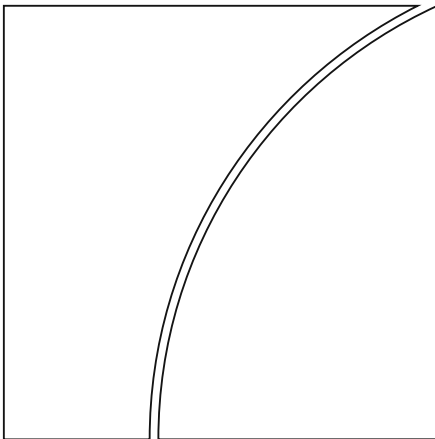




BANK FOR INTERNATIONAL SETTLEMENTS



## **Statistical release**

# OTC derivatives statistics at end-December 2016

Monetary and Economic Department

May 2017

Tools to access and download the OTC derivatives statistics:

- [BIS website](#) – tables in PDF of the BIS's most current data
- [BIS Statistics Explorer](#) – a browsing tool for pre-defined views of the BIS's most current data. An example of a chart showing the notional principal of all OTC derivatives is shown [here](#).

Data behind the charts in this release can be downloaded from the BIS website ([www.bis.org/statistics/otc\\_hy1705\\_charts.zip](http://www.bis.org/statistics/otc_hy1705_charts.zip)).

Technical terms used in this release are explained in the Glossary on the BIS website ([www.bis.org/statistics/glossary.htm](http://www.bis.org/statistics/glossary.htm)).

Questions about the OTC derivatives statistics may be addressed to [statistics@bis.org](mailto:statistics@bis.org).

This release is available on the BIS website ([www.bis.org/publ/otc\\_hy.htm](http://www.bis.org/publ/otc_hy.htm)).

# OTC derivatives statistics at end-December 2016

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Data are subject to change. Revised data will be released concurrently with the forthcoming *BIS Quarterly Review* on 6 June 2017. The OTC derivatives statistics at end-June 2017 will be released no later than 15 November 2017.

## 1. Highlights

Highlights from the BIS over-the-counter (OTC) derivatives statistics for the six months ending in December 2016:

- The increase in OTC derivatives positions that took place in the first half of 2016 reversed in the second. The notional amount of outstanding OTC derivatives declined from \$553 trillion to \$483 trillion between end-June and end-December 2016 ([view data](#)). Their gross market value – that is, the cost of replacing all outstanding contracts at current market prices – fell from \$21 trillion to \$15 trillion over the same period ([view data](#)).
- Central clearing made further inroads. In particular, the share of centrally cleared credit default swaps (CDS) jumped from 37% of notional amounts outstanding at end-June 2016 to 44% at end-December ([view data](#)). In OTC interest rate derivatives markets, the share centrally cleared was more or less unchanged at 76% ([view data](#)).

## 2. Developments in OTC derivatives markets in the second half of 2016

The increase in outstanding OTC derivatives positions recorded in the first half of 2016 reversed in the second. The notional amount of outstanding OTC derivatives contracts – which determines contractual payments – declined from \$553 trillion to \$483 trillion between end-June and end-December 2016 ([Graph A1](#), left-hand panel, in Annex A of this release; and [Table D5.1](#) on the BIS website).<sup>1</sup>

The gross market value of outstanding derivatives contracts – which provides a more meaningful measure of amounts at risk – also declined in the second half of 2016, from \$21 trillion to \$15 trillion ([Graph A1](#), centre panel). Gross credit exposures, which adjust gross market values for legally enforceable bilateral netting agreements, fell from \$3.7 trillion to \$3.3 trillion during the same period.<sup>2</sup> However, as a share of gross market values, gross credit exposures rose from 17% to 22% ([Graph A1](#), left-hand panel).

### Central clearing makes further inroads

Central clearing, which is a key element in authorities' agenda for reforming OTC derivatives markets to reduce systemic risks, made further inroads in OTC derivatives markets in the second half of 2016. At end-June 2016, comprehensive data on central counterparties (CCPs) were collected for the first time. They had shown that central clearing is predominant in OTC interest rate derivatives markets, but less

<sup>1</sup> Positions are reported in US dollars, and thus changes between periods include the impact of exchange rate movements on positions denominated in currencies other than the US dollar. Between end-June and end-December 2016, the overall decrease in notional amounts was smaller after adjusting for exchange rate movements: –9%, compared with –13% on an unadjusted basis. The depreciation of the euro, the yen and other currencies against the US dollar depressed the reported US dollar value of positions denominated in these currencies.

<sup>2</sup> Netting agreements are one way that market participants can reduce their exposure to counterparty credit risk. Collateral is another important way. Gross credit exposures take into account netting agreements but not collateral.

prevalent in other OTC derivatives segments.<sup>3</sup> Data at end-December 2016 indicate that central clearing is gaining ground in these other segments too.

In OTC interest rate derivatives markets, the share of reporting dealers' positions booked against CCPs stood at 76% at end-December 2016, similar to the share observed six months earlier.<sup>4</sup> Among interest rate instruments, the share of notional amounts booked against CCPs was highest for forward rate agreements, at 92%, followed by interest rate swaps, at 81%. In contrast, the share remained negligible for interest rate options, despite a quadrupling of the outstanding amount of options contracts reported against CCPs in the second half of 2016, from \$53 billion to \$225 billion (Table D7).

The share of outstanding CDS cleared through CCPs jumped from 37% at end-June 2016 to 44% at end-December 2016. This jump represented the largest semiannual increase since CCP data for CDS were first collected in 2010. The proportion of contracts centrally cleared increased for single-name as well as multi-name instruments, although it remained much higher for the latter (54%) than for the former (36%). Multi-name products tend to be more standardised than single-name products and consequently more amenable to central clearing.

In OTC foreign exchange (FX) derivatives markets, only 1% of notional amounts were centrally cleared at end-December 2016. That said, the outstanding amount cleared almost tripled in the second half of 2016, from \$352 billion to \$903 billion (Table D6). While the BIS does not collect a decomposition of FX derivatives into FX swaps and forwards, the growth of clearing was probably concentrated in non-deliverable forwards because they are one of the few FX instruments that CCPs offer for clearing.

The rising importance of central clearing in OTC derivatives markets is consistent with the incentives provided by higher capital and margin requirements for non-centrally cleared derivatives. Regulators in most of the major derivatives markets require certain classes of standardised OTC derivatives, particularly interest rate swaps and CDS, to be centrally cleared. While options, FX derivatives and equity derivatives are generally not covered by these requirements, higher margin requirements for non-centrally cleared derivatives are being phased in, starting in Canada, Japan and the United States in September 2016 and in other key markets in 2017.<sup>5</sup>

## OTC interest rate derivatives fall to lowest level since 2007

Notional amounts of OTC interest rate derivatives fell to \$368 trillion at end-December 2016, their lowest level since 2007. Contracts denominated in euros, sterling, Swedish kronor and yen fell especially sharply

<sup>3</sup> See P Wooldridge, "Central clearing predominates in OTC interest rate derivatives markets", *BIS Quarterly Review*, December 2016, pp 22–24, [www.bis.org/publ/qtrpdf/r\\_qt1612r.htm](http://www.bis.org/publ/qtrpdf/r_qt1612r.htm).

<sup>4</sup> The proportion of outstanding positions against CCPs is typically larger than the proportion of trades cleared through CCPs – known as the clearing rate – because the former counts trades between dealers twice. When a derivatives trade is cleared by a CCP, the initial contract between counterparties A and B is replaced, in an operation called novation, by two new contracts: one between counterparty A and the CCP, and a second between the CCP and counterparty B. In the BIS OTC derivatives statistics, dealers report all outstanding contracts and separately identify contracts between reporting dealers. The BIS then adjusts such inter-dealer positions to eliminate double-counting. However, inter-dealer trades that are subsequently novated to a CCP are not adjusted; each dealer's position with the CCP is included in the global aggregates published by the BIS. Under the extreme assumption that all positions with CCPs are initially inter-dealer contracts, positions with CCPs could be adjusted by dividing by two. For OTC interest rate derivatives, this would reduce the notional amount outstanding by \$139 trillion (half of the \$278 trillion reported against CCPs), which in turn would reduce the share of CCPs in outstanding positions to 61% ( $\$139 / (\$368 - \$139)$ ). The actual clearing rate is likely to be higher than this estimate because some positions with CCPs may initially be trades with institutional investors and other financial customers, which in the BIS OTC derivatives statistics are not double-counted when novated to CCPs.

<sup>5</sup> See Financial Stability Board, "OTC derivatives market reforms: eleventh progress report on implementation", August 2016, [www.fsb.org/2016/08/otc-derivatives-market-reforms-eleventh-progress-report-on-implementation/](http://www.fsb.org/2016/08/otc-derivatives-market-reforms-eleventh-progress-report-on-implementation/).

in the second half of 2016, owing in part to the depreciation of these currencies against the US dollar (Graph A3, left-hand panel).<sup>6</sup> Nevertheless, even after adjusting for exchange rate movements, there was a clear contraction.

The gross market value of interest rate derivatives also declined, falling from \$15.5 trillion at end-June 2016 to \$10.0 trillion at end-December 2016 (Table D7). This decline is likely to have reflected the fall in notional amounts during the period as well as increases in long-term yields, which reduced the gap between market interest rates on the reporting date and rates prevailing at contract inception.<sup>7</sup> Decreases in market values were reported for interest rate derivatives denominated in all major currencies.

Interest rate swaps are the single largest segment in OTC derivatives markets. At end-December 2016, they accounted for 57% of the notional amount of all outstanding OTC derivatives and 59% of the total gross market value.<sup>8</sup> Yet their importance has been declining since 2014, when they accounted for close to 70% of the gross market value of all OTC derivatives. Trade compression to eliminate redundant contracts has been a major factor. Compression was aided by the shift towards CCPs, which in effect multilateralised the compression process.

### Inter-dealer activity continues to drive OTC foreign exchange derivatives

The notional amount of outstanding FX derivatives stood at \$68.6 trillion at end-December 2016, in line with levels observed since 2013. Their gross market value totalled \$3.0 trillion, which was close to the high of \$3.1 trillion reported at end-June 2016 (Table D6).

Notwithstanding the stable overall trend, the gross market value of contracts involving the pound sterling almost halved in the second half of 2016, from \$624 billion to \$338 billion. This reversed the spike seen at end-June 2016, which occurred on the back of the sharp depreciation of the currency following the Brexit referendum.

In contrast to inter-dealer contracts in the OTC interest rate derivatives market, which have largely shifted to CCPs, inter-dealer positions in the FX derivatives market continued to account for the largest share of outstanding contracts. The notional amount of outstanding FX contracts between reporting dealers totalled \$30.3 trillion at end-2016, which represented 44% of all FX contracts outstanding (Graph A2, right-hand panel). Contracts with financial counterparties other than dealers and CCPs equalled \$28.9 trillion, while those with non-financial customers stood at \$8.4 trillion. Contracts with CCPs totalled only \$0.9 trillion.

### Credit default swaps between dealers contract

The notional amount of outstanding CDS contracts dropped substantially in the second half of 2016, from \$11.8 trillion to \$9.9 trillion (Graph A6, left-hand panel). This continued the downward trend observed since 2008. The gross market value of CDS also fell further, to \$292 billion (Graph A6, right-hand panel).

The latest decline in overall CDS positions was concentrated in the uncleared segment. Whereas the notional amount cleared through CCPs was more or less unchanged in the second half of 2016, at \$4.3 trillion, the notional amount for contracts between reporting dealers fell from \$5.1 trillion to

<sup>6</sup> See footnote 1.

<sup>7</sup> See "A paradigm shift in markets?", *BIS Quarterly Review*, December 2016, pp 1–11, [www.bis.org/publ/qtrpdf/r\\_qt1612a.htm](http://www.bis.org/publ/qtrpdf/r_qt1612a.htm).

<sup>8</sup> Considering only OTC interest rate derivatives, interest rate swaps account for 75% of the notional amount and 89% of the gross market value.

\$3.7 trillion (Table D10.1). Higher margin requirements for non-centrally cleared derivatives are likely to have been an important factor contributing to this contraction.

Net market values, which adjust gross market values for netting agreements among CDS counterparties, totalled \$79 billion at end-December 2016.<sup>9</sup> This was equivalent to 27% of gross market values. The prevalence of netting is greatest for CDS contracts with other reporting dealers and CCPs, for which net market values as a percentage of gross values equalled 22% and 15%, respectively, at end-December 2016 (Table D10.1). Netting is least prevalent for contracts with insurance companies and non-financial customers. The comparable ratios for both of those groups stood at 71%.

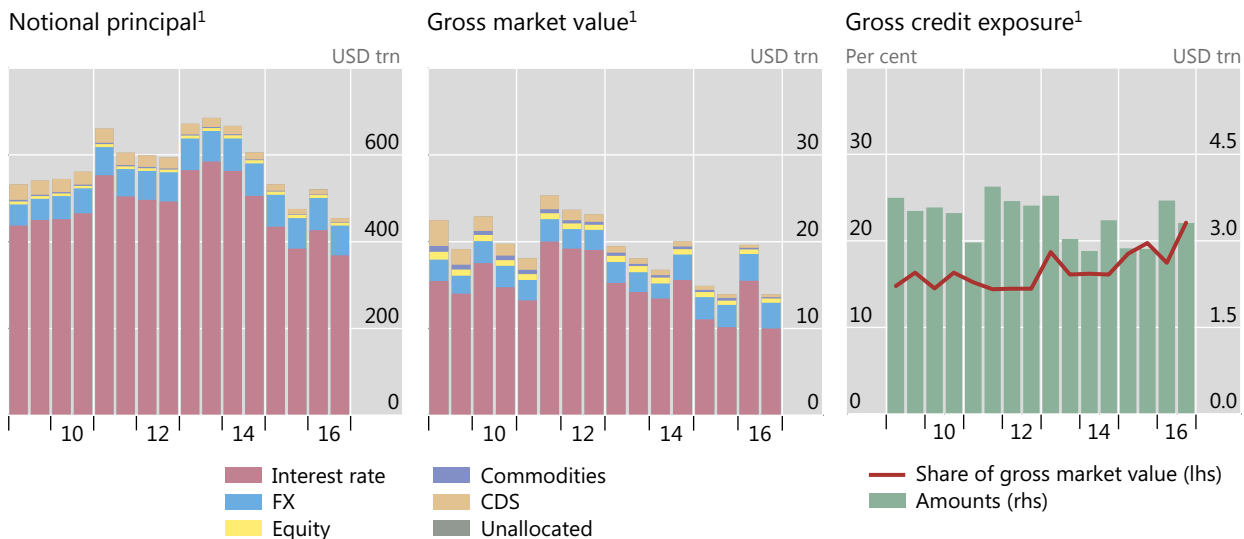
<sup>9</sup> The net market value of CDS contracts takes account of legally enforceable bilateral netting agreements but, unlike gross credit exposures, is not adjusted for cross-product netting.

# Annexes

## A Charts

### Global OTC derivatives markets

Graph A1



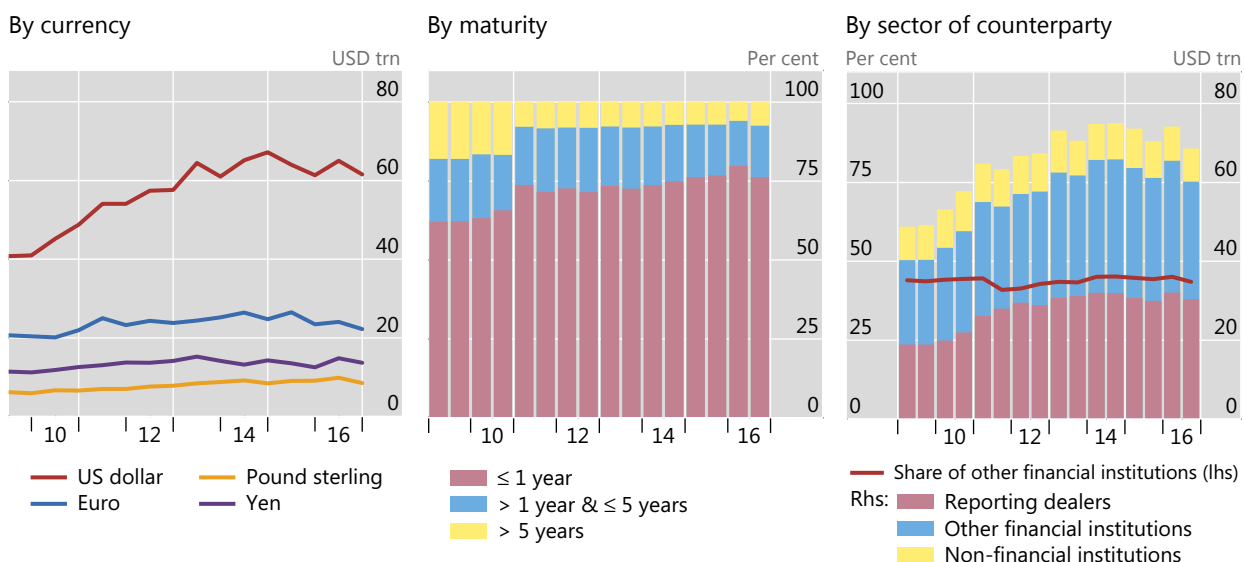
Further information on the BIS derivatives statistics is available at [www.bis.org/statistics/derstats.htm](http://www.bis.org/statistics/derstats.htm).

<sup>1</sup> 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.

### OTC foreign exchange derivatives

#### Notional principal<sup>1</sup>

Graph A2



Further information on the BIS derivatives statistics is available at [www.bis.org/statistics/derstats.htm](http://www.bis.org/statistics/derstats.htm).

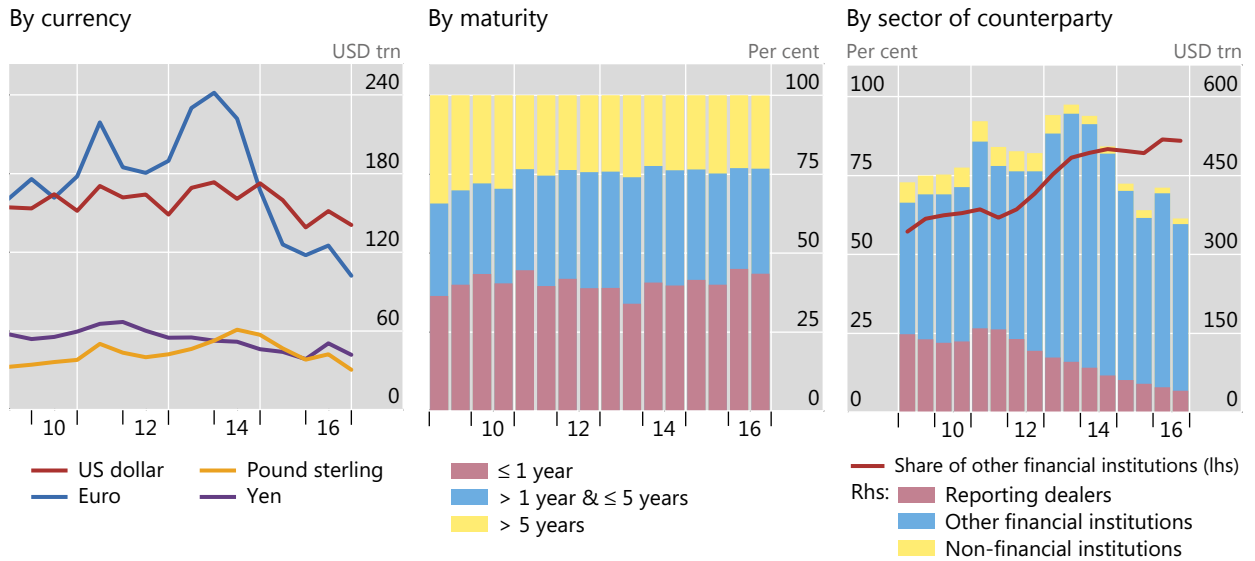
<sup>1</sup> At half-year end (end-June and end-December). Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date.



## OTC interest rate derivatives

Notional principal<sup>1</sup>

Graph A3



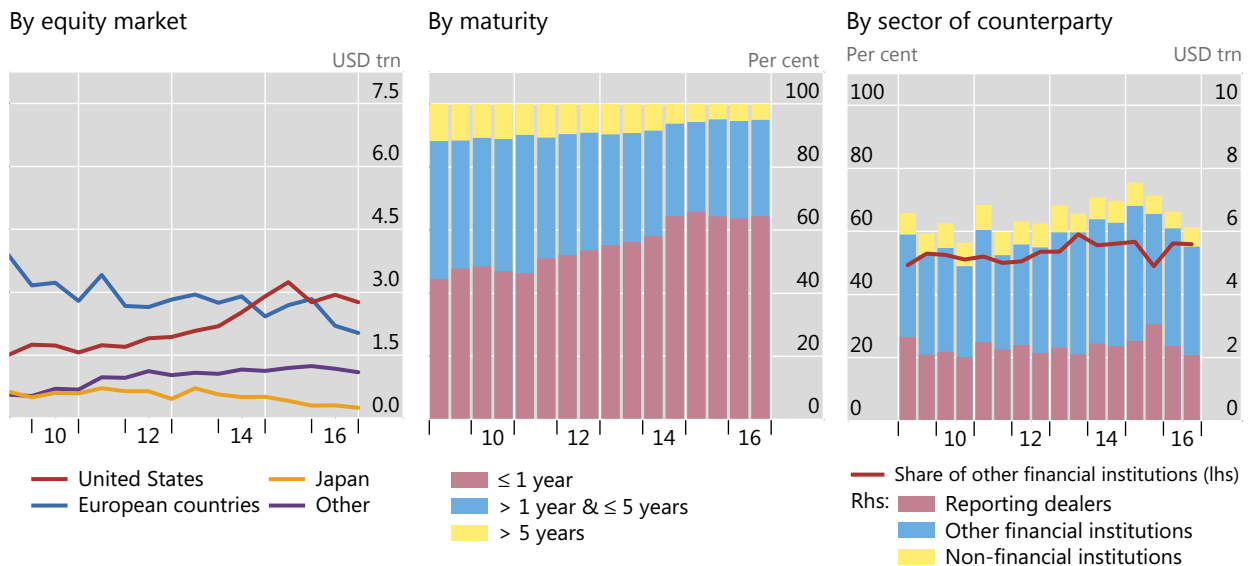
Further information on the BIS derivatives statistics is available at [www.bis.org/statistics/derstats.htm](http://www.bis.org/statistics/derstats.htm).

<sup>1</sup> 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.

## OTC equity-linked derivatives

Notional principal<sup>1</sup>

Graph A4



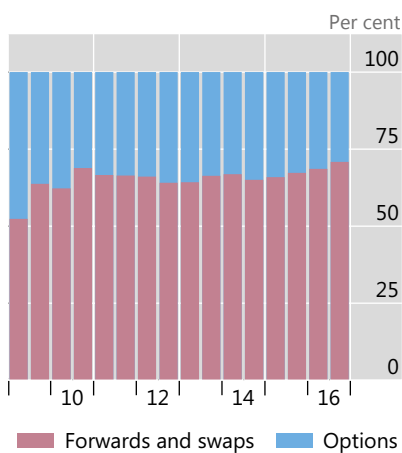
Further information on the BIS derivatives statistics is available at [www.bis.org/statistics/derstats.htm](http://www.bis.org/statistics/derstats.htm).

<sup>1</sup> 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.

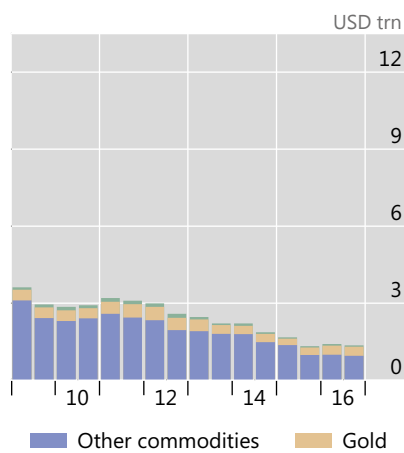
## OTC commodity derivatives

Graph A5

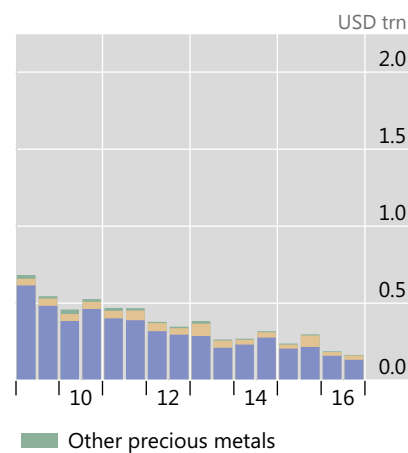
### Notional principal, by instrument<sup>1</sup>



### Notional principal, by commodity<sup>1</sup>



### Gross market value, by commodity<sup>1</sup>



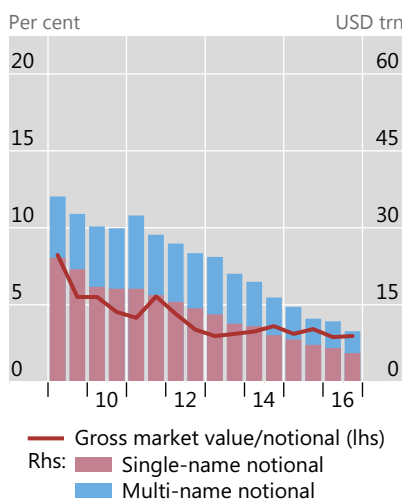
Further information on the BIS derivatives statistics is available at [www.bis.org/statistics/derstats.htm](http://www.bis.org/statistics/derstats.htm).

<sup>1</sup> 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.

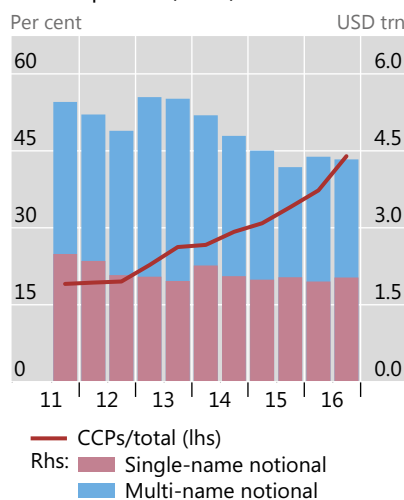
## Credit default swaps<sup>1</sup>

Graph A6

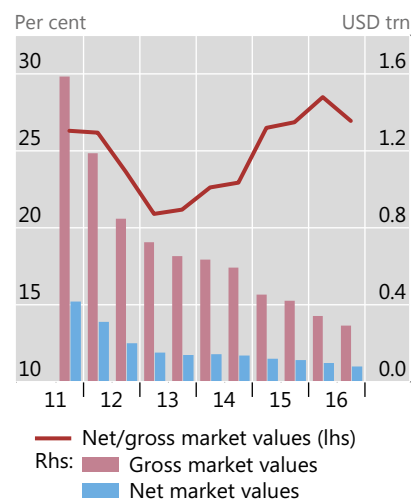
### Notional principal



### Notional principal with central counterparties (CCPs)



### Impact of netting



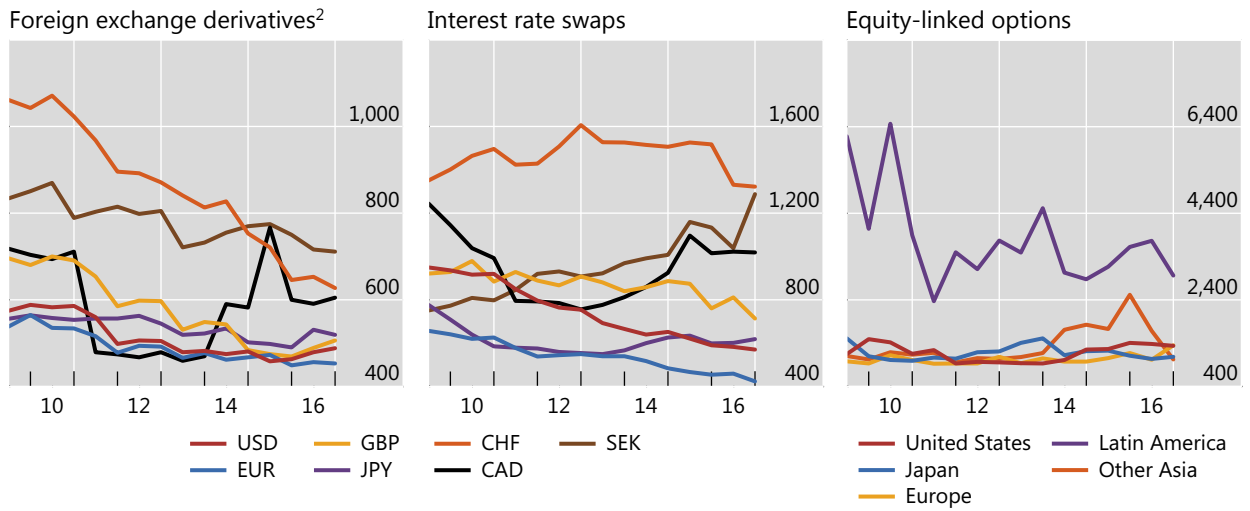
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<sup>1</sup> At half-year end (end-June and end-December). Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date.

# Concentration in global OTC derivatives markets

Herfindahl index<sup>1</sup>

Graph A7



Further information on the BIS derivatives statistics is available at [www.bis.org/statistics/derstats.htm](http://www.bis.org/statistics/derstats.htm).

CAD = Canadian dollar; CHF = Swiss franc; EUR = euro; GBP = pound sterling; JPY = Japanese yen; SEK = Swedish krona; USD = US dollar. JP = Japan; US = United States.

<sup>1</sup> 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. <sup>2</sup> Foreign exchange forwards, foreign exchange swaps and currency swaps.

## B Explanatory notes

### Reporting countries

The OTC derivatives statistics are reported to the BIS at an aggregate (country) level rather than individual institution level. A central bank or another national authority collects data from banks and other major derivatives dealers in its jurisdiction, compiles national aggregates and then sends them to the BIS to calculate global aggregates.

Authorities in the following 13 countries participate in the semiannual survey of outstanding positions in OTC derivatives markets:

Country	Reporting authority	Country	Reporting authority
<b>Australia</b>	Reserve Bank of Australia	<b>Netherlands</b>	Netherlands Bank
<b>Belgium</b>	National Bank of Belgium	<b>Spain</b>	Bank of Spain
<b>Canada</b>	Bank of Canada	<b>Sweden</b>	Sveriges Riksbank
<b>France</b>	Bank of France		Statistics Sweden
<b>Germany</b>	Deutsche Bundesbank	<b>Switzerland</b>	Swiss National Bank
<b>Italy</b>	Bank of Italy	<b>United Kingdom</b>	Bank of England
<b>Japan</b>	Bank of Japan	<b>United States</b>	Board of Governors of the Federal Reserve System

Every three years, dealers from more than 30 additional countries participate in the outstanding positions part of the Triennial Central Bank Survey of foreign exchange and OTC derivatives markets. The market share of dealers that participate in the semiannual survey varies across risk categories. It is highest in the credit, equity and interest rate segments (99%, 98% and 96%, respectively, at end-June 2016) and lowest in the commodity and foreign exchange segments (79% and 86%). Overall, the combined results of the semiannual and Triennial surveys indicate that the former captured about 94% of global OTC derivatives positions at end-June 2016. The next Triennial Survey of outstanding positions will be conducted in June 2019.

### Reporting basis

The OTC derivatives statistics are reported on a consolidated basis. Data from branches and (majority-owned) subsidiaries worldwide of a given institution are aggregated and reported by the parent institution to the authority in the country where the parent institution is headquartered. Intragroup positions, between affiliates of the same institution, are excluded.

Data are reported to the BIS in US dollars, with positions in other currencies being converted into US dollars at the exchange rate prevailing at the end of the reference period. Comparisons of amounts outstanding between periods are affected by movements in exchange rates.

More information about how the OTC derivatives statistics are compiled is available in the reporting guidelines on the BIS website.

### Revisions and breaks

Data are subject to revision and are impacted by breaks – or changes in compilation – over time. Breaks may arise from: changes in the population of reporting institutions, including the addition of new reporting countries; changes in reporting practices; or methodological improvements.

The statistics at end-December 2016 are not impacted by any significant revisions or breaks. Comprehensive data on central counterparties are available only from end-June 2016. They are reported as an "of which" item within the counterparty sector comprising all financial institutions except reporting dealers; therefore, the latest data for other financial institutions are comparable with historical data. Prior to end-June 2016, CCPs were identified separately only for CDS.