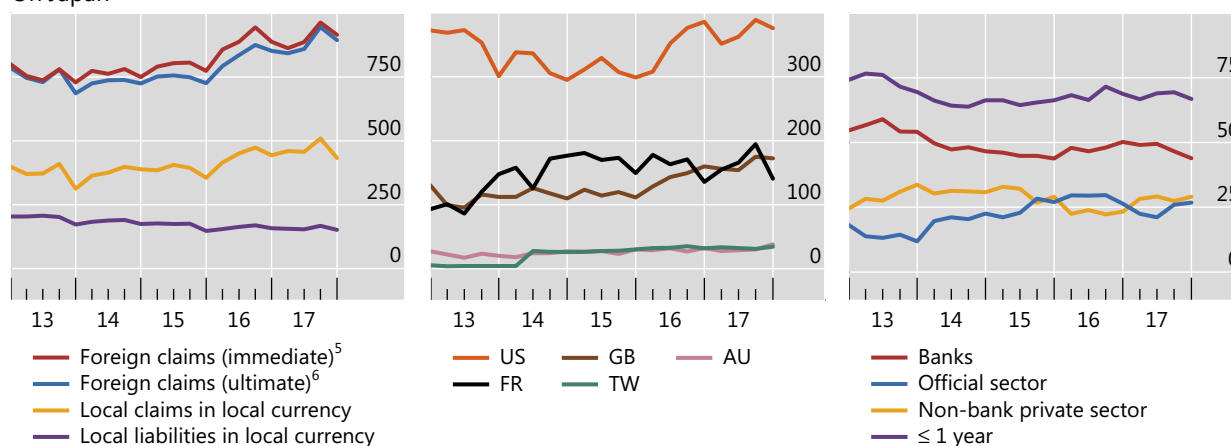
On the euro area



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

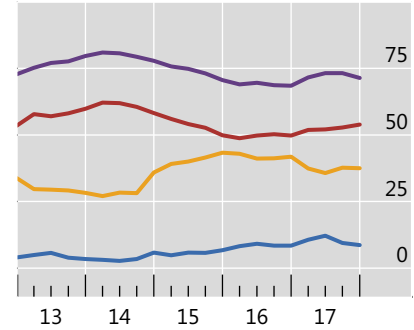
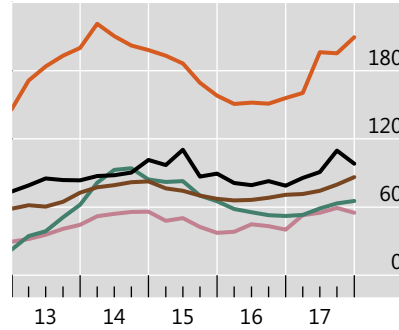
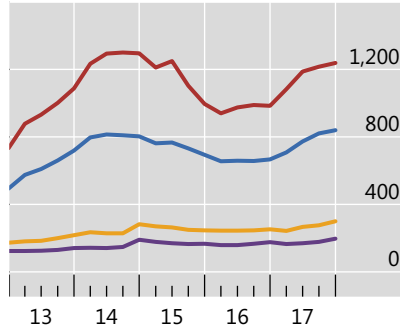
Graph B.2

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

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

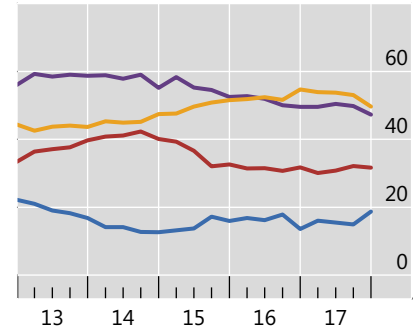
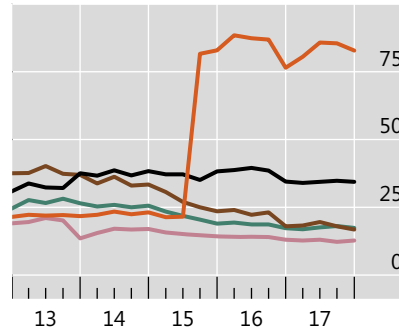
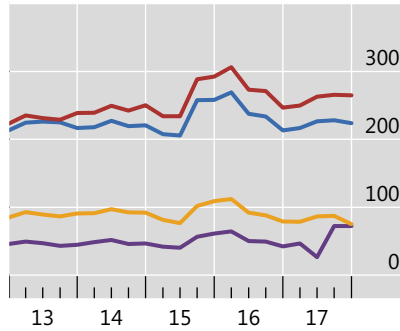
International claims, by sector and maturity, in per cent⁴

On China



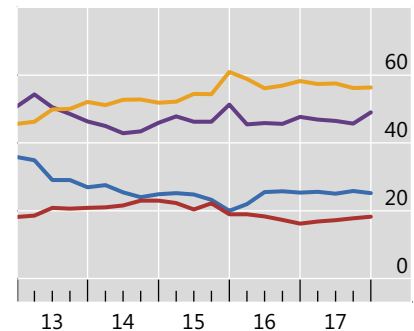
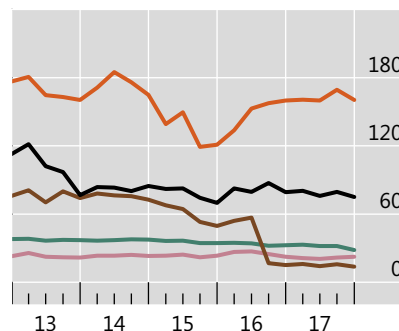
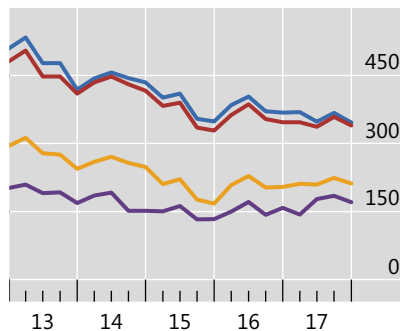
— GB — JP — FR
— US — TW

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.

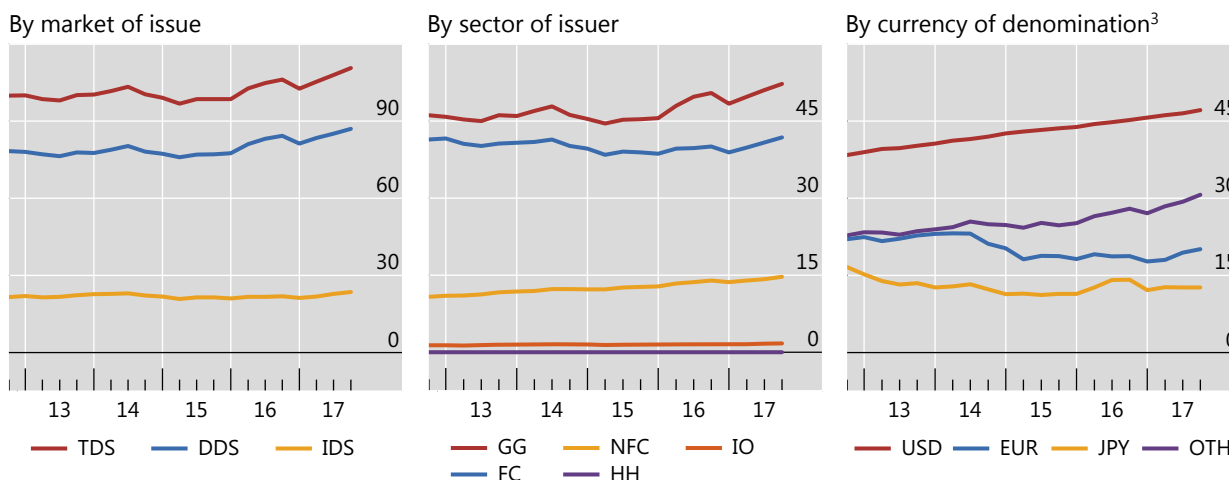
Source: BIS consolidated banking statistics (CBS).

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.

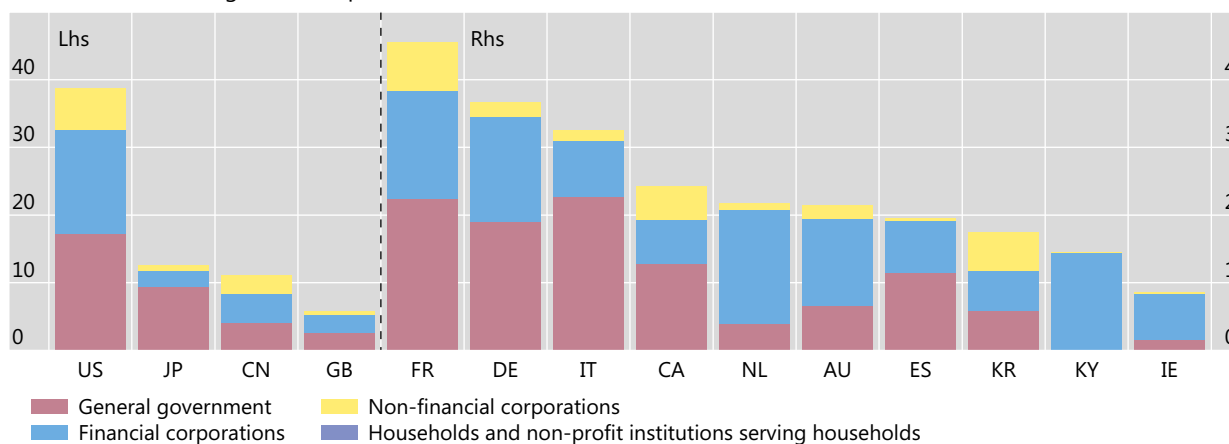
¹ Sample of countries varies across breakdowns shown. For countries that do not report TDS, data are estimated by the BIS as DDS plus IDS. For countries that do not report either TDS or DDS, data are estimated by the BIS as IDS. ² At quarter-end. Amounts denominated in currencies other than the US dollar 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 at end-September 2017, in trillions of US

Graph C.2



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

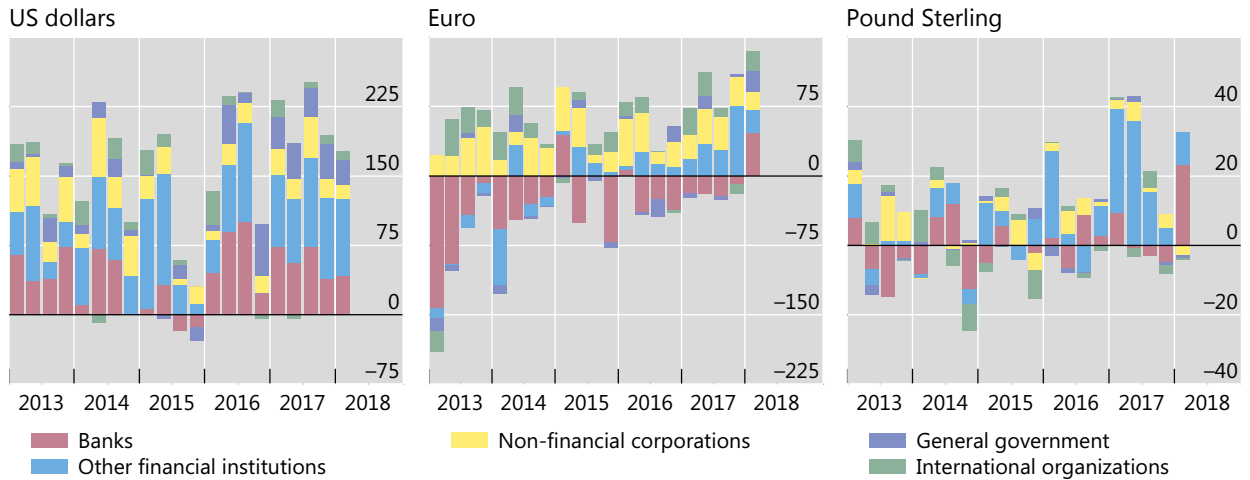
¹ For countries that do not report TDS, data are estimated by the BIS as DDS plus IDS. ² Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date.

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



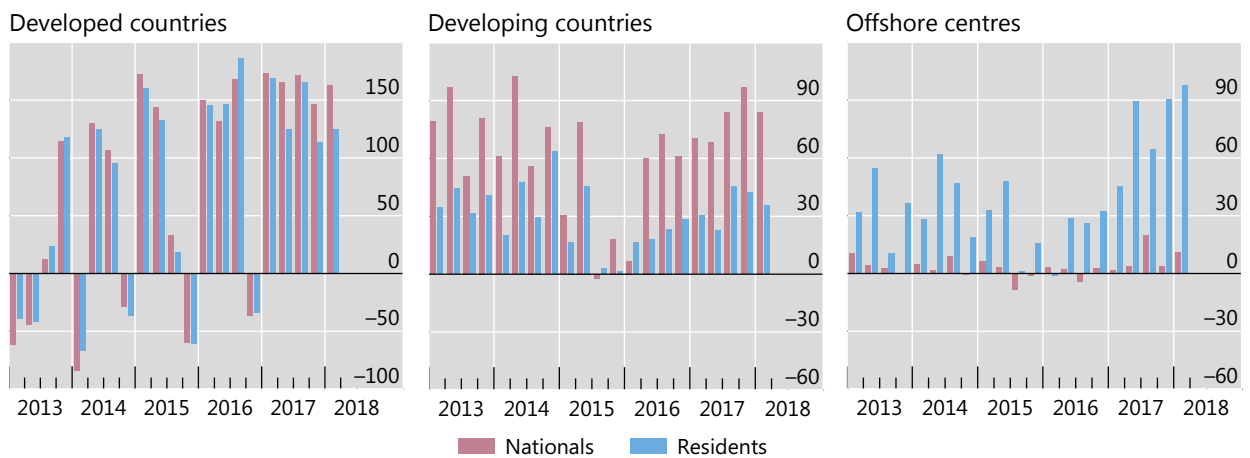
Further information is available at www.bis.org/statistics/secstats.htm.

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

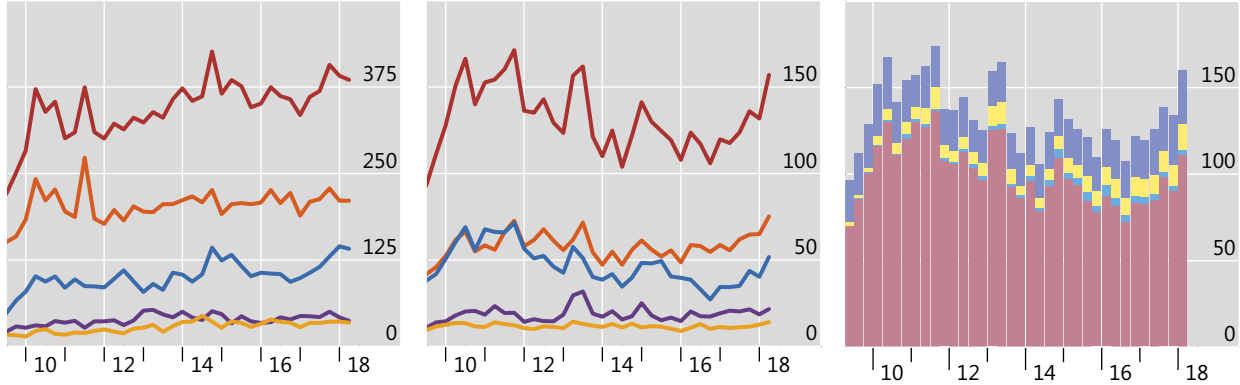
Graph D.1

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



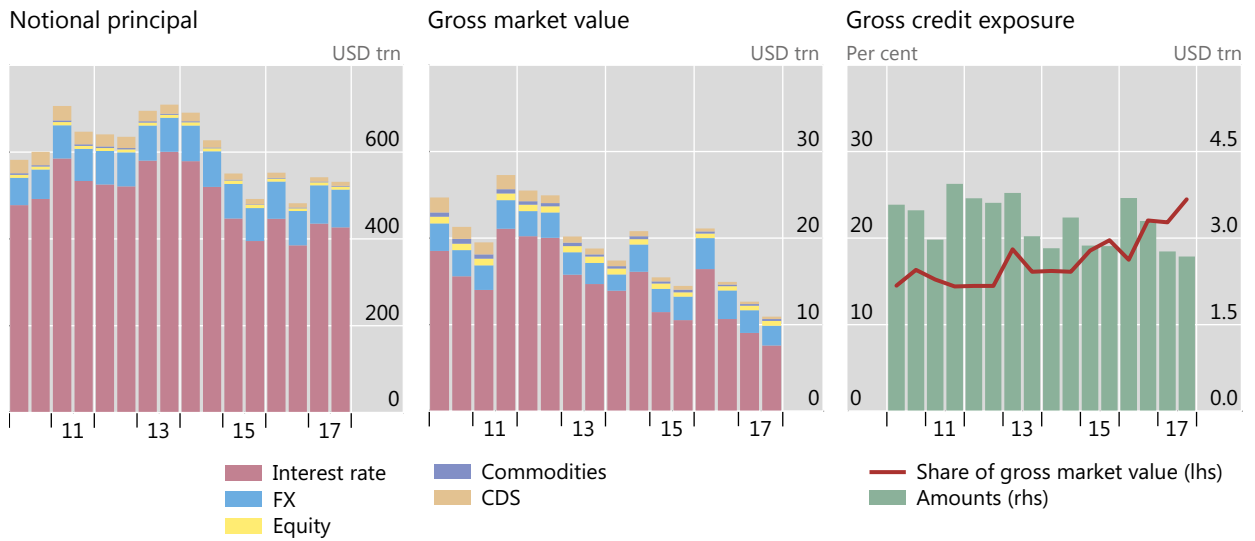
Further information on the BIS derivatives statistics is available at www.bis.org/statistics/extderiv.htm.

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.

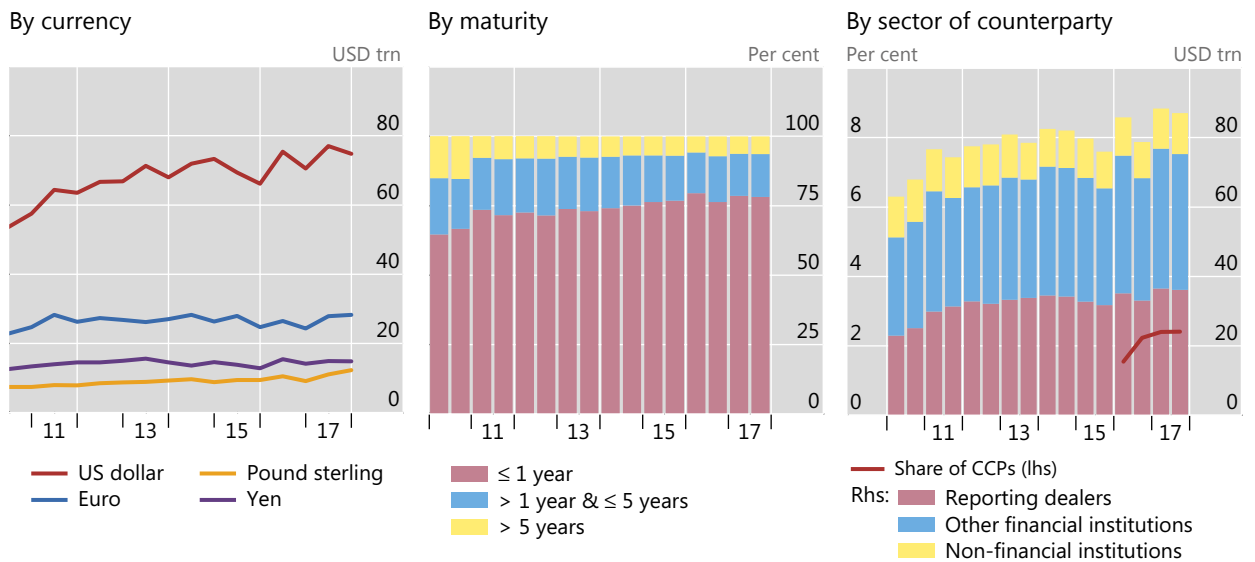
¹ At half-year end (end-June and end-December). Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date.

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.

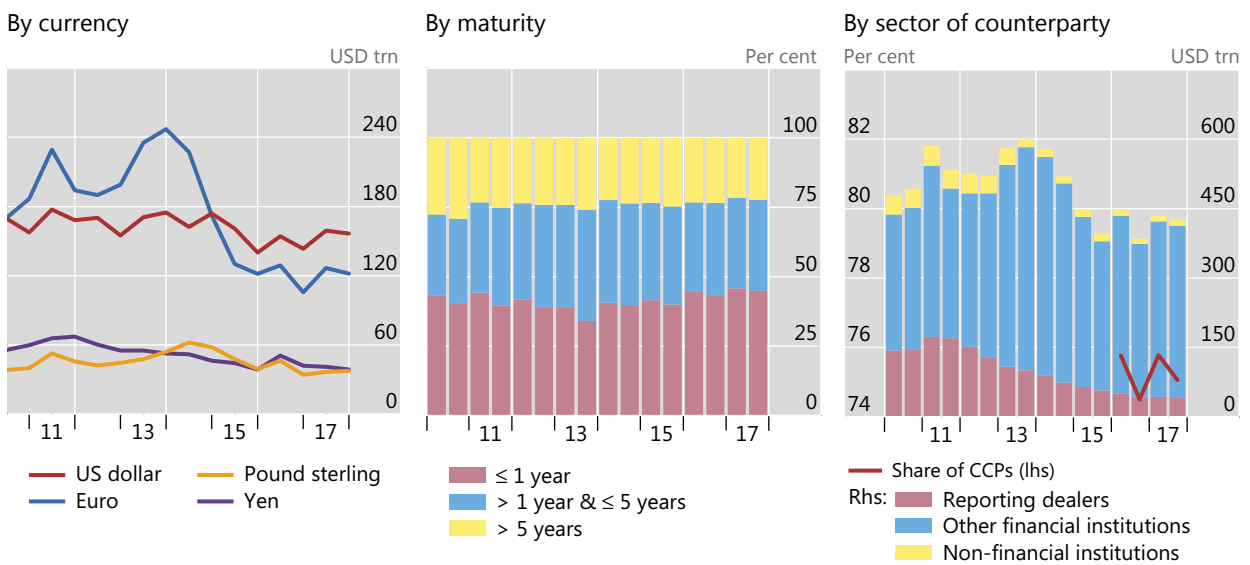
¹ At half-year end (end-June and end-December). Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date.

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.

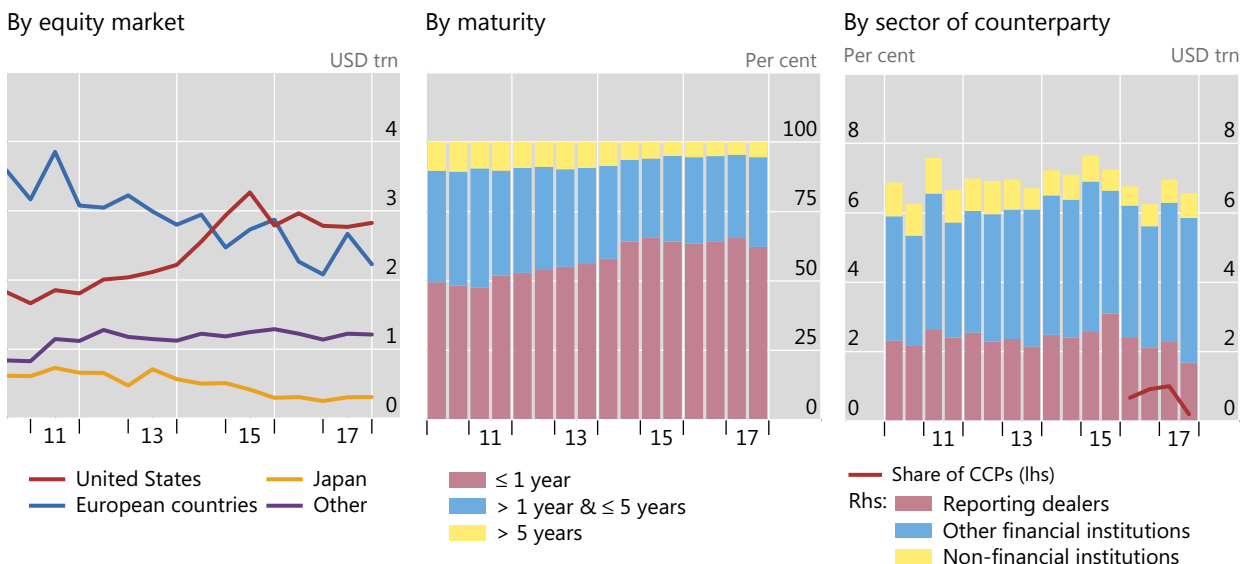
¹ At half-year end (end-June and end-December). Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date.

Source: BIS derivatives statistics.

OTC equity-linked derivatives

Notional principal¹

Graph D.5



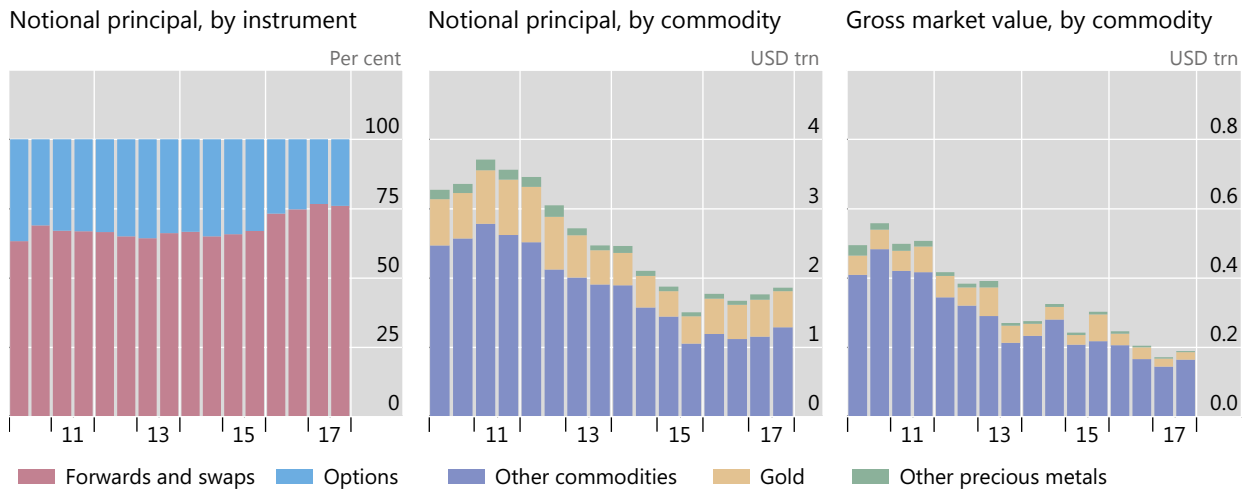
Further information on the BIS derivatives statistics is available at www.bis.org/statistics/derstats.htm.

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



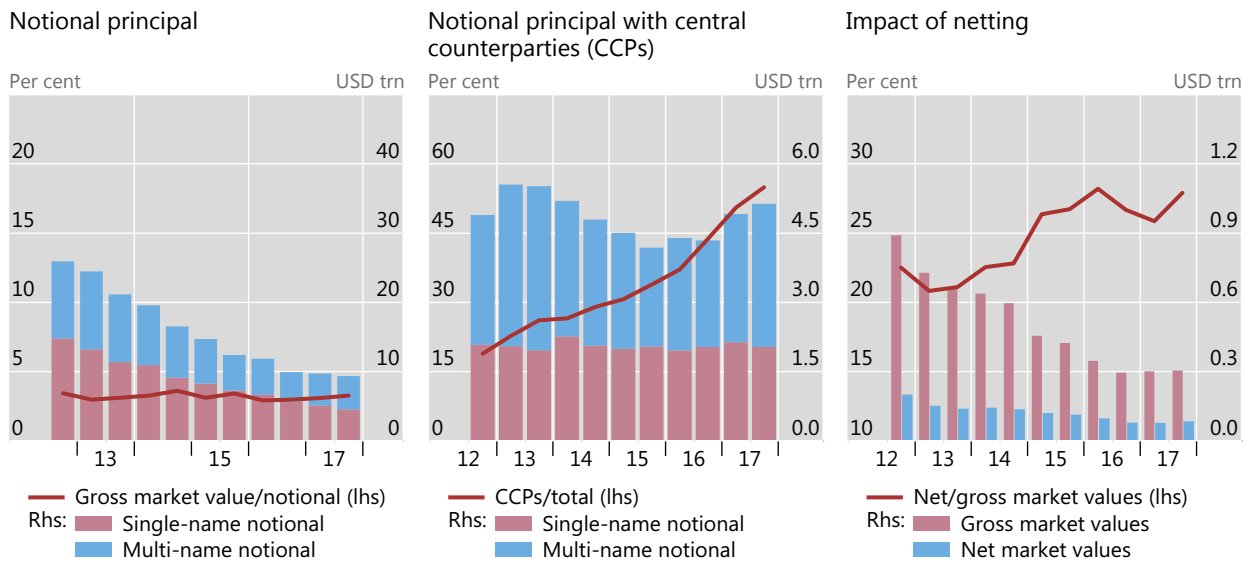
Further information on the BIS derivatives statistics is available at www.bis.org/statistics/derstats.htm.

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.

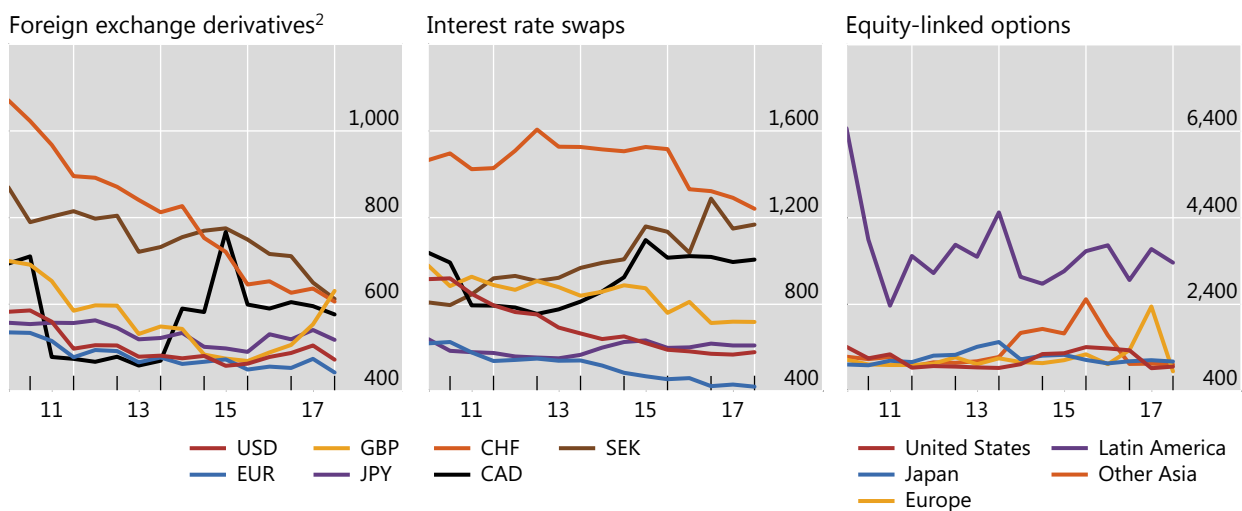
¹ At half-year end (end-June and end-December). Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date.

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.

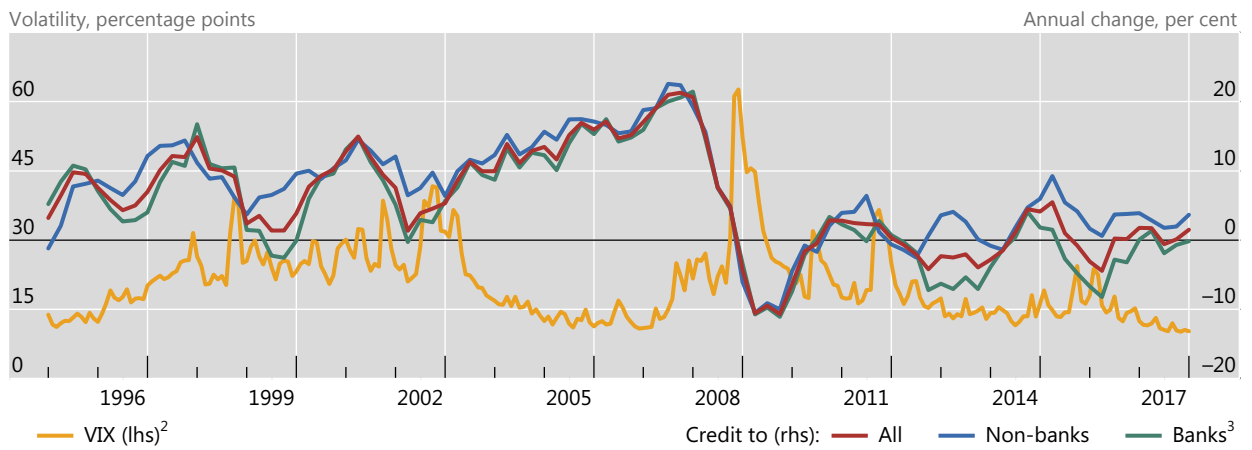
¹ The index ranges from 0 to 10,000, where a lower number indicates that there are many dealers with similar market shares (as measured by notional principal) and a higher number indicates that the market is dominated by a few reporting dealers. ² Foreign exchange forwards, foreign exchange swaps and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

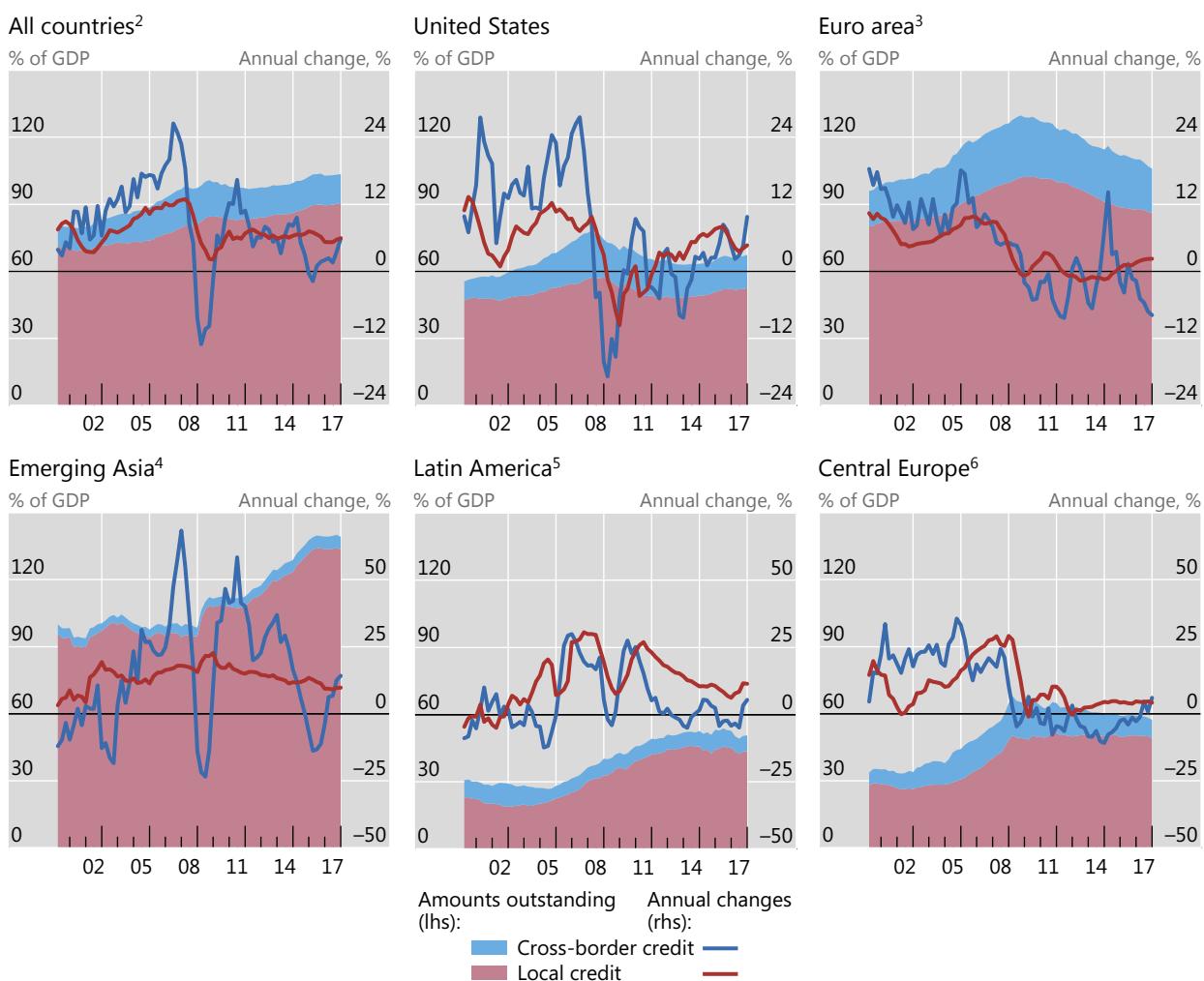
¹ LBS-reporting banks' cross-border claims plus local claims in foreign currencies. ² Chicago Board Options Exchange S&P 500 implied volatility index; standard deviation, in percentage points per annum. ³ Including intragroup transactions.

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.

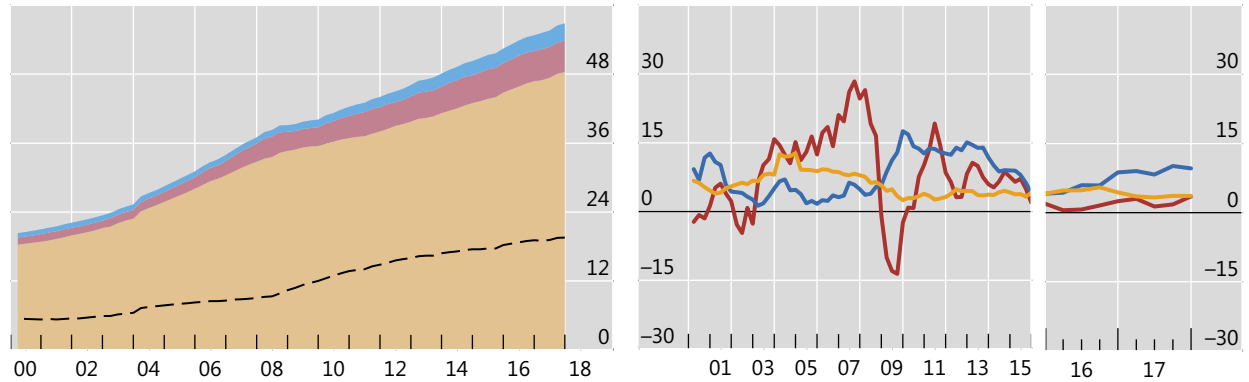
Global credit to the non-financial sector, by currency

Graph E.3

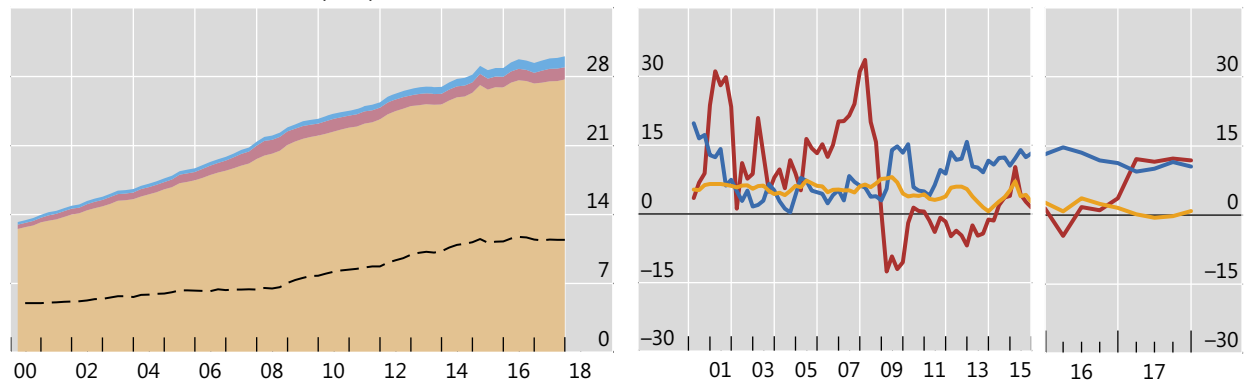
Amounts outstanding, in trillions of currency units¹

Annual change, in per cent²

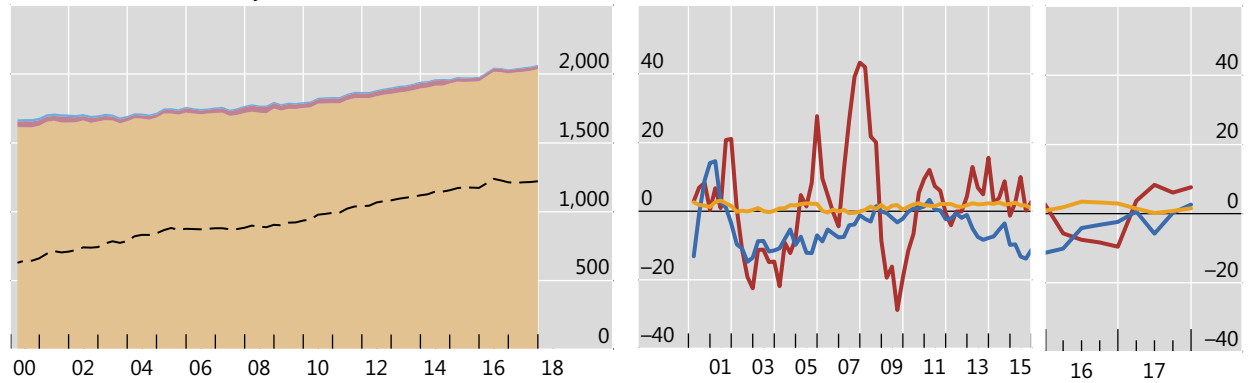
Credit denominated in US dollars (USD)



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.

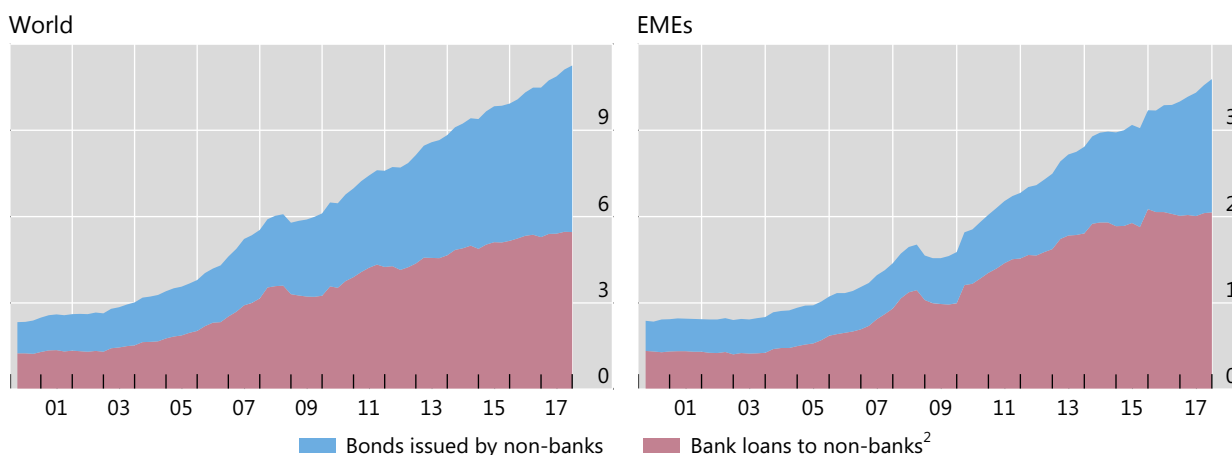
¹ Amounts outstanding at quarter-end. ² Based on quarterly break- and exchange rate-adjusted changes. ³ Credit to non-financial borrowers residing in the United States/euro area/Japan. National financial accounts are adjusted using BIS banking and securities statistics to exclude credit denominated in 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

Amounts outstanding, in trillions of US dollars

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.

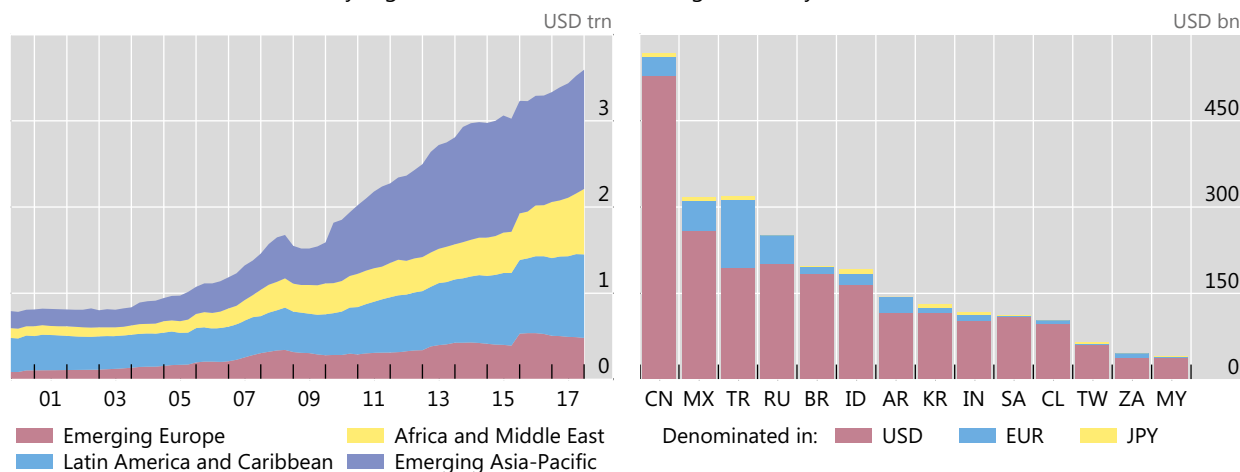
Sources: Datastream; Dealogic; Euroclear; Thomson Reuters; Xtrakter Ltd; national data; BIS locational banking statistics (LBS); BIS calculations.

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.

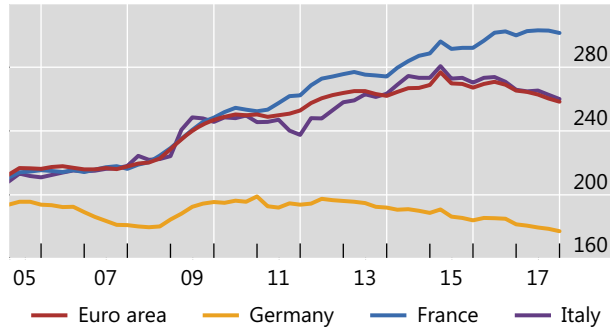
F Statistics on total credit to the non-financial sector

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

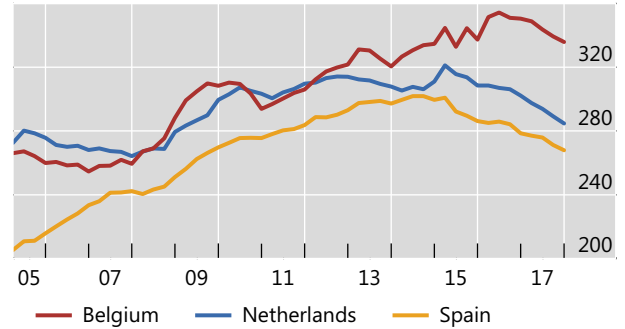
As a percentage of GDP

Graph F.1

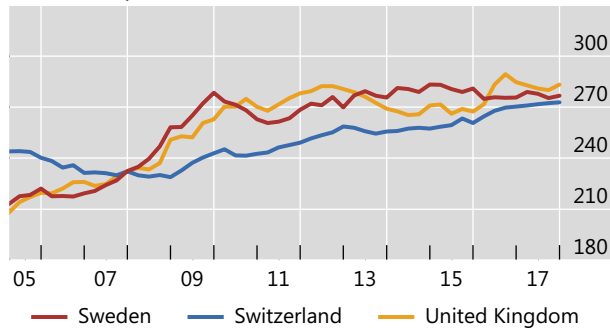
Euro area: aggregate and major countries



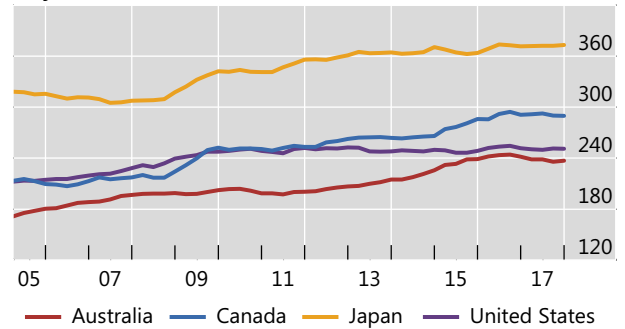
Euro area: other countries



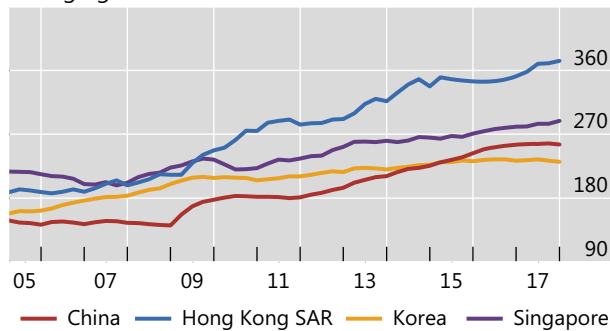
Other European countries



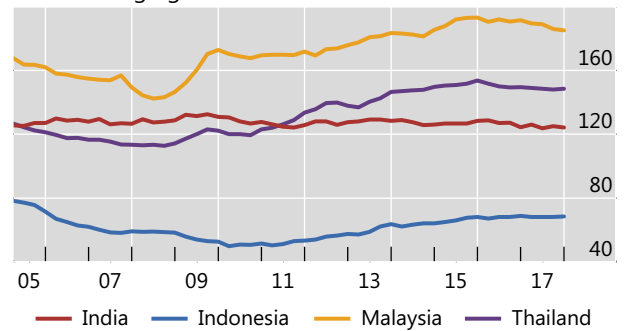
Major advanced economies



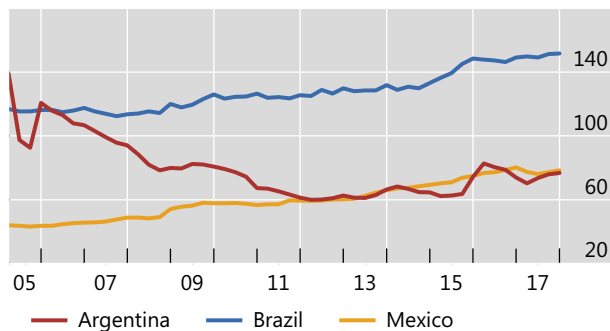
Emerging Asia



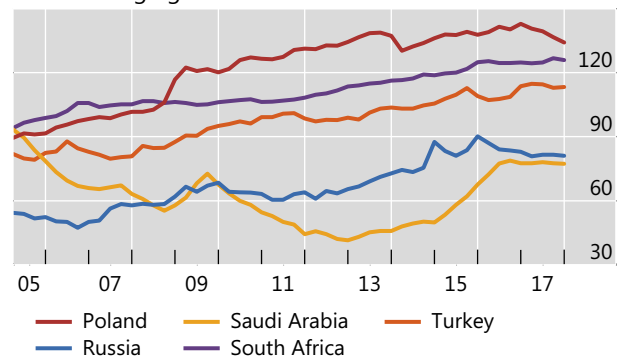
Other emerging Asia



Latin America



Other emerging market economies



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

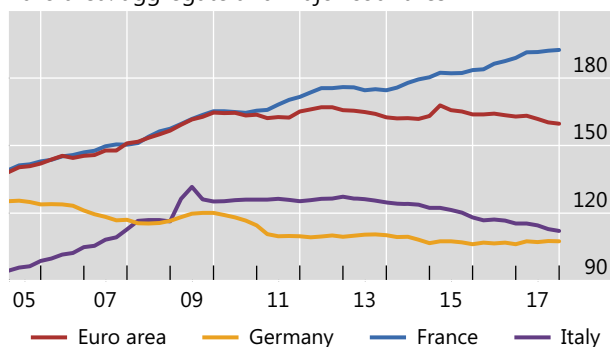
Source: BIS total credit statistics.

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

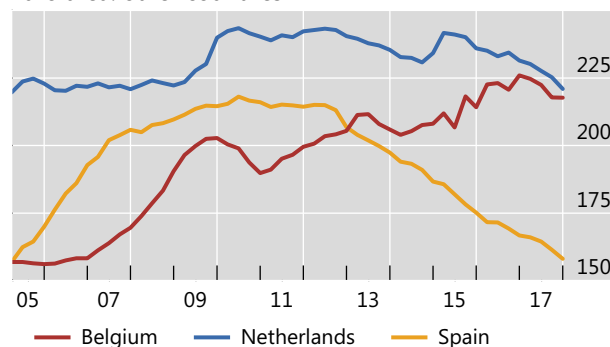
As a percentage of GDP

Graph F.2

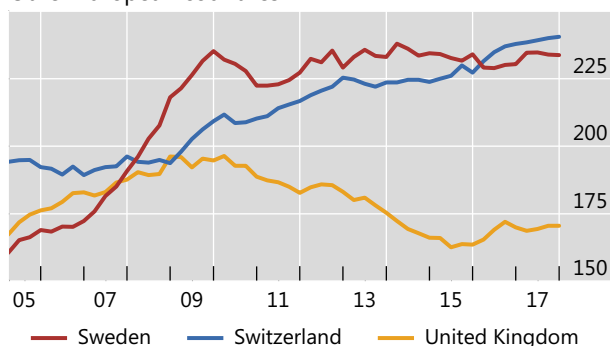
Euro area: aggregate and major countries



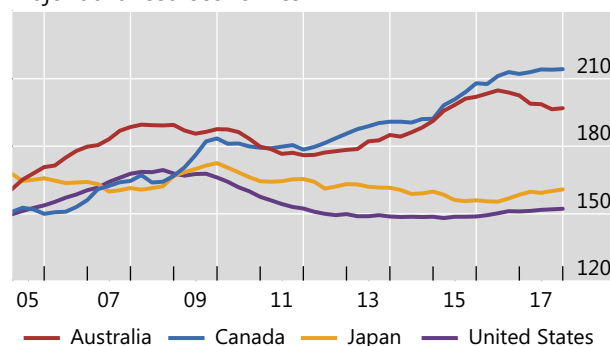
Euro area: other countries



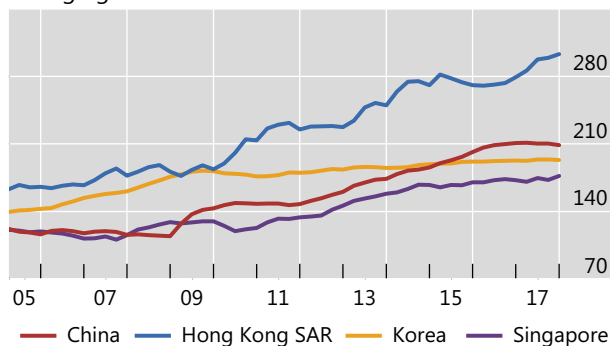
Other European countries



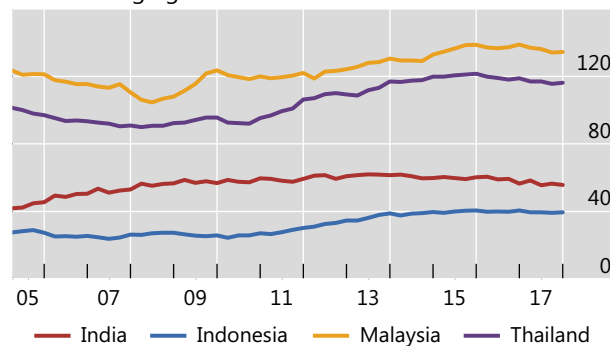
Major advanced economies



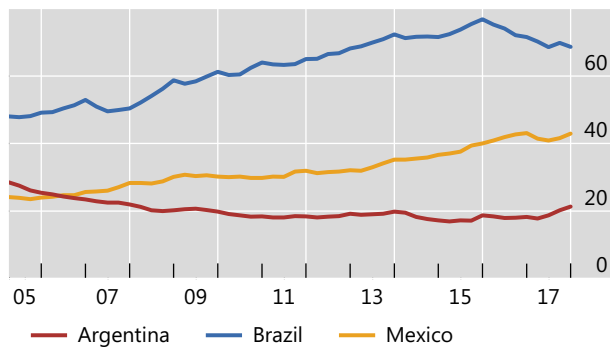
Emerging Asia



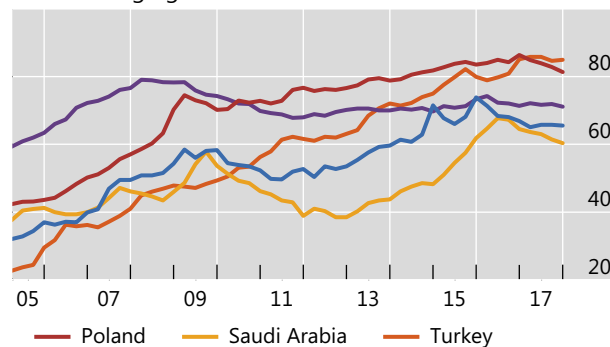
Other emerging Asia



Latin America



Other emerging market economies



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

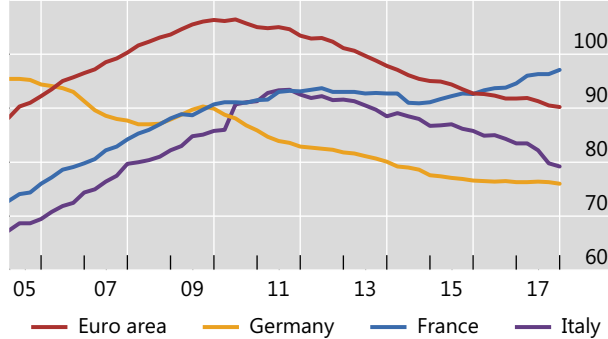
Source: BIS total credit statistics.

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

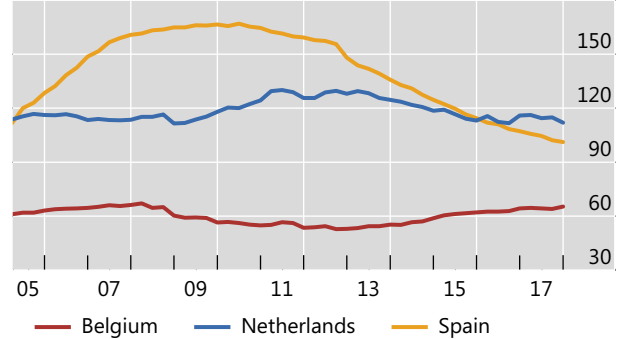
As a percentage of GDP

Graph F.3

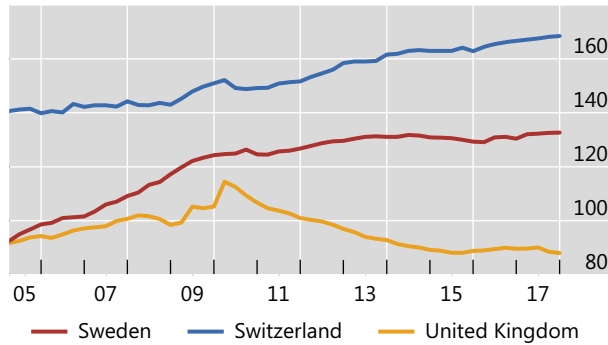
Euro area: aggregate and major countries



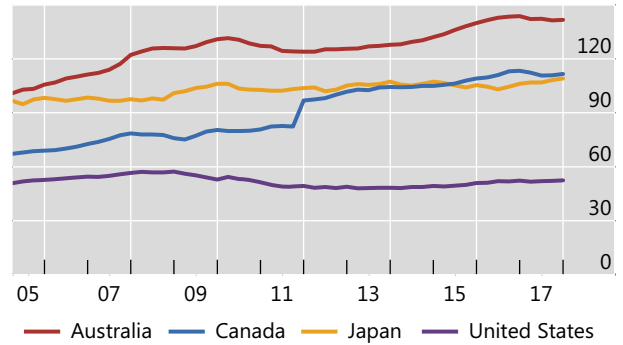
Euro area: other countries



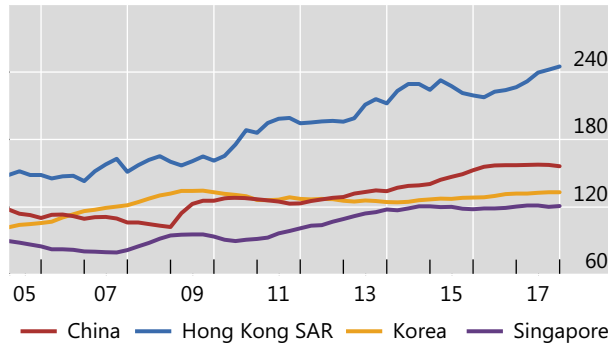
Other European countries



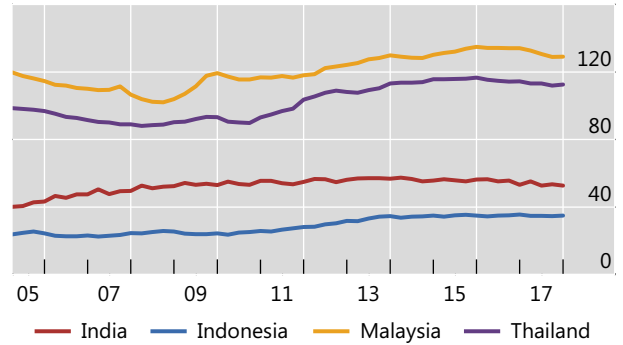
Major advanced economies



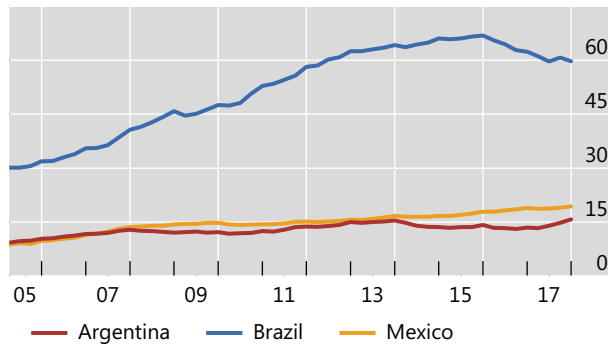
Emerging Asia



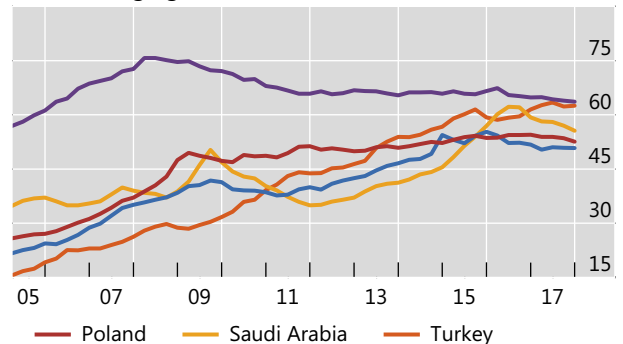
Other emerging Asia



Latin America



Other emerging market economies



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

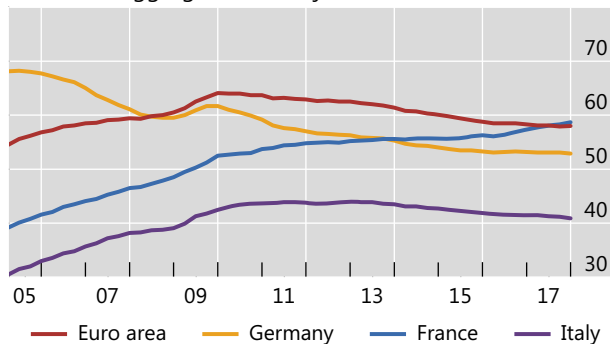
Source: BIS total credit statistics.

Total credit to households (core debt)

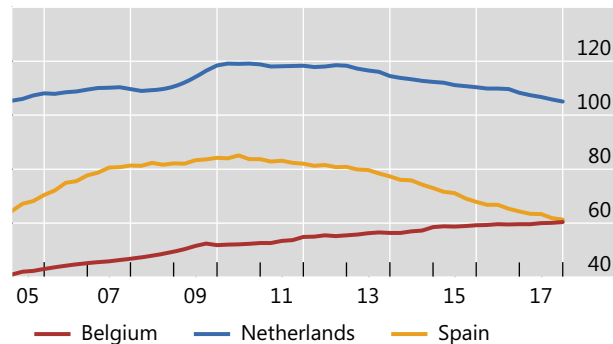
As a percentage of GDP

Graph F.4

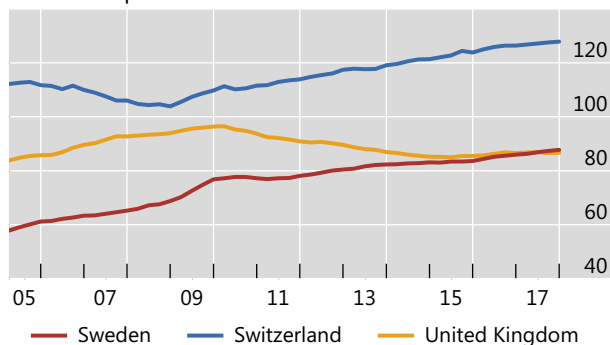
Euro area: aggregate and major countries



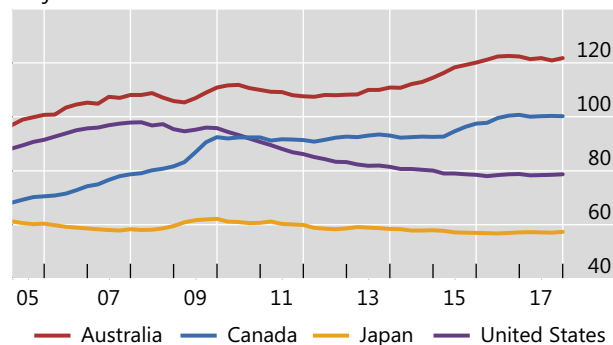
Euro area: other countries



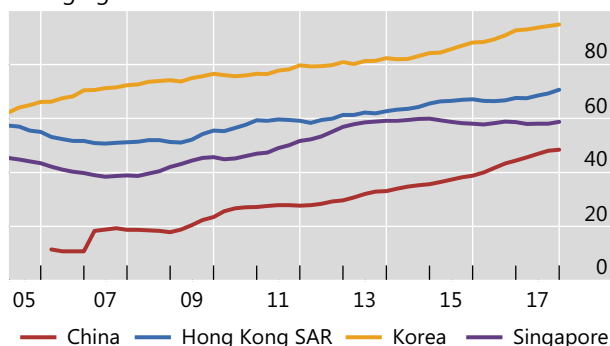
Other European countries



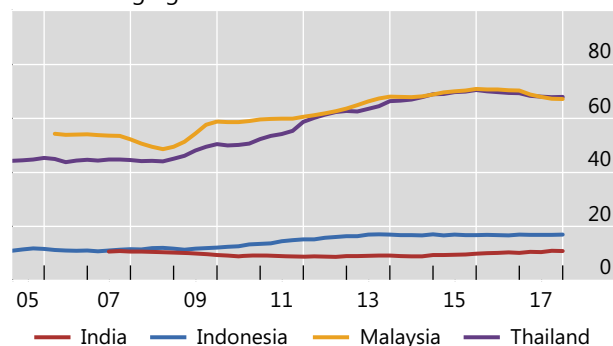
Major advanced economies



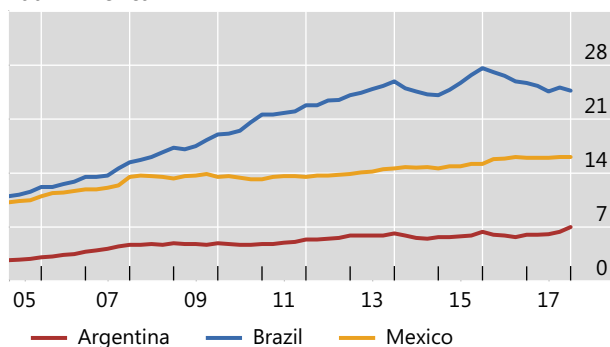
Emerging Asia



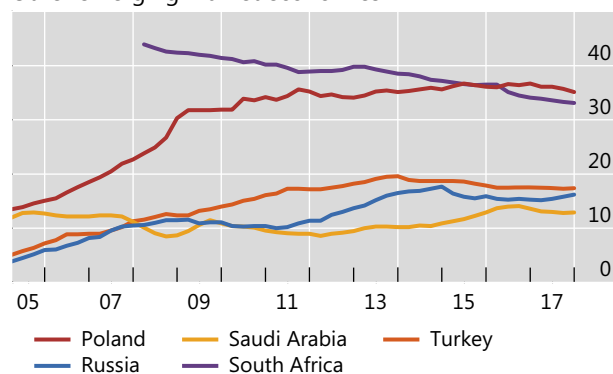
Other emerging Asia



Latin America



Other emerging market economies



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

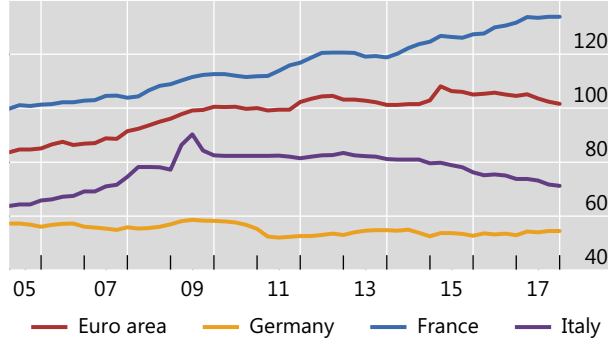
Source: BIS total credit statistics.

Total credit to non-financial corporations (core debt)

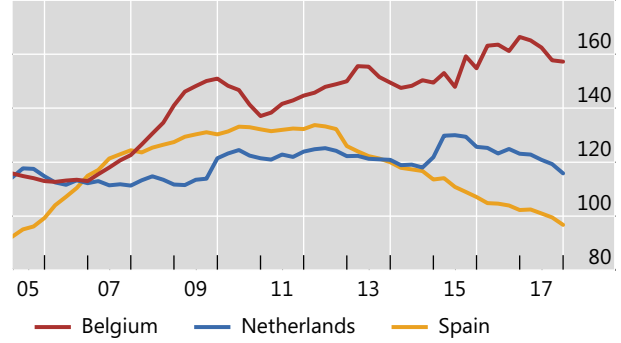
As a percentage of GDP

Graph F.5

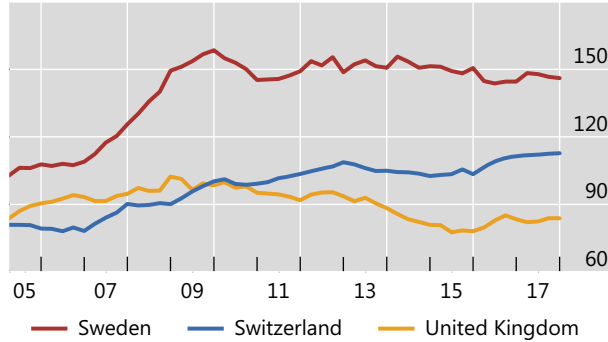
Euro area: aggregate and major countries



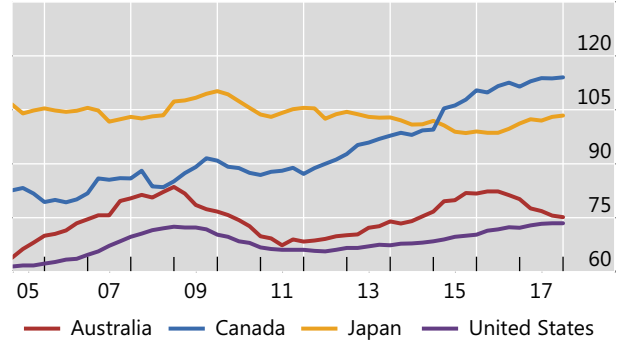
Euro area: other countries



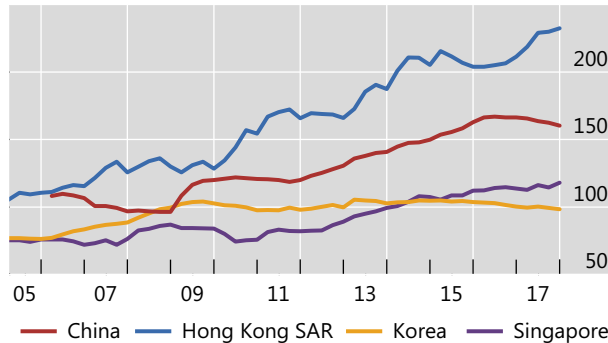
Other European countries



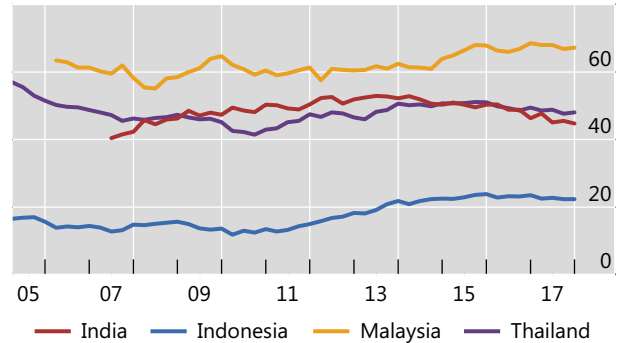
Major advanced economies



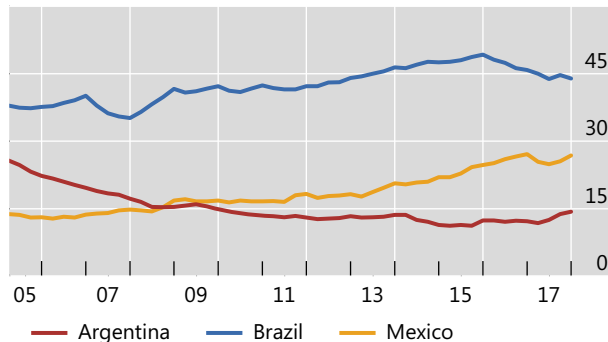
Emerging Asia



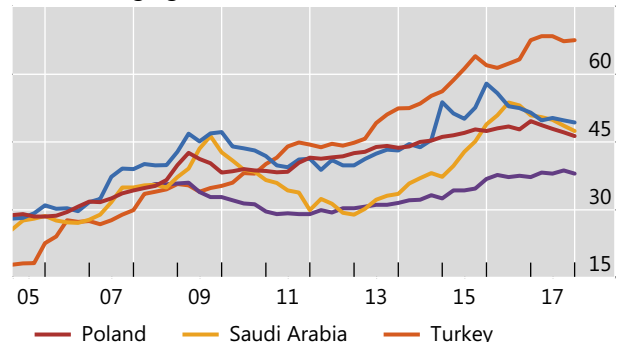
Other emerging Asia



Latin America



Other emerging market economies



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

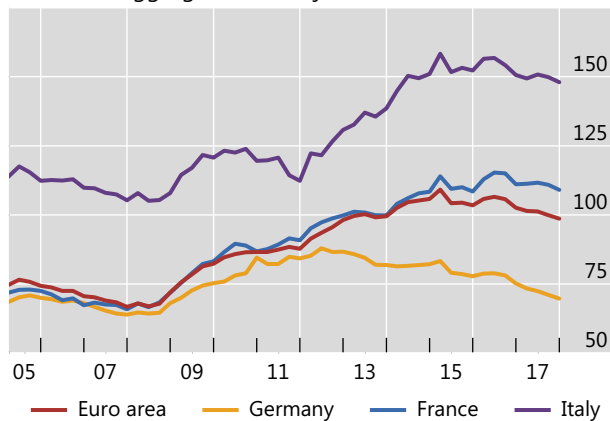
Source: BIS total credit statistics.

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

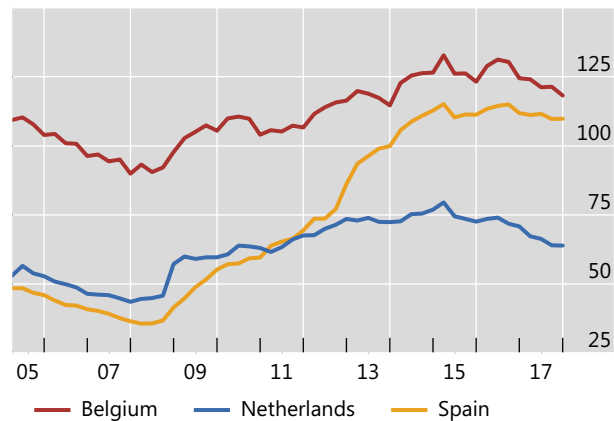
As a percentage of GDP

Graph F.6

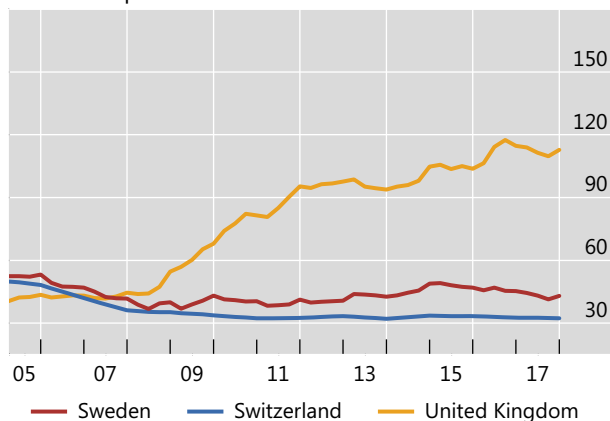
Euro area: aggregate and major countries



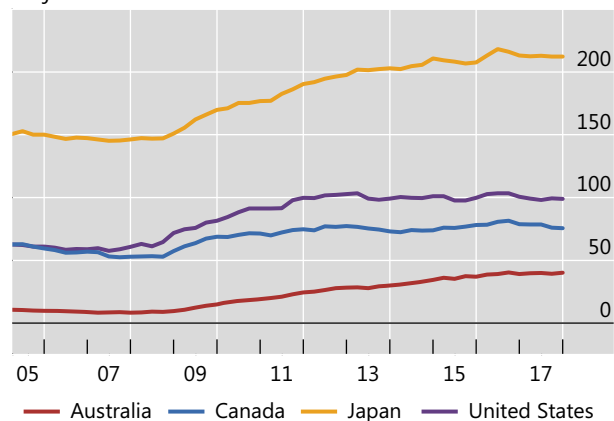
Euro area: other countries



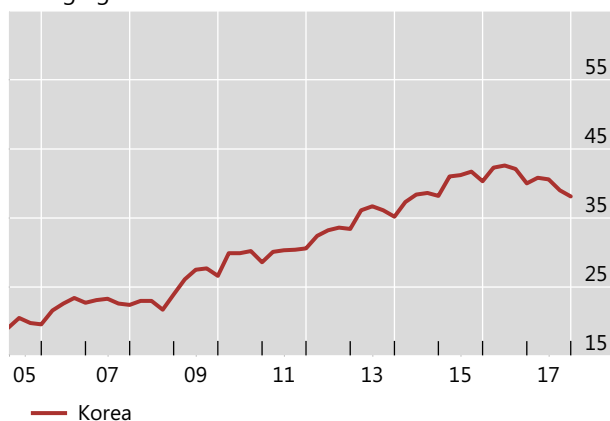
Other European countries



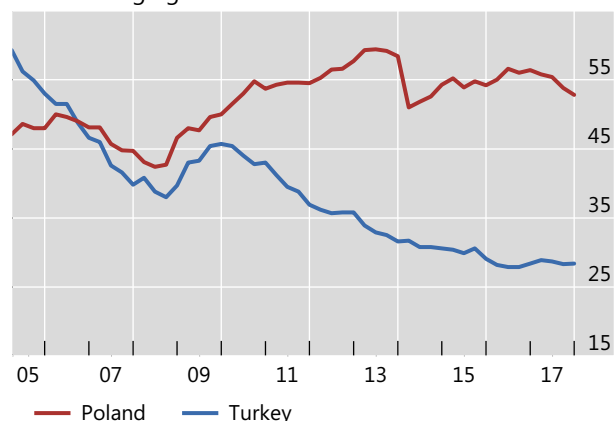
Major advanced economies



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.

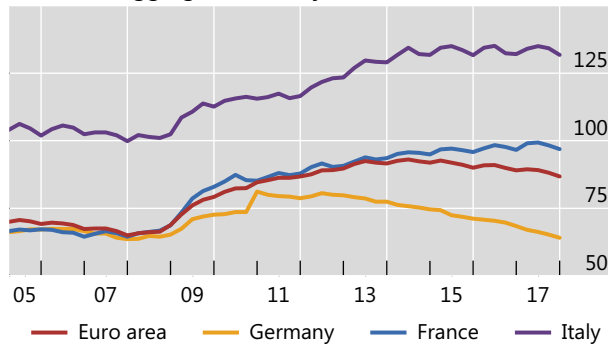
Source: BIS total credit statistics.

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

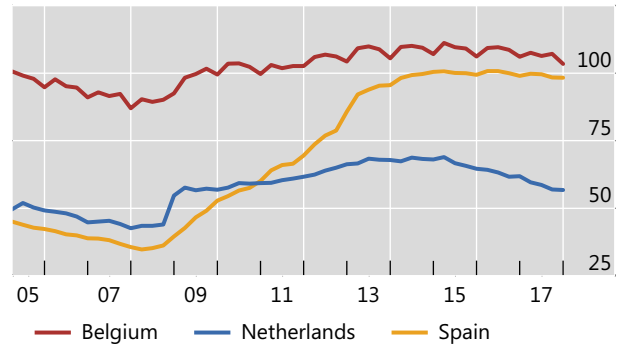
As a percentage of GDP

Graph F.7

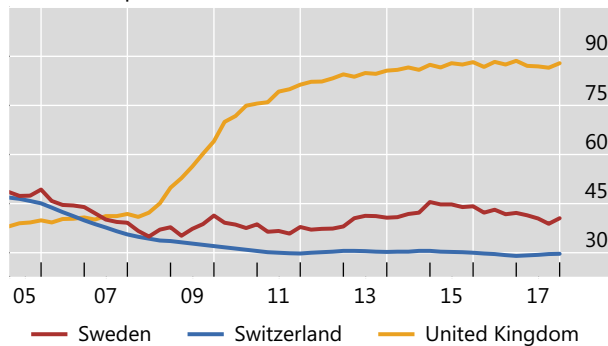
Euro area: aggregate and major countries



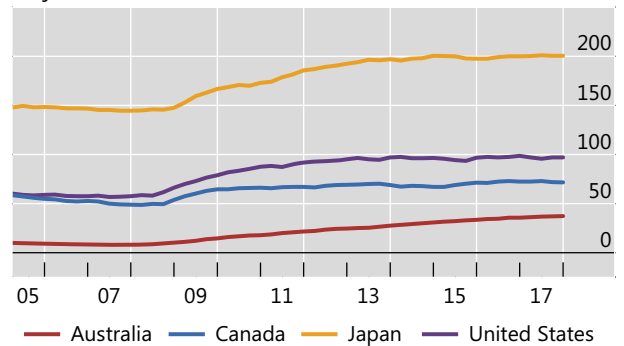
Euro area: other countries



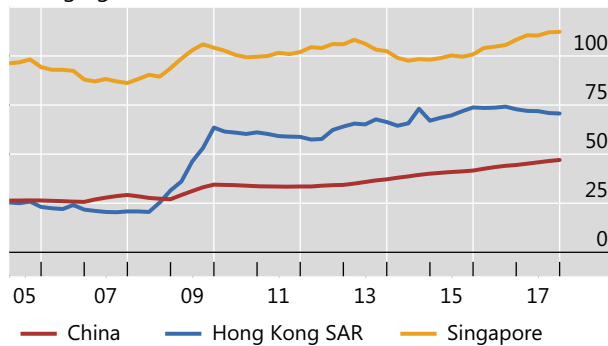
Other European countries



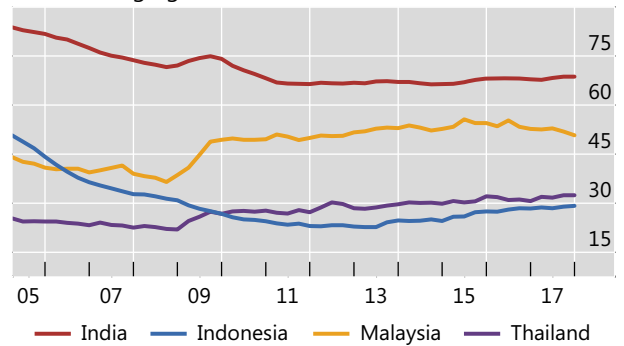
Major advanced economies



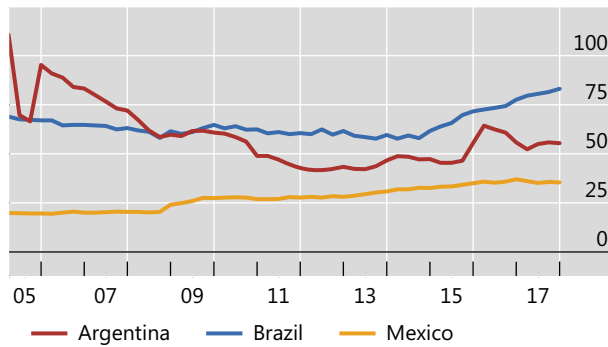
Emerging Asia



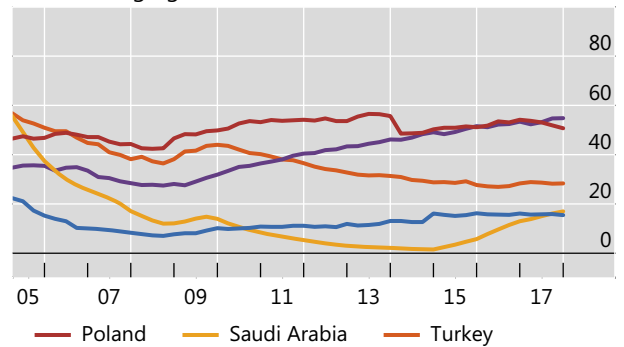
Other emerging Asia



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.

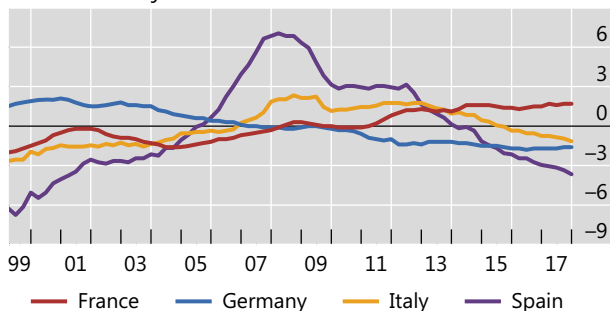
G Debt service ratios for the private non-financial sector

Debt service ratios of the private non-financial sector

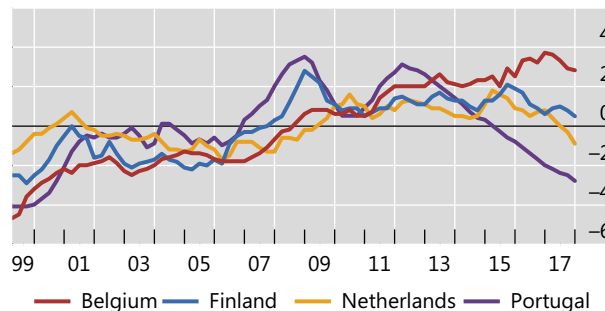
Deviation from country-specific mean, in percentage points¹

Graph G.1

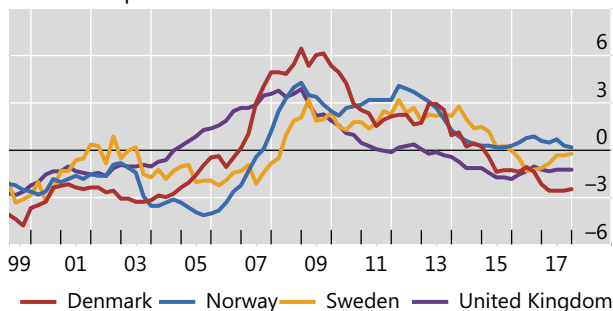
Euro area: major countries



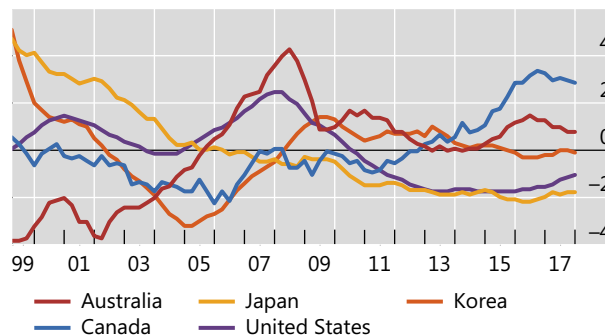
Euro area: other countries



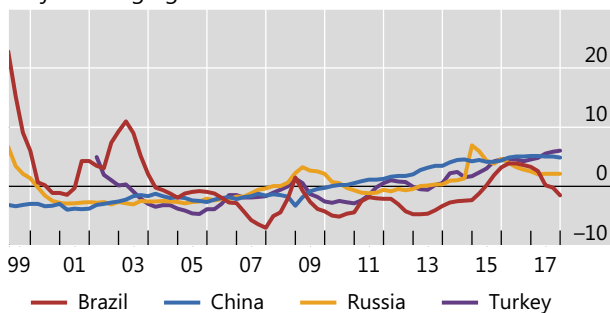
Other European countries



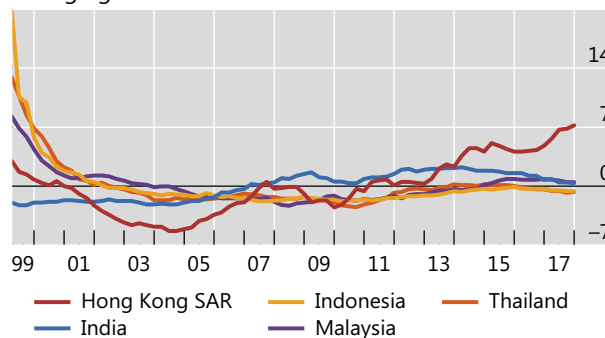
Other economies



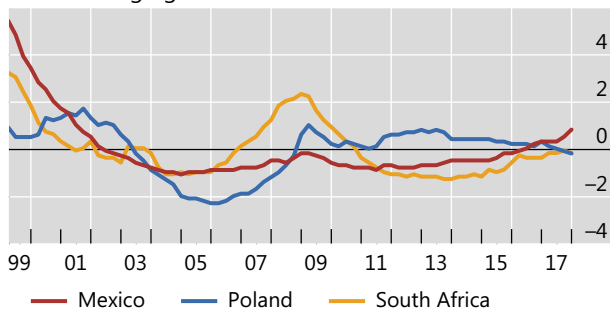
Major emerging markets²



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.

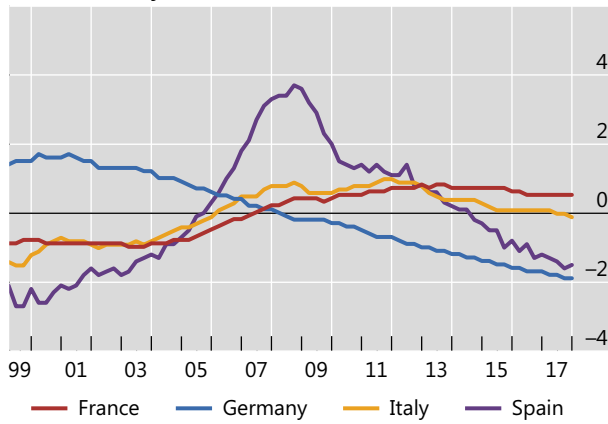
Source: BIS debt service ratios statistics.

Debt service ratios of households

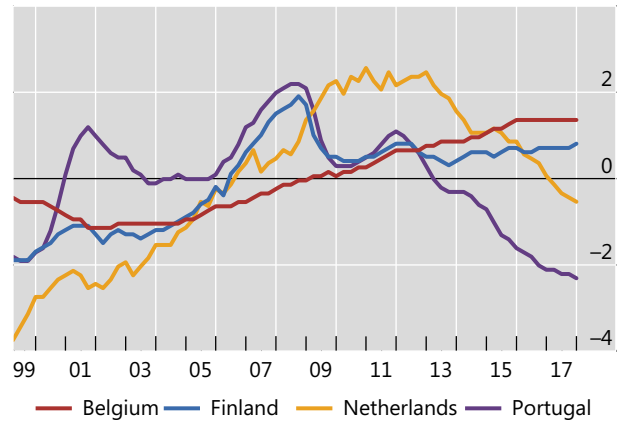
Deviation from country-specific mean, in percentage points¹

Graph G.2

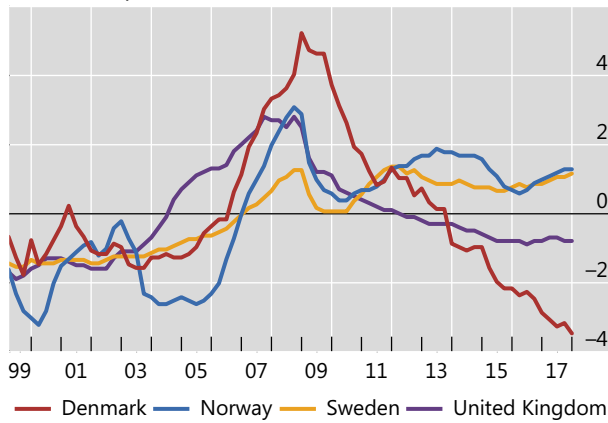
Euro area: major countries



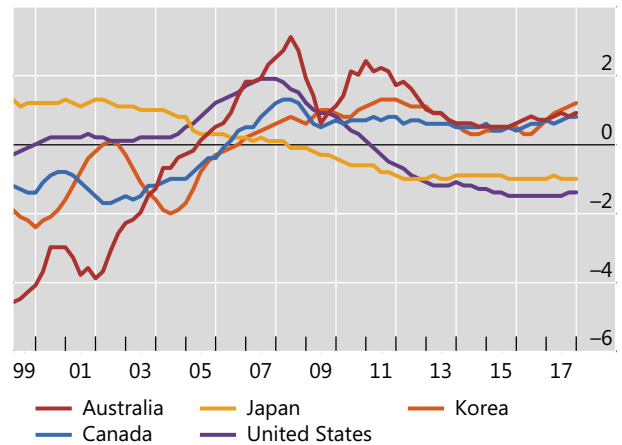
Euro area: other countries



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.

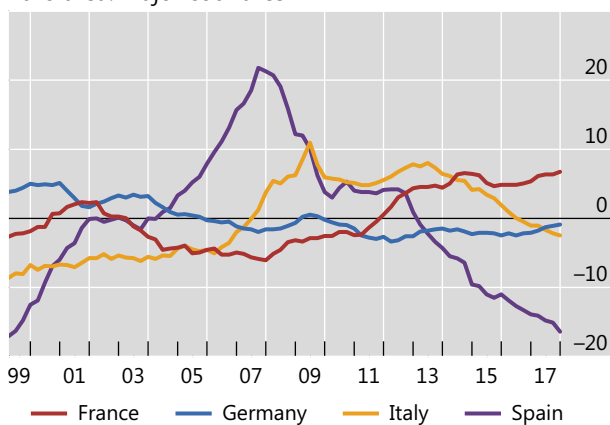
Source: BIS debt service ratios statistics.

Debt service ratios of non-financial corporations

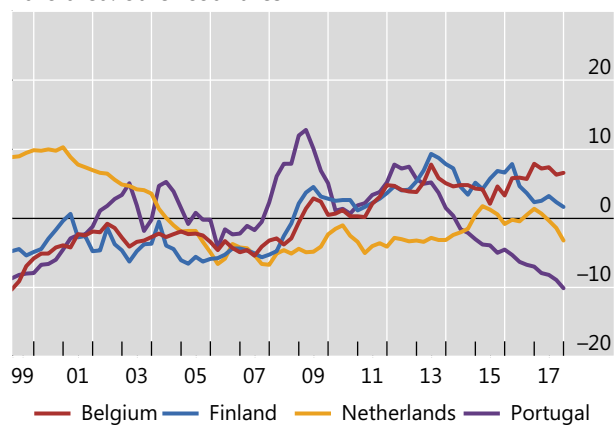
Deviation from country-specific mean, in percentage points¹

Graph G.3

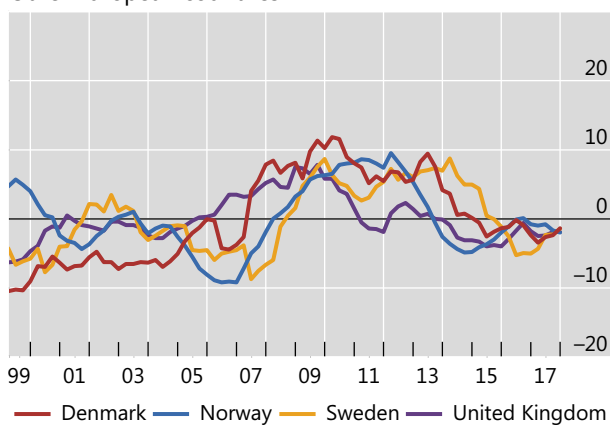
Euro area: major countries



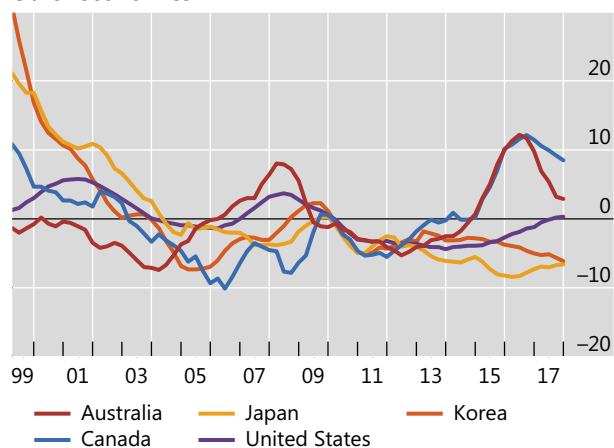
Euro area: other countries



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.

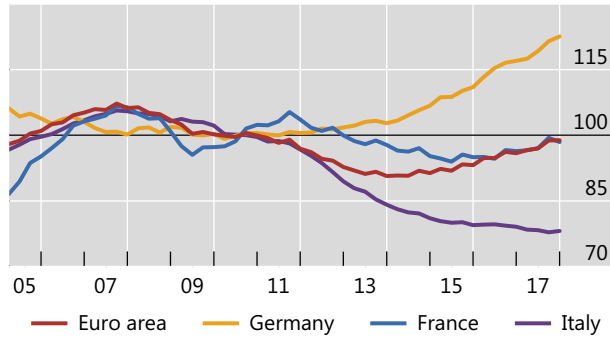
H Property price statistics

Real residential property prices

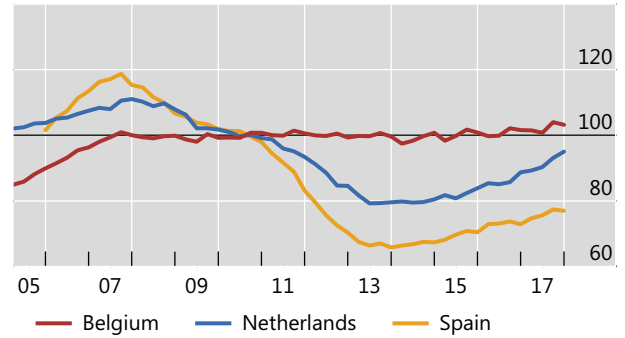
CPI-deflated, 2010 = 100

Graph H.1

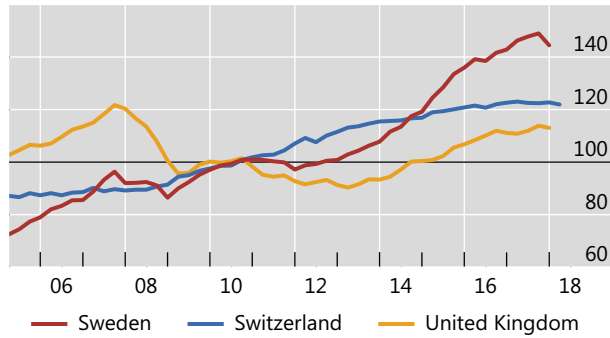
Euro area: aggregate and major countries



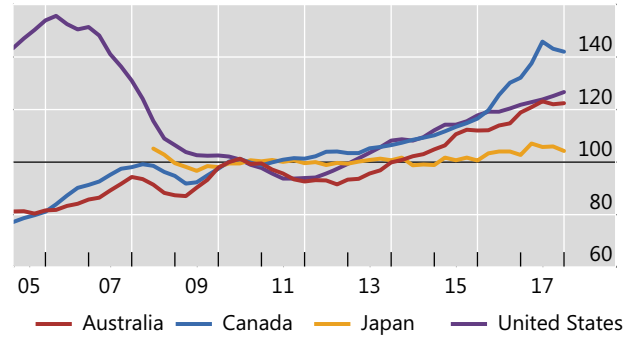
Euro area: other countries



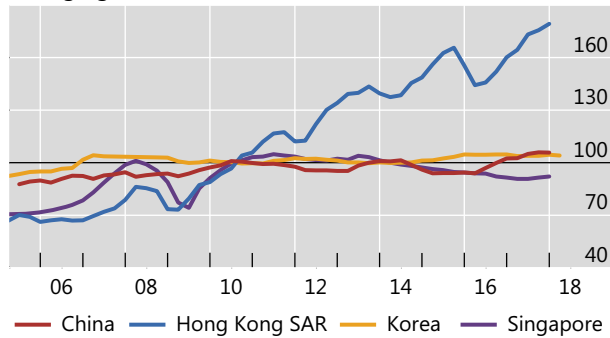
Other European countries



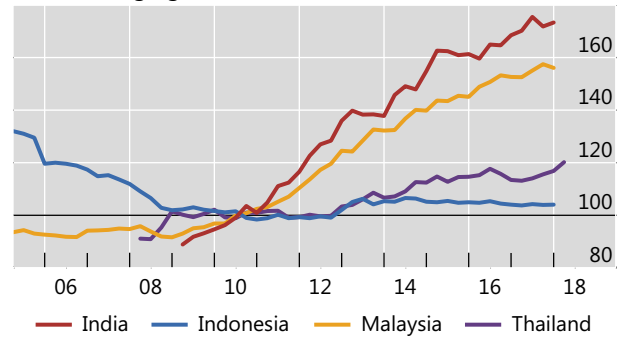
Major advanced economies



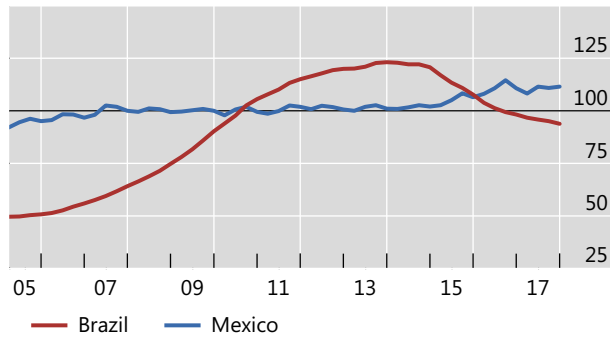
Emerging Asia



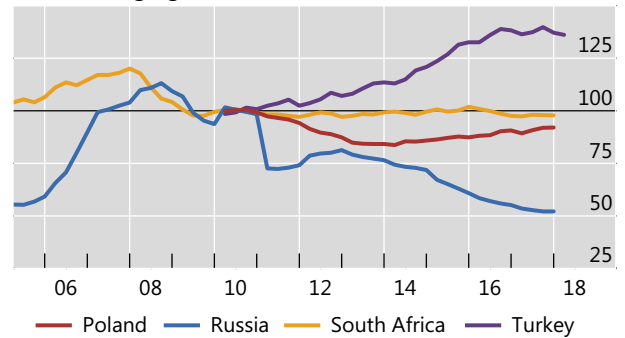
Other emerging Asia



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.

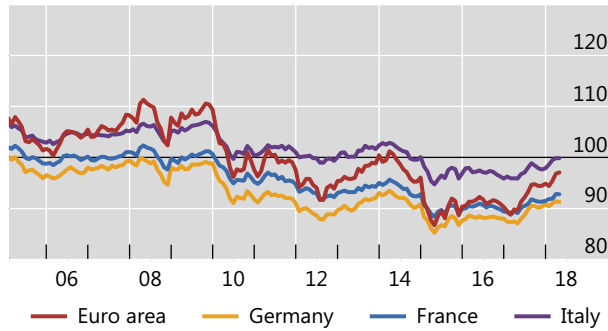
I Effective and US dollar exchange rate statistics

Real effective exchange rates

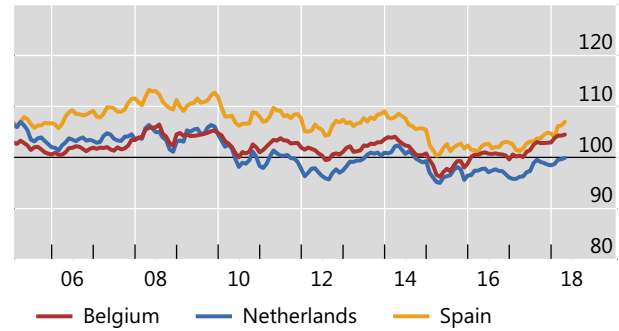
CPI-based, 1995–2005 = 100¹

Graph I.1

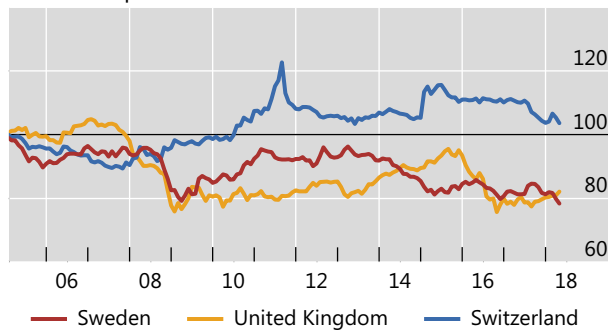
Euro area: aggregate and major countries



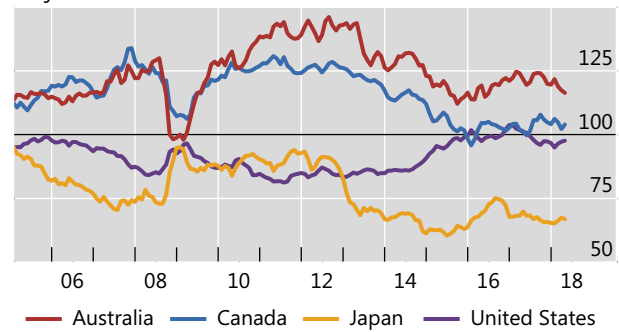
Euro area: other countries



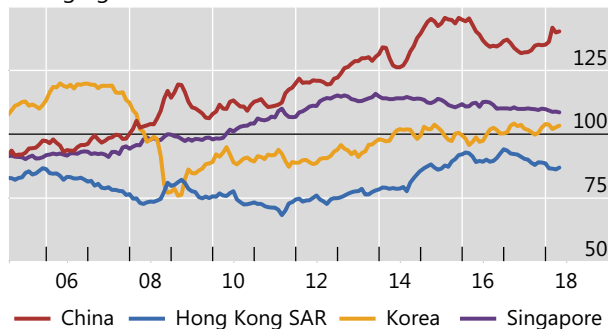
Other European countries



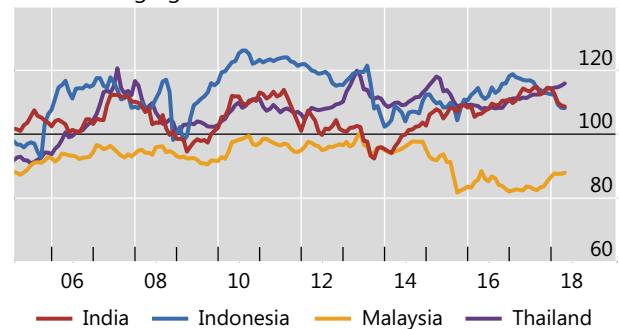
Major advanced economies



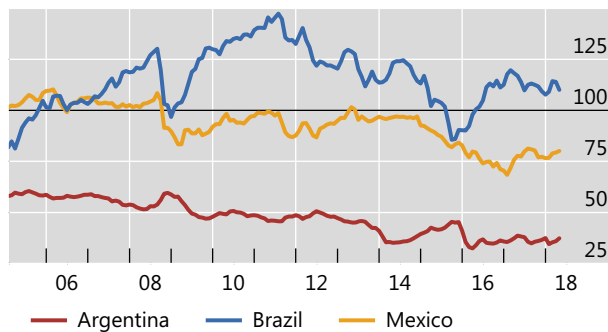
Emerging Asia



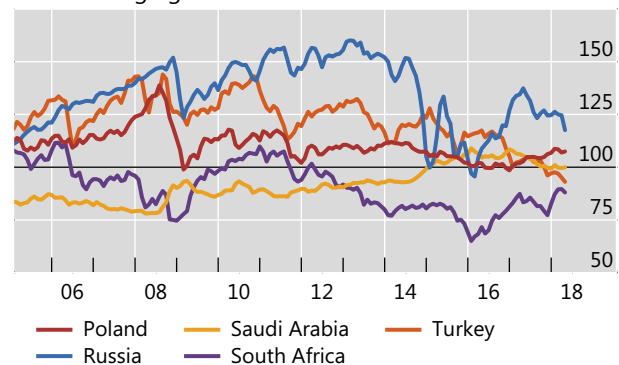
Other emerging Asia



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.

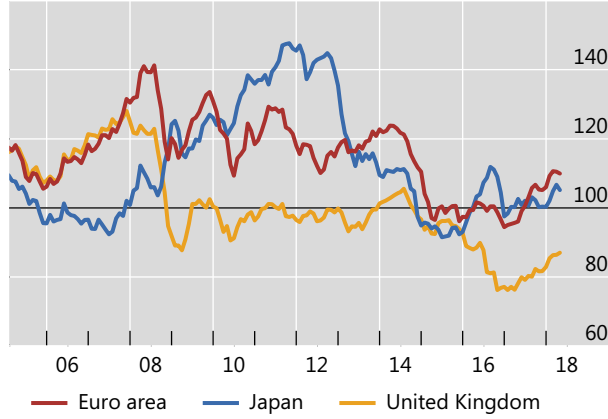
Source: BIS effective exchange rates statistics.

US dollar exchange rates

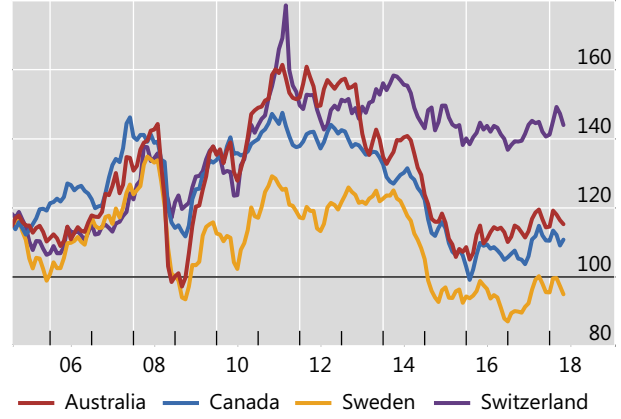
Indices, 1995–2005 = 100¹

Graph I.2

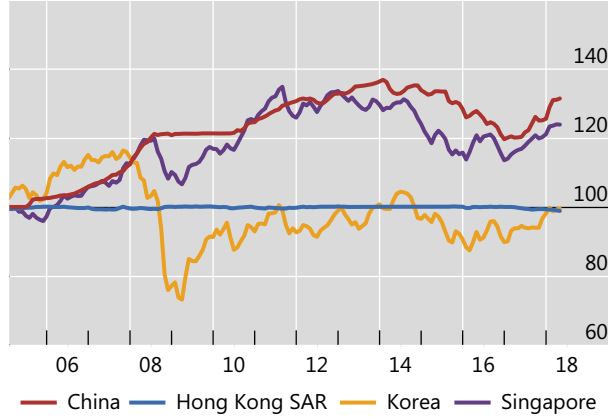
Major advanced economies



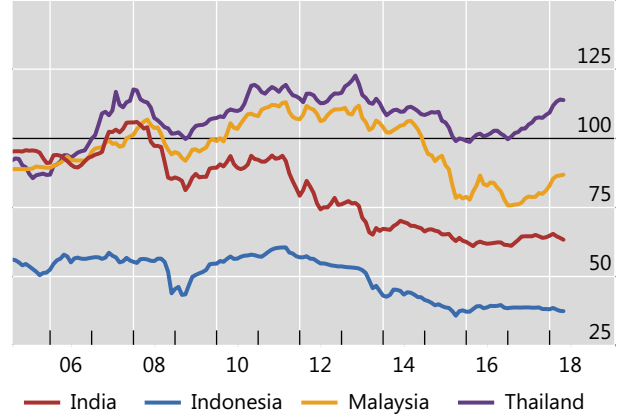
Other advanced economies



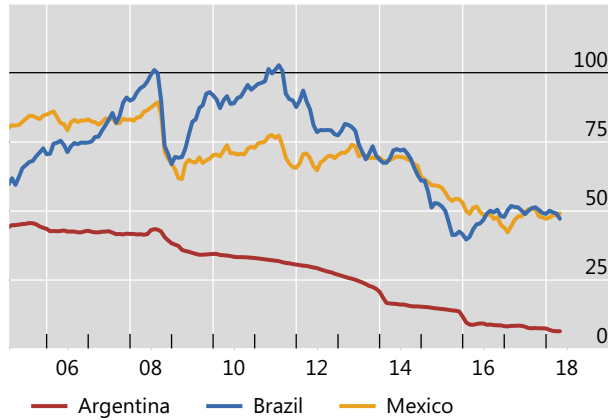
Emerging Asia



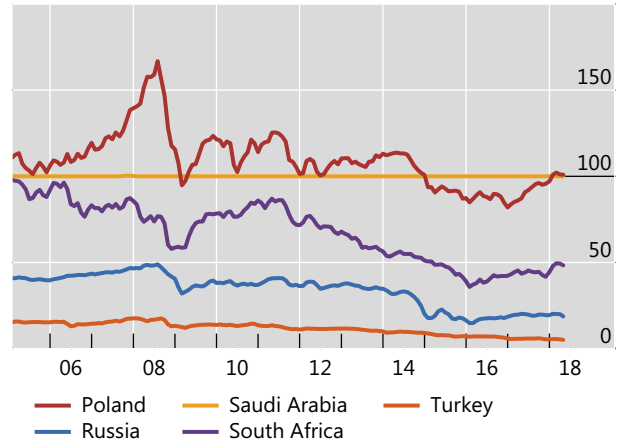
Other emerging Asia



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.

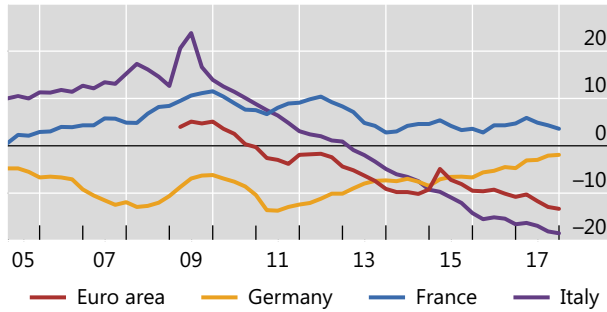
J Credit-to-GDP gaps

Credit-to-GDP gaps

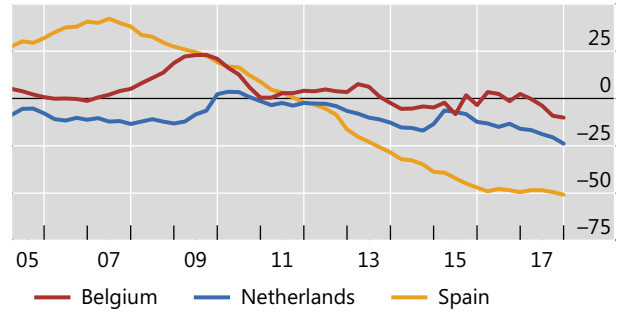
In percentage points of GDP

Graph J.1

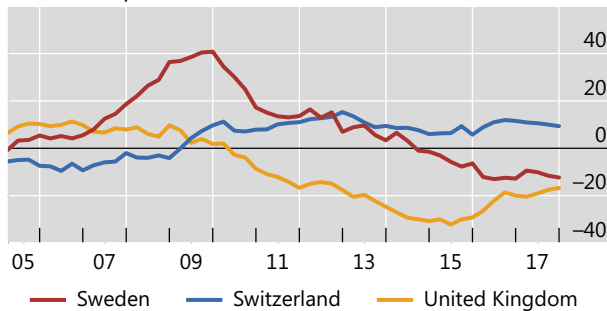
Euro area: aggregate and major countries



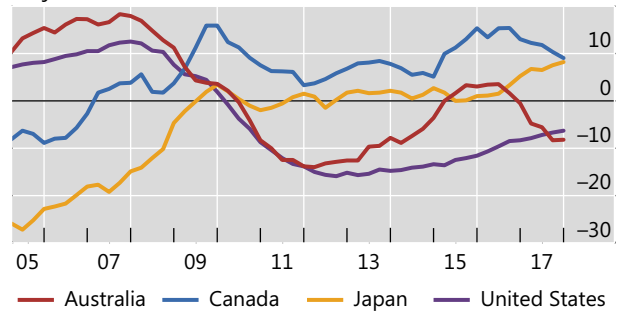
Euro area: other countries



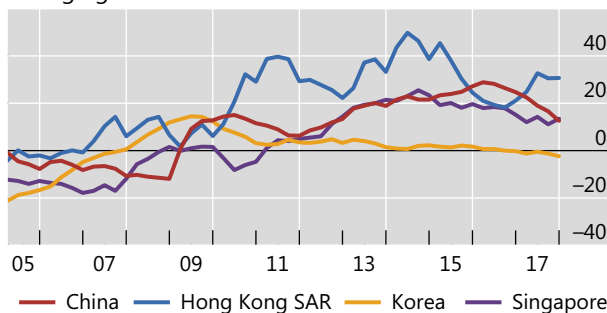
Other European countries



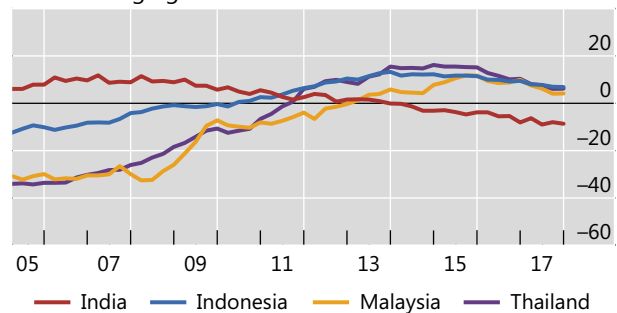
Major advanced economies



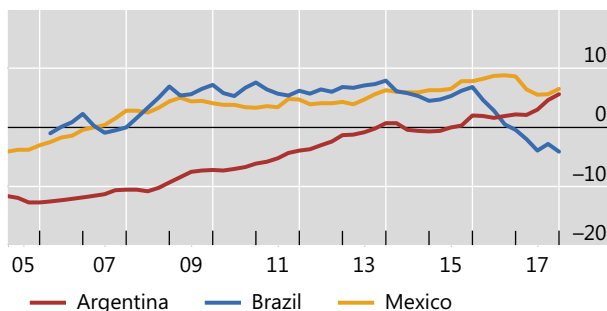
Emerging Asia



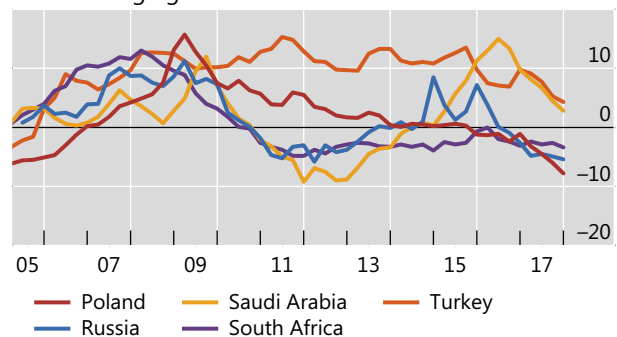
Other emerging Asia



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.

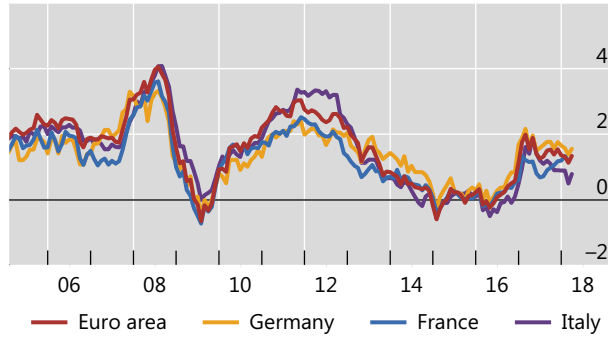
K Consumer prices

Consumer prices

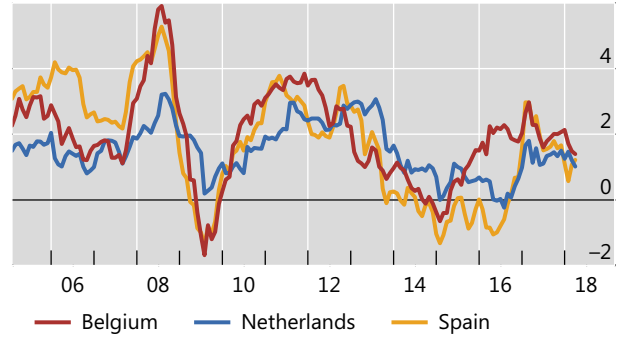
Year-on-year percentage changes

Graph K.1

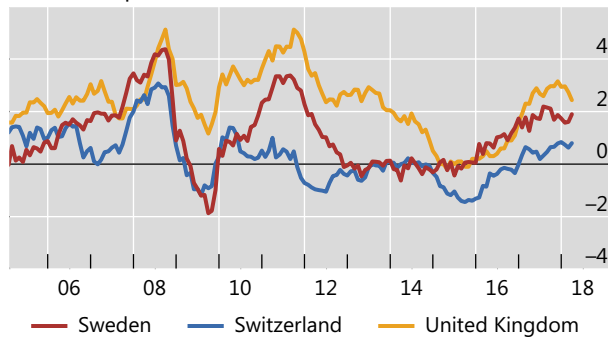
Euro area: aggregate and major countries



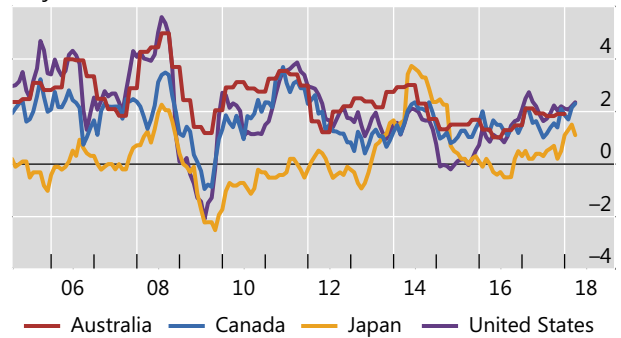
Euro area: other countries



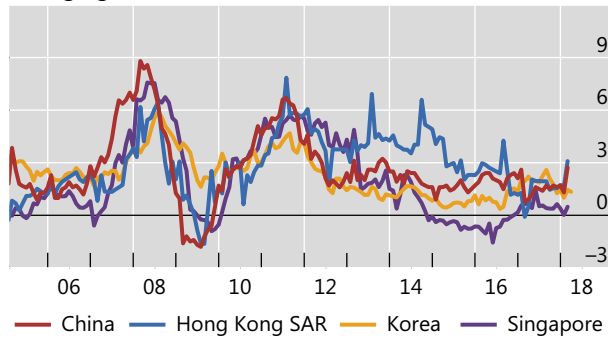
Other European countries



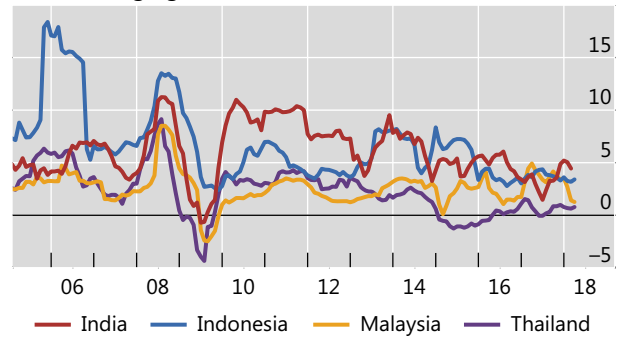
Major advanced economies



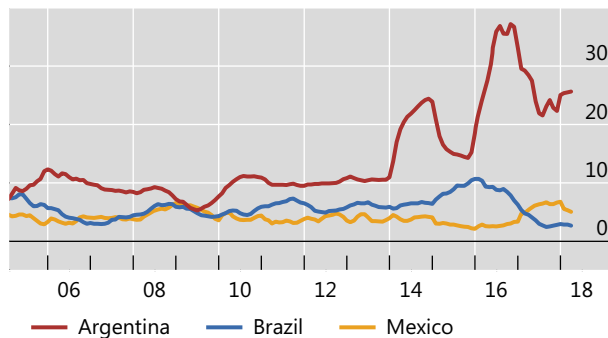
Emerging Asia



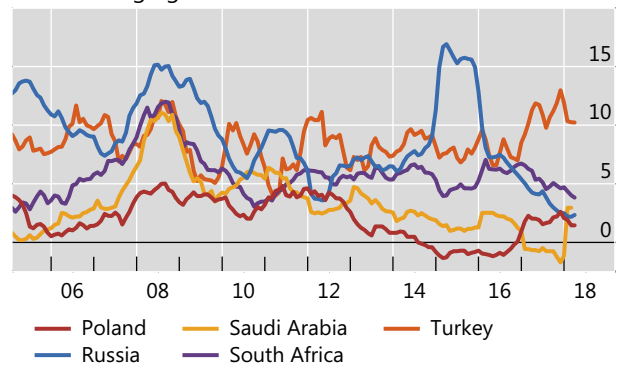
Other emerging Asia



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.

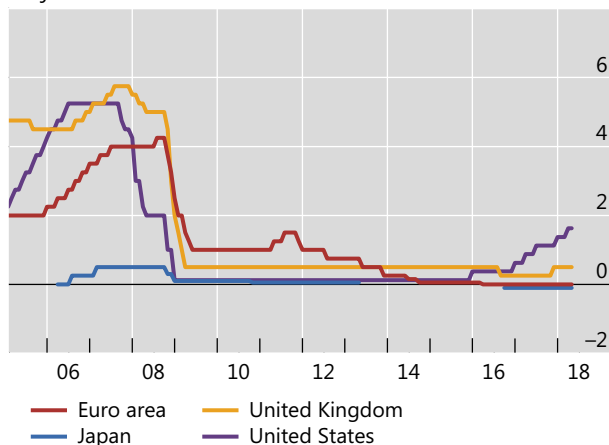
L Central bank policy rates

Central bank policy or representative rates

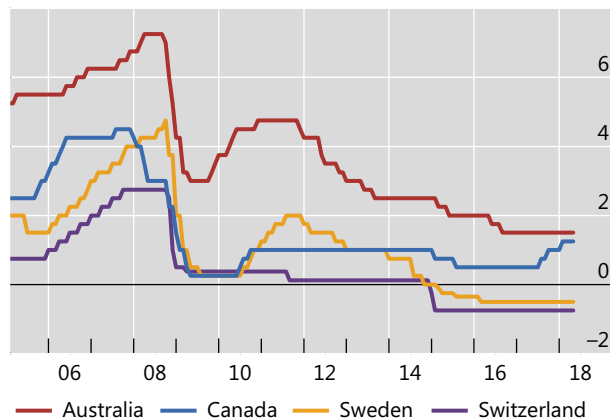
Month-end; in per cent

Graph L.1

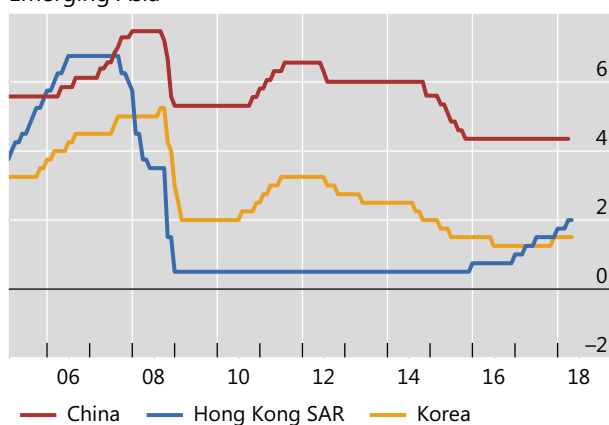
Major advanced economies



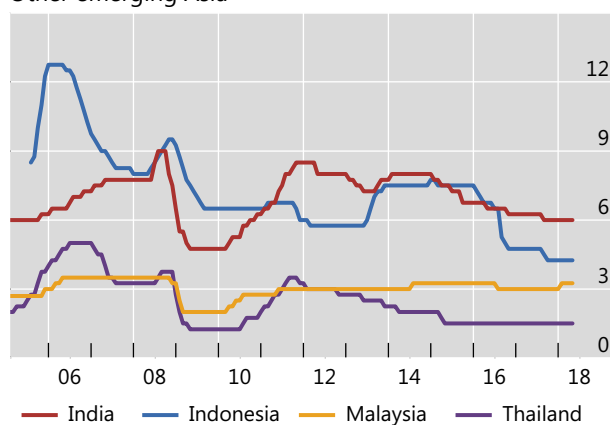
Other advanced economies



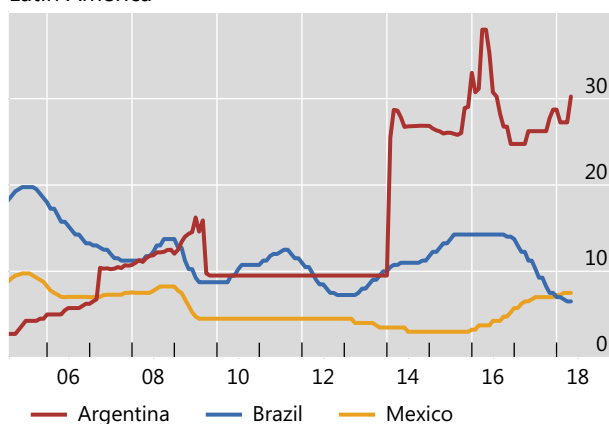
Emerging Asia



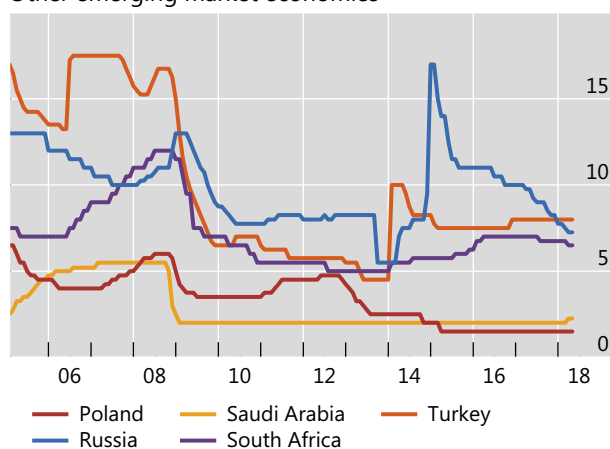
Other emerging Asia



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

March 2018	Early warning indicators of banking crises: expanding the family	Iñaki Aldasoro, Claudio Borio & Mathias Drehmann
March 2018	Tracking the international footprints of global firms	Stefan Avdjiev, Mary Everett, Philip R Lane & Hyun Song Shin
March 2018	Payments are a-changin' but cash still rules	Morten Bech, Umar Faruqui, Frederik Ougaard & Cristina Picillo
March 2018	The ABCs of bank PBRs: What drives bank price-to-book ratios?	Bilyana Bogdanova, Ingo Fender & Előd Takáts
March 2018	Mortgages, developers and property prices	Michael Chui, Anamaria Illes & Christian Uppe
March 2018	The implications of passive investing for securities markets	Vladyslav Sushko & Grant Turner
December 2017	Is there a debt service channel of monetary transmission?	Boris Hofmann & Gert Peersman
December 2017	Household debt: recent developments and challenges	Anna Zabai
September 2017	FX swaps and forwards: missing global debt?	Claudio Borio, Robert McCauley & Patrick McGuire
September 2017	Central bank cryptocurrencies	Morten Bech & Rodney Garratt
September 2017	What are the effects of macroprudential policies on macroeconomic performance?	Codruta Boar, Leonardo Gambacorta, Giovanni Lombardo & Luiz Pereira da Silva
September 2017	Green bond finance and certification	Torsten Ehlers & Frank Packer

Recent BIS publications¹

BIS Papers

Financial spillovers, spillbacks, and the scope for international macroprudential policy coordination

BIS Papers No 97, April 2018

This paper discusses the scope for international macroprudential policy coordination in a financially integrated world economy. It first reviews the transmission channels associated with, and the empirical evidence on, financial spillovers and spillbacks - which have both increased in magnitude since the global financial crisis. Then it proceeds with evaluating the potential gains associated with cross-border macroprudential coordination, dwelling on both recent analytical contributions and quantitative studies based on multi-country models with financial market frictions. The particular case of currency unions is discussed, and so is the issue of whether coordination of macroprudential policies simultaneously requires some degree of monetary policy coordination. Much of this analysis focuses on the potential for countercyclical policy coordination between major advanced economies and a group identified as systemic middle-income countries (SMICs). Finally, the paper considers practical ways to promote international macroprudential policy coordination. Following a discussion of Basel III's principle of reciprocity and ways to improve it, the paper advocates a further strengthening of the current statistical, empirical and analytical work conducted by the Bank for International Settlements, the Financial Stability Board and the International Monetary Fund to evaluate and raise awareness of the gains from international coordination of macroprudential policies.

The price, real and financial effects of exchange rates

BIS Papers No 96, March 2018

The Hong Kong Monetary Authority and the Bank for International Settlements (BIS) co-hosted a research conference on "The price, real and financial effects of exchange rates " on 28-29 August 2017 in Hong Kong. The event was the wrap-up conference of a research programme of the BIS Representative Office for Asia and the Pacific on exchange rates that had been endorsed by the Asian Consultative Council of central bank Governors in February 2016.

The conference brought together senior officials and researchers from central banks, international organisations and academia. This volume is a collection of the speeches, papers and prepared discussant remarks from the conference. Topics covered include exchange rate puzzles; deviations from covered interest parity; devaluations and intraregional trade; exchange rates and corporate risk-taking; FX hedging and creditors' rights; and a risk-taking channel of FX reserves accumulation. The foreword summarises the contents of the conference and provides a synopsis of the discussions for time-constrained readers.

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/>).

Identifying oil price shocks and their consequences: the role of expectations in the crude oil market

Takuji Fueki, Hiroka Higashi, Naoto Higashio, Jouchi Nakajima, Shinsuke Ohyama and Yoichiro Tamanyu

May 2018, No 725

This paper proposes a simple but comprehensive structural vector autoregressive (SVAR) model to examine the underlying factors of oil price dynamics. The distinguishing feature is to explicitly assess the role of expectations on future aggregate demand and oil supply in addition to the traditional realized aggregate demand and supply factors. Our empirical analysis shows that identified future demand and supply shocks explain about 30-35 percent of historical oil price fluctuations. In particular, future oil supply shocks are more than twice as important as realized and future demand shocks in accounting for oil price developments. The empirical result indicates that the influence of oil price shocks on global output varies according to the nature of each shock. We also show that the financial factors and the development of shale-oil technology are additional relevant sources of oil price fluctuations.

Do small bank deposits run more than large ones? Three event studies of contagion and financial inclusion

Dante B Canlas, Johnny Noe E Ravalo and Eli M Remolona

May 2018, No 724

How susceptible to contagion are bank deposits associated with financial inclusion? To shed light on this question, we analyze the behavior of deposits of different account sizes around three significant bank closures in the Philippines. When we look at the three events by applying difference-in-difference regressions to a dataset that distinguishes between small and large deposits at the town level, we find no evidence that the closure of a large bank leads to withdrawals by depositors at other banks nearby, whether the depositors are large or small. For two of the events, we do find some evidence that depositors, both large and small, anticipate that their bank is about to fail, and they start to withdraw before the bank is closed. With more comprehensive branch-level data for one of the events, we find that a bank closure does lead to reduced deposits at bank branches nearby. All this suggests that, while a bank failure can lead to contagion, the behavior of small depositors is no different from that of large depositors, and thus financial inclusion is unlikely to add to financial instability.

The cross-border credit channel and lending standards surveys

Andrew Filardo and Pierre Siklos

May 2018, No 723

This paper argues that a measure of lending conditions - Senior Loan Officer (SLO) surveys - offers important insights into the monetary transmission mechanism. Using a Global VAR (GVAR) and SLO survey data from 16 countries, we document bank lending standards' significant role in explaining the dynamics of domestic credit conditions. Changes in lending attitudes lead to spillovers of financial conditions to other advanced and emerging market economies. We also examine the interaction of unconventional monetary policies (UMPs) and lending attitudes by using an external high frequency instrument. Looking through this lens of UMPs, we see that expansionary monetary policy led to a lowering of domestic credit standards which amplified the impact of the initial monetary stimulus. However, we also find evidence that the need to resort to UMPs also brought about a decline in lending demand, raising questions about whether the signaling channel of monetary policy unintentionally worked at cross purposes by sapping the full effectiveness of these policies. The varied experiences in the United States and euro area draw attention to the relative importance of bank intermediation in determining the strength of the bank lending channel of monetary policy.

The enduring link between demography and inflation

Mikael Juselius and Előd Takáts

May 2018, No 722

Demographic shifts, such as population ageing, have been suggested as possible explanations for the past decade's low inflation. We exploit cross-country variation in a long panel to identify age structure effects in inflation, controlling for standard monetary factors. A robust relationship emerges that accords with the lifecycle hypothesis. That is, inflationary pressure rises when the share of dependants increases and, conversely, subsides when the share of working age population increases. This relationship accounts for the bulk of trend inflation, for instance, about 7 percentage points of US disinflation since the 1980s. It predicts rising inflation over the coming decades.

Effects of asset purchases and financial stability measures on term premia in the euro area

Richhild Moessner

May 2018, No 721

We study the effects of the announcements of ECB asset purchases and of financial stability measures in the euro area on ten-year government bond term premia in eleven euro area countries in the wake of the global financial crisis and the euro area sovereign debt crisis. We find that the term premia of euro area countries with higher sovereign risk, as measured by sovereign CDS spreads, decreased more in response to the announcements of asset purchases and financial stability measures. Term premia of countries with the lowest sovereign risk either increased as in Germany, or were not significantly affected or fell slightly, as in the Netherlands and Finland.

Could a higher inflation target enhance macroeconomic stability?

José Dorich, Nicholas Labelle St-Pierre, Vadym Lepetyuk and Rhys Mendes

May 2018, No 720

Recent international experience with the effective lower bound on nominal interest rates has rekindled interest in the benefits of inflation targets above 2 per cent. We evaluate whether an increase in the inflation target to 3 or 4 per cent could improve macroeconomic stability in the Canadian economy. We find that the magnitude of the benefits hinges critically on two elements: (i) the availability and effectiveness of unconventional monetary policy (UMP) tools at the effective lower bound, and, (ii) the level of the real neutral interest rate. In particular, we show that when the real neutral rate is in line with the central tendency of estimates, raising the inflation target yields some improvement in macroeconomic outcomes. There are only modest gains if effective UMP tools are available. In contrast, with a deeply negative real neutral rate, a higher inflation target substantially improves macroeconomic stability regardless of UMP.

Channels of US monetary policy spillovers to international bond markets

Elias Albagli, Luis Ceballos, Sebastián Claro and Damian Romero

May 2018, No 719

We document significant US monetary policy (MP) spillovers to international bond markets. Our methodology identifies US MP shocks as the change in short-term treasury yields within a narrow window around FOMC meetings, and traces their effects on international bond yields using panel regressions. We emphasize three main results. First, US MP spillovers to long-term yields have increased substantially after the global financial crisis. Second, spillovers are large compared to the effects of other events, and at least as large as the effects of domestic MP after 2008. Third, spillovers work through different channels, concentrated in risk neutral rates (expectations of future MP rates) for developed countries, but predominantly on term premia in emerging markets. In interpreting these findings, we provide evidence consistent with an exchange rate channel, according to which foreign central banks face a tradeoff between narrowing MP rate differentials, or experiencing currency movements against the US dollar. Developed countries adjust in a manner consistent with freely floating regimes, responding partially with risk neutral rates, and partially through currency adjustments. Emerging countries display patterns consistent with FX interventions, which cushion the response of exchange rates but reinforce capital flows

and their effects in bond yields through movements in term premia. Our results suggest that the endogenous effects of FXI on long-term yields should be added into the standard cost-benefit analysis of such policies.

Breaking the trilemma: the effects of financial regulations on foreign assets

David Perez-Reyna and Mauricio Villamizar-Villegas

May 2018, No 718

In this paper we analyze the effects of financial constraints on the exchange rate through the portfolio balance channel. Our contribution is twofold: First, we construct a tractable two-period general equilibrium model in which financial constraints inhibit capital flows. Hence, departures from the uncovered interest rate parity condition are used to explain the effects of sterilized foreign exchange intervention. Second, using high frequency data during 2004-2015, we use a sharp policy discontinuity within Colombian regulatory banking limits to empirically test for the portfolio balance channel. Consistent with our model's postulations, our findings suggest that the effects on the exchange rate are short-lived, and significant only when banking constraints are binding.

Financial and price stability in emerging markets: the role of the interest rate

Lorenzo Menna and Martin Tobal

May 2018, No 717

The Global Financial Crisis opened a heated debate on whether inflation target regimes must be relaxed and allow for monetary policy to address financial stability concerns. Nonetheless, this debate has focused on the ability of the interest rate to "lean against the wind" and, more generally, on the accumulation of systemic risk arising from the macro-financial challenges faced by advanced economies. This paper extends the debate to emerging markets by developing micro-foundations that allow extending a simplified version of the New-Keynesian credit augmented model of Curdia and Woodford (2016) to a small-open economy scenario, and by subsequently using the same empirical strategy as Ajello et al. (2015) to calibrate the model for Mexico. The results suggest that openness in the capital account, and in particular a strong dependence of domestic financial conditions on capital flows, diminishes the effectiveness of monetary policy to lean against the wind. Indeed, in the open-economy with endogenous financial crises, the optimal policy rate is even below the level that would prevail in the absence of endogenous financial crisis and systemic risk.

Macro-financial linkages: the role of liquidity dependence

Alexey Ponomarenko, Anna Rozhkova and Sergei Seleznev

April 2018, No 716

We estimate a panel Bayesian vector autoregression model for a cross-section of seven advanced European economies and produce out-of-sample forecasts of GDP conditionally on observed developments of interest rates and credit. We show that, by using a smooth transition version of the model and allowing the parameters to vary across economies conditionally on their liquidity dependence (i.e. dependence on the availability of funding from external sources), it is possible to improve the accuracy of the forecasts. We conclude that the degree of liquidity dependence is likely to be among the important predictors of heterogeneity in macro-financial linkages across countries.

A time series model of interest rates with the effective lower bound

Benjamin K Johansson and Elmar Mertens

April 2018, No 715

Modeling nominal interest rates requires their effective lower bound (ELB) to be taken into account. We propose a flexible time series approach that includes a "shadow rate" - a notional rate identical to the actual nominal rate except when the ELB binds. We apply this approach to a trend-cycle decomposition of interest rates and macroeconomic variables that generates competitive interest-rate forecasts. Our estimates of the real-rate trend have edged down somewhat in recent decades, but not significantly so. We identify monetary policy shocks from shadow-rate surprises and find that they were particularly effective at stimulating economic activity during the ELB period.

Do interest rates play a major role in monetary policy transmission in China?

Güneş Kamber and Madhusudan Mohanty

April 2018, No 714

We explore the role of interest rates in monetary policy transmission in China in the context of its multiple instrument setting. In doing so, we construct a new series of monetary policy surprises using information from high frequency Chinese financial market data around major monetary policy announcements. Our event analysis shows that monetary policy surprises have persistent effects on interest rates. We then use these surprise measures as external instruments to identify monetary policy shocks in an SVAR. We find that a contractionary monetary policy surprise increases interest rates and significantly reduces inflation and economic activity. Our findings provide further support to recent studies suggesting that monetary policy transmission in China has become increasingly similar to that in advanced economies.

Inflation and professional forecast dynamics: an evaluation of stickiness, persistence, and volatility

Elmar Mertens and James M. Nason

April 2018, No 713

This paper studies the joint dynamics of real-time U.S. inflation and average inflation predictions of the Survey of Professional Forecasters (SPF) based on sample ranging from 1968Q4 to 2017Q2. The joint data generating process (DGP) comprises an unobserved components (UC) model of inflation and a sticky information (SI) prediction mechanism for the SPF predictions. We add drifting gap inflation persistence to a UC model in which stochastic volatility (SV) affects trend and gap inflation. Another innovation puts a time-varying frequency of inflation forecast updating into the SI prediction mechanism. The joint DGP is a nonlinear state space model (SSM). We estimate the SSM using Bayesian tools grounded in a Rao-Blackwellized auxiliary particle filter, particle learning, and a particle smoother. The estimates show that (i) longer horizon average SPF inflation predictions inform estimates of trend inflation; (ii) gap inflation persistence is procyclical and SI inflation updating is frequent before the Volcker disinflation; and (iii) subsequently, gap inflation persistence turns countercyclical and SI inflation updating becomes infrequent.

Firms' credit risk and the onshore transmission of the global financial cycle

Ramon Moreno and José María Serena Garralda

March 2018, No 712

We investigate the role of firms' credit risk in the onshore transmission of international bond market conditions. We show that reductions in the global price of risk, measured by the excess bond premium, encourage more international bond borrowing by smaller and younger firms. Due to informational asymmetries, these firms pay a higher credit spread. Thus their funding costs, and consequently their international borrowing, are more tightly linked to the global price of risk. The funds borrowed in response to favourable market conditions cause their balance sheets to deteriorate; over a three-year horizon, leverage increases, in support of capital expenditure, and cash holdings increase. Our results reveal a micro-level link between rising global risk appetite and the gradual build-up of domestic vulnerabilities.

Credit supply and productivity growth

Francesco Manaresi and Nicola Pierri

March 2018, No 711

We study the impact of bank credit supply on firm output and productivity. By exploiting a matched firm-bank database which covers all the credit relationships of Italian corporations over more than a decade, we measure idiosyncratic supply-side shocks to firms' credit availability. We use our data to estimate a production model augmented with financial frictions and show that an expansion in credit supply leads firms to increase both their inputs and their output (value added and revenues) for a given level of inputs. Our estimates imply that a credit crunch will be followed by a productivity slowdown, as experienced by most OECD countries after the Great Recession. Quantitatively, the credit contraction between 2007 and 2009 could account for about a quarter of the observed decline in Italy's total

factor productivity growth. The results are robust to an alternative measurement of credit supply shocks that uses the 2007-08 interbank market freeze as a natural experiment to control for assortative matching between borrowers and lenders. Finally, we investigate possible channels: access to credit fosters IT-adoption, innovation, exporting, and the adoption of superior management practices.

Exchange rate appreciations and corporate risk taking

Sebnem Kalemli-Ozcan, Xiaoxi Liu and Ilhyock Shim

March 2018, No 710

We test the risk taking channel of exchange rate appreciations using firm-level data from private and public firms in ten Asian emerging market economies during 2002-2015. Since foreign currency (FX) debt at the firm level is not observed for the Asian economies, we approximate the FX debt of a given firm by assuming that any given firm will hold a constant share of its total debt in foreign currency, where this share is given by the firm's country's share of FX liabilities in total liabilities. We measure risk taking by firm leverage. We show that firms with a higher volume of FX debt before the exchange rate appreciates, increase their leverage relatively more after the appreciation. Our results imply that more indebted firms become even more leveraged after exchange rate appreciations.

Does sovereign risk in local and foreign currency differ?

Marlene Amstad, Frank Packer and Jimmy Shek

March 2018, No 709

Historically, sovereign debt in local currency has been considered safer than debt in foreign currency. Yet the literature offers scant theoretical or empirical guidance as to why such a gap exists, or why it appears to have slowly and steadily diminished for all regions over the past two decades, as expressed in the ratings widely used by global investors and regulators to assess credit risk. We suggest and empirically test five hypotheses. We find that differences in inflation do not explain the assessed gaps between local and foreign currency credit risk. The banking sector's vulnerability to sovereign debt problems is a significant determinant of the spread, but does not account for its decline over time. Instead, the surge in global reserves, and to lesser extent the reduced reliance on overseas foreign currency borrowing (ie the decline of original sin), as well as lower global volatility, appear to have lessened the gap. But if these variables were to go into reverse, the gap could again widen.

Business models and dollar funding of global banks

Iñaki Aldasoro, Torsten Ehlers and Egemen Eren

March 2018, No 708

Since the eurozone crisis, there has been a stark divergence between European banks and Japanese banks in their dollar uses and sources. We show that these shifts have implications for the price of dollar funding. We document a "Japan Repo Premium." Japanese banks pay a premium for repos with US money market funds (MMFs), despite identical contract and risk characteristics. Using the US MMF reform as a natural experiment, we establish that Japanese banks' long maturity dollar assets generate a relatively inelastic demand for long maturity dollar borrowing. Differences in the demand for dollar funding combined with market and supply side frictions can explain these pricing differences. MMFs mainly provide short term repos and favor longer term clients for long maturity repos. Japanese banks concentrate their repo borrowing, reducing their bargaining power in order to extend their funding maturity. Our results have implications for the formation of global dollar funding networks. We provide evidence for European banks intermediating repos to Japanese banks, with economically significant estimated spreads from maturity transformation.

Global imbalances from a stock perspective. The asymmetry between creditors and debtors

Enrique Alberola-Ila, Ángel Estrada and Francesca Viani

February 2018, No 707

After the recent crisis, a reduction was observed in global current account (flow imbalances). Still, global disequilibria as measured in terms of countries' net foreign assets (stock imbalances), kept increasing. This paper studies whether stock imbalances have a stabilizing or destabilizing impact on countries' accumulation of external wealth and why. Our results

show that in debtor economies the existing stock of net debt is stabilising as it helps to reduce trade imbalances, limit current account deficits and halt future debt accumulation. In creditor countries, instead, the positive stock of net foreign assets contributes - everything else equal - to increase future current account surpluses, as trade balances do not adjust, potentially leading to destabilizing dynamics in wealth accumulation. The asymmetry may have relevant implications for global trade and growth.

Basel Committee on Banking Supervision

Capital treatment for simple, transparent and comparable short-term securitisations May 2018

The Basel Committee on Banking Supervision today issued the Capital treatment for simple, transparent and comparable short-term securitisations. This standard supplements the Criteria for identifying simple, transparent and comparable short-term securitisations issued jointly with the International Organization of Securities Commissions (IOSCO).

The standard sets out additional guidance and requirements for the purpose of applying preferential regulatory capital treatment for banks acting as investors in or as sponsors of simple, transparent and comparable (STC) short-term securitisations, typically in asset-backed commercial paper (ABCP) structures. The additional guidance and requirements in this standard are consistent with those for STC term securitisations set out in the Committee's July 2016 revisions to the securitisation framework. Provided that the expanded set of STC short-term criteria are met, STC short-term securitisations will receive the same modest reduction in capital requirements as other STC term securitisations.

The standard incorporates feedback collected during the public consultation conducted in July 2017. Changes made include setting the minimum performance history for non-retail and retail exposures at five years and three years, respectively, and clarifying that the provision of credit and liquidity support to the ABCP structure can be performed by more than one entity, subject to certain conditions.

The short-term STC framework takes effect immediately. Similar to the STC framework for term securitisations, implementation of the STC short-term framework is not mandatory. Jurisdictions which consider that implementation costs exceed potential benefits retain the option not to implement the STC framework.

The Basel Committee wishes to thank all those who contributed time and effort to express their views during the consultation process.

Criteria for identifying simple, transparent and comparable short-term securitisations May 2018

The Basel Committee on Banking Supervision (BCBS) and the International Organization of Securities Commissions (IOSCO) today issued the Criteria for identifying simple, transparent and comparable short-term securitisations (the short-term STC criteria), which are available on the BCBS and IOSCO websites.

The short-term STC criteria aim to assist the financial industry in its development of simple, transparent and comparable short-term securitisations. The criteria maintain and build on the principles in the Criteria for identifying simple, transparent and comparable securitisations issued by BCBS-IOSCO in July 2015. The criteria published today take account of the characteristics of asset-backed commercial paper (ABCP) conduits, such as (i) the short maturity of the commercial paper issued, (ii) the different forms of programme structures and (iii) the existence of multiple forms of liquidity and credit support facilities.

The criteria incorporate feedback collected during the public consultation conducted in July 2017. Changes made include clarifying that the criteria do not automatically exclude equipment leases and auto loan and lease securitisations from the short-term STC framework.

Fourteenth progress report on adoption of the Basel regulatory framework April 2018

This updated progress report on adoption of the Basel regulatory framework provides a high-level view of Basel Committee members' progress in adopting Basel III standards as of end-March 2018.

The report focuses on the status of adoption of all the Basel III standards 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. The report includes for the first time the finalised Basel III post-crisis reforms published by the Committee in December 2017, which will take effect from 1 January 2022.

Frameworks for early supervisory intervention March 2018

The Basel Committee on Banking Supervision today published Frameworks for early supervisory intervention, which presents a range-of-practice study on how supervisors around the world have adopted frameworks, processes, and tools to support early supervisory intervention.

Since the global financial crisis, supervisory authorities have increasingly focused their attention on how early supervisory intervention can promote financial stability by reducing the probability and impact of a bank failure. There is also a common recognition that for supervision to operate effectively, identification and intervention at an early stage are critical to prevent problems from escalating or becoming acute.

There have been important developments in supervisory practices in this regard since the crisis. National supervisory authorities have adopted more forward-looking approaches, incorporating both quantitative and qualitative elements into their risk-based supervisory assessments. In addition to institution-specific supervision, supervisors are also adopting benchmarking exercises and thematic reviews as part of their toolkit to better detect emerging risks and potential outlier banks. Many national authorities have also undergone organisational changes to support these approaches, and have introduced dedicated teams and oversight functions to ensure early supervisory actions are taken and followed up.

Towards a sectoral application of the countercyclical capital buffer: A literature review March 2018

The aim of this paper is to review the existing literature on the (sectoral) countercyclical capital buffer. Since the literature directly addressing this topic is relatively scarce, we also include relevant papers that are only indirectly related. We draw insights from the theoretical and empirical literature and use these to shed light on whether the countercyclical capital buffer (CCyB) setting in the Basel III framework could be extended towards a sectoral application of the CCyB. Rather than aiming at providing an exhaustive overview of the literature reviewed, the aim is to draw focused messages that could serve as sufficiently grounded arguments in the debate.

Overall, the literature review shows that there is a justified need for sectoral macroprudential tools, and 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 empirical work is needed to assess their ability to achieve the different objectives that may be attributed to them. Furthermore, a sectoral application of the CCyB entails several operational challenges, such as defining modalities on when to activate a sectoral CCyB and on its interactions with the Basel III CCyB as well as with other (targeted) instruments. It would also add an additional layer of complexity to the macroprudential capital buffer framework. While they are crucial

for the further development of the policy framework on a sectoral CCyB, such operational issues are beyond the scope of this paper.

Frequently asked questions on the Basel III standardised approach for measuring counterparty credit risk exposures

March 2018

In March 2014, the Basel Committee on Banking Supervision published the standard The standardised approach for measuring counterparty credit risk exposures. To promote consistent global implementation of those requirements, the Committee has agreed to periodically review frequently asked questions (FAQs) and publish answers along with any technical elaboration of the standards text and interpretative guidance that may be necessary.

The document published today sets out the second set of FAQs on the standard, combined with those published in an earlier set of FAQs.

Frequently asked questions on market risk capital requirements

March 2018

In January 2016, the Basel Committee on Banking Supervision published the standard Minimum capital requirements for market risk. To promote consistent global implementation of those requirements, the Committee has agreed to periodically review frequently asked questions (FAQs) and publish answers along with any technical elaboration of the standards text and interpretative guidance that may be necessary.

The document published today sets out the second set of FAQs on the revised market risk standard, combined with those published in an earlier set of FAQs. The questions and answers address clarifications of the standardised approach, the internal models approach and the scope of application of the standard.

Revisions to the minimum capital requirements for market risk

March 2018

In January 2016, the Basel Committee on Banking Supervision published the standard Minimum capital requirements for market risk.

The proposals included in this consultative document are intended to address issues that the Basel Committee has identified in the course of monitoring the implementation and impact of the standard.

The consultative document includes proposed changes to the following aspects of the standard:

- Changes to the measurement of the standardised approach to enhance its risk sensitivity;
- Recalibration of standardised approach risk weights for general interest risk, equity risk and FX risk;
- Revisions to the assessment process to determine whether a bank's internal risk management models appropriately reflect the risks of individual trading desks;
- Clarifications to the requirements for identification of risk factors that are eligible for internal modelling; and
- Clarifications to the scope of exposures that are subject to market risk capital requirements.

vided in the annex tables of the report and in a data file for ease of use.

Committee on Payments and Market Infrastructure

Reducing the risk of wholesale payments fraud related to endpoint security

May 2018 No 178

There Fraud in the wholesale payment ecosystem is becoming increasingly sophisticated, and recent examples have shown that weaknesses in security at one endpoint in the ecosystem can be exploited to commit payments fraud. While wholesale payments fraud can cause material risks to individual financial institutions, it may also have a broader systemic impact on a payment system, its ecosystem and the broader economy.

Against this background, the Committee on Payments and Market Infrastructures (CPMI) developed a strategy to encourage and help focus industry efforts to reduce the risk of wholesale payments fraud related to endpoint security. The strategy is composed of seven elements designed to work holistically to address all areas relevant to preventing, detecting, responding to and communicating about fraud.

Successful operationalisation of the strategy depends on operators, participants and other relevant private sector and public sector stakeholders in each jurisdiction engaging actively in and taking ownership of developing and carrying out an appropriate action plan for their respective jurisdictions. Accordingly, the CPMI has set out a plan to promote, support and monitor local and global progress in operationalising the strategy. Each CPMI member central bank, and the CPMI as a whole, is committed to acting as a catalyst for effective and coherent operationalisation of the strategy within and across jurisdictions and systems and will monitor progress throughout 2018 and 2019 to determine the need for further action.

Implementation monitoring of PFMI: follow-up Level 3 assessment of CCPs' recovery planning, coverage of financial resources and liquidity stress testing

May 2018 No 177

The Committee on Payments and Market Infrastructures (CPMI) and the International Organization of Securities Commissions (IOSCO) continue to closely monitor the implementation of the Principles for financial market infrastructures (PFMI). The PFMI are international standards for payment, clearing and settlement systems, and trade repositories. They are designed to ensure that the infrastructure supporting global financial markets is robust and well placed to withstand financial shocks.

This report reviews the progress made by central counterparties (CCPs) in addressing the most serious issues of concern that were identified in an initial Level 3 report published in 2016. Overall, while the report found that participating CCPs have made progress in implementing arrangements consistent with the PFMI, some CCPs are still failing to implement a number of measures in the areas of risk management and recovery planning. The failure of these CCPs to implement practices constitutes, in certain instances, serious issues of concern and warrants immediate attention.

Framework for supervisory stress testing of central counterparties (CCPs)

April 2018 No 176

In April 2015, the G20 finance ministers and central bank governors asked the Financial Stability Board to work with the CPMI, IOSCO, and the Basel Committee on Banking Supervision to develop and report back on a workplan for identifying and addressing any gaps and potential financial stability risks relating to CCPs that are systemic across multiple jurisdictions and for helping to enhance their resolvability. This report, Framework for supervisory stress testing of central counterparties (CCPs), published today by the CPMI and IOSCO addresses one aspect of this joint CCP Workplan.

The supervisory stress testing framework is designed to support tests conducted by one or more authorities that examine the potential macro-level impact of a common stress event affecting multiple CCPs. Among other things, such supervisory stress tests will help authorities better understand the scope and magnitude of the interdependencies between markets, CCPs and other entities such as participants, liquidity providers and custodians.

Harmonisation of critical OTC derivatives data elements (other than UTI and UPI) - Technical guidance
April 2018 No 175

G20 Leaders agreed in 2009 that all over-the-counter (OTC) derivatives contracts should be reported to trade repositories (TRs) as part of their commitment to reforming OTC derivatives markets with the aim of improving transparency, mitigating systemic risk and preventing market abuse. Aggregation of the data reported across TRs will help ensure that authorities can obtain a comprehensive view of the OTC derivatives market and its activity.

Following the 2014 • FSB Feasibility study on approaches to aggregate OTC derivatives data, the FSB asked the CPMI and IOSCO to develop global guidance on the harmonisation of data elements reported to TRs and important for the aggregation of data by authorities, including Unique Transaction Identifier (UTI) and Unique Product Identifier (UPI).

This report is one part of the CPMI-IOSCO Harmonisation Group's response to its mandate. It focuses on the definition, format and allowable values of critical data elements, other than UTI and UPI (CDE), reported to TRs and important to aggregation by authorities. The guidance is global in scale, takes account of relevant international technical standards where available and is jurisdiction-agnostic, thus enabling the consistent global aggregation of OTC derivatives transaction data.

Central bank digital currencies
March 2018 No 174

Central banks must carefully weigh the implications for financial stability and monetary policy of issuing digital currencies, according to a report from the Committee on Payments and Market Infrastructures (CPMI) and the Markets Committee.

The report considers a wholesale CBDC (for use in financial markets), and a general purpose CBDC (for use by the general public) and their implications for payments, monetary policy and financial stability.

It finds that wholesale CBDCs might be useful for payments but more work is needed to assess the full potential. Although a CBDC would not alter the basic mechanics of monetary policy implementation, its transmission could be affected.

A general purpose CBDC could have wide-ranging implications for banks and the financial system. Commercial banks' reliance on customer deposits may become less stable, as deposits could more easily take flight to the central bank in times of stress. Besides consequences for financial stability, effects on the efficiency of financial intermediation need to be carefully considered.

The report concludes that each jurisdiction considering the launch of a CBDC should carefully and thoroughly consider the implications before making any decision.

Speeches

Central banking: trending and cycling

Panel remarks by Mr Agustín Carstens, General Manager of the BIS, at the Sveriges Riksbank's 350th anniversary conference on " • 350 years of central banking: the past, the present and the future", held at the Riksdag, Stockholm, 25 May 2018.

The Riksbank's journey from public savings bank to modern central bank epitomises the central bank as an adaptive, learning and improving organisation. Often crisis spurs adaptation, as it did in 2008. The Riksbank's evolution points to broad trends in central banking towards fiat money, public governance, centralised payments and a lender of last resort role. I submit that these trends will persist.

However, we have not reached "the end of history".¹ In important respects, central banking cycles, or at least fluctuates. Should central banks favour government bonds as assets?² What

relative weights to assign to price stability and financial stability? How independent should the central bank be? Different times give different answers.

Going last, my remarks to some extent organise my fellow panellists' reflections into four trends and three cycles.³ Along the way, I argue that public, centralised large payment systems will survive advancing technology. I close with some thoughts on central bank independence and cooperation. Please check website for more information.

Technology is no substitute for trust

Op-ed by Mr Agustín Carstens, General Manager of the BIS, published in Börsen-Zeitung, 23 May 2018.

How to preserve trust in financial transactions is a tricky business in our digital age. With new cryptocurrencies proliferating, it's as important to educate the public about good money as it is to build defences against fake news, online identity theft and Twitter bots. Conjuring up new cryptocurrencies is the latest chapter in a long story of attempts to invent new money, as fortune seekers have tried to make a quick buck. It has become the alchemy of the age of innovation, with the promise of magically transforming everyday substances (electricity, in this case) into gold (or at least euros).

Many cryptocurrencies are ultimately get-rich-quick schemes. They should not be conflated with the sovereign currencies and established payment systems that have stood the test of time. What makes currencies credible is trust in the issuing institution, and successful central banks have a proven record of earning this public trust. The short experience of cryptocurrencies shows that technology, however sophisticated, is a poor substitute for hard-earned trust in sound institutions. We will explain this concept further in a special section of our annual report on 17 June.

Recent episodes show how private cryptocurrencies struggle to earn public trust. Cases of fraud and misappropriation abound. Above all, the technology behind cryptocurrencies makes them inefficient and certainly less effective than the digital payment systems already in place. Let me highlight three aspects.

Currently, central banks around the world are working on systems for retail payments that will allow instant transfers, anytime and anywhere. They are also actively testing the distributed ledger technology underlying cryptocurrencies - not as a substitute for the current system, but to build on it. Even in this digital age, trust in the issuing institution matters and will continue to underpin currencies. Central banks, for their part, will have to continue earning that public trust by closely guarding their currency's value.

Agustín Carstens interview with Börsen-Zeitung

Interview with Mr Agustín Carstens, General Manager of the BIS, in Börsen-Zeitung, conducted by Mr Mark Schrörs and published online on 22 May 2018 and in print format on 23 May 2018.

Please visit website for the detail. <https://www.bis.org/speeches/sp180523.htm>

With a little help from my friends: why large financial spillovers require more international macroprudential policy coordination

Remarks by Mr Luiz Awazu Pereira da Silva, Deputy General Manager of the BIS, at the Joint BIS-PIIE Roundtable on "Global interdependence: rethinking international policy coordination with a special focus on macroprudential policies", Washington DC, 18 April 2018..

These remarks*: (1) take stock of existing analyses on spillovers and spillbacks and examine evidence about their measurement and transmission, including macroprudential spillovers and regulatory leakages; (2) showcase new empirical and theoretical contributions on the rationale and potential gains of international macroprudential policy coordination; (3) recall the existing mechanisms for international macroprudential policy coordination through regulatory standards and reciprocity principles; and (4) discuss, from a policy perspective, how to go further to strengthen international macroprudential policy coordination in a financially integrated world.

Claudio Borio interview with Market News International

Original quotes from interview with Mr Claudio Borio, Head of the Monetary and Economic Department of the BIS, with Market News International conducted by Mr Christian Vits and published on 23 March 2018.

On challenges for central banks:

On financial/business cycles:

On low inflation/globalisation:

On the Phillips curve:

On the side-effects of low interest rates for long:

On deviations from inflation objectives:

On the risk that central banks fall behind the curve:

On risks such as a debt-trap:

On how much ammunition is left:

On inflation targeting:

On policy normalisation:

On keeping larger central bank balance sheets:

On the limitations of forward guidance:

On the limitations of negative interest rates:

On central banks being led by markets instead of leading them:

Banker to central bankers

Interview with Mr Agustín Carstens, General Manager of the BIS, conducted by Mr Vikram Khanna from the Business Times and published on 24 March 2018.

BIS and its influence

Missing inflation

A safer system

Fintech challenges

Crypto-assets, not currencies

Fighting protectionism

Bail-in in the new bank resolution framework: is there an issue with the middle class?

Speech by Mr Fernando Restoy, Chairman, Financial Stability Institute, Bank for International Settlements, at the IADI-ERC International Conference: "Resolution and deposit guarantee schemes in Europe: incomplete processes and uncertain outcomes", Naples, Italy, 23 March 2018*

Introduction

The challenges

The facts

Bail-in in the European Union

The issues with the "middle class"

The structure of the industry

The need to improve insolvency procedures

In defence of central bank DSGE modelling

Introductory remarks by Mr Luiz Awazu Pereira da Silva, Deputy General Manager of the BIS, at the Seventh BIS Research Network meeting on "Pushing the frontier of central banks' macro-modelling", Basel, 8 March 2018.*

I am pleased to open the Seventh BIS Research Network meeting, centred this year on "pushing the frontier of central bank modelling". Let me say a few words, first, in defence of central banks' modelling work and about dynamic stochastic general equilibrium (DSGE) modelling efforts¹. Then, second, from a policy perspective, let me suggest where I think the modelling research frontier has been making progress but could be pushed further to become even more useful to policymakers.