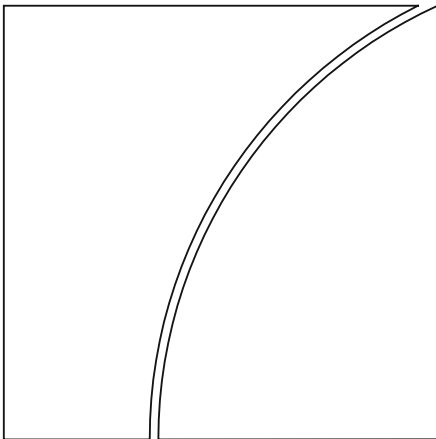




BANK FOR INTERNATIONAL SETTLEMENTS



## **Triennial Central Bank Survey**

OTC interest rate  
derivatives turnover in  
April 2019

Monetary and Economic Department

16 September 2019

Tools to access and download the results of the BIS Triennial Central Bank Survey:

- [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
- [BIS Statistics Warehouse](#) – a search tool for customised queries of the BIS's most current data

Questions about the BIS Triennial Central Bank Survey may be addressed to [statistics@bis.org](mailto:statistics@bis.org).

This publication is available on the BIS website ([www.bis.org/statistics/rpfx19.htm](http://www.bis.org/statistics/rpfx19.htm)).

# OTC interest rate derivatives turnover in April 2019

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This publication presents the global results of the 2019 BIS Triennial Central Bank Survey of turnover in over-the-counter (OTC) interest rate derivatives markets. A separate publication presents the results of turnover in foreign exchange markets ([www.bis.org/statistics/rpfx19.htm](http://www.bis.org/statistics/rpfx19.htm)). Many participating authorities also publish their national results, links to which are available on the BIS website ([www.bis.org/statistics/triennialrep/national.htm](http://www.bis.org/statistics/triennialrep/national.htm)). The global results for a companion survey on amounts outstanding in OTC derivatives markets will be published in November 2019.

Data are subject to change. Revised data will be released concurrently with the *BIS Quarterly Review* in December 2019. The December 2019 *BIS Quarterly Review* will include several special feature articles that analyse the results of the 2019 Triennial Survey.

## Notations

billion	thousand million
trillion	thousand billion
e	estimated
lhs	left-hand scale
rhs	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

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

## 1. BIS Triennial Central Bank Survey

The BIS Triennial Central Bank Survey is the most comprehensive source of information on the size and structure of global foreign exchange (FX) and over-the-counter (OTC) derivatives markets. The Triennial Survey aims to increase the transparency of OTC markets and to help central banks, other authorities and market participants monitor developments in global financial markets. It also helps to inform discussions on reforms to OTC markets.

FX market activity has been surveyed every three years since 1986, and OTC interest rate derivatives market activity since 1995. The Triennial Survey is coordinated by the BIS under the auspices of the Markets Committee (for the FX part) and the Committee on the Global Financial System (for the interest rate derivatives part). It is supported through the Data Gaps Initiative endorsed by the G20.

This statistical release covers the interest rate derivatives part of the latest Triennial Survey of turnover that took place in April 2019. Central banks and other authorities in 53 jurisdictions participated in the 2019 survey (see page 13). They collected data from close to 1,300 banks and other dealers in their jurisdictions and reported national aggregates to the BIS, which then calculated global aggregates. Turnover data are reported by the sales desks of reporting dealers, regardless of where a trade is booked, and are reported on an unconsolidated basis, ie including trades between related entities that are part of the same group.

Data are subject to revision. The final data, as well as several special features that analyse the data, will be released with the *BIS Quarterly Review* in December 2019.

### Highlights

Highlights from the 2019 Triennial Survey of turnover in OTC interest rate derivatives markets:

- Daily turnover of OTC interest rate derivatives averaged \$6.5 trillion in April 2019, up markedly from the April 2016 survey when it averaged \$2.7 trillion per day. This rise appears to have been driven mainly by increased hedging and positioning amid shifting prospects for growth and monetary policy. However, other factors also played a role. Much of the turnover in April 2019 was in shorter-term contracts, which are rolled over more often. In addition, the 2019 survey saw more comprehensive reporting of related party trades than in previous surveys. Average daily turnover in April 2019, after adjusting for these trades, is estimated to have been closer to \$5.8 trillion in April 2019, up around 120% since the 2016 survey.
- The 2019 survey distinguished for the first time between overnight index swaps (OIS) and other interest rate swaps. Almost half of the average daily turnover of all interest rate swaps (\$4.1 trillion) was due to turnover in OIS (\$2.0 trillion; Table 1). Turnover of forward rate agreements (FRAs) averaged \$1.9 trillion. Combined, turnover in OIS and FRAs – instruments that are typically of short maturities – accounted for 61% of turnover in all instruments.
- Average daily turnover in US dollar-denominated contracts amounted to \$3.3 trillion in April 2019. This represented about half of total turnover in all currencies, the same global market share as in 2016. Turnover in euro-denominated contracts came to \$1.6 trillion in April 2019, or 24% of total turnover (also 24% in 2016). Turnover in contracts in renminbi amounted to \$33 billion, or 0.5% of total turnover (up from 0.4% in 2016), and that in contracts in Korean won reached \$27 billion, or 0.4% of total turnover (down from 0.5% in 2016).
- In April 2019, sales desks located in the United Kingdom recorded the highest average daily turnover in OTC interest rate derivatives, at \$3.7 trillion (50% of the global market), followed by the United States (\$2.4 trillion, 32% global market share) and Hong Kong SAR (\$436 million, 6% global market share).

## 2. Turnover in OTC interest rate derivatives markets

Daily turnover in single currency OTC interest rate derivatives averaged \$6.5 trillion in April 2019 (Graph 1 and Table 1). Turnover in April 2019 was significantly higher than in the previous survey in April 2016 (\$2.7 trillion per day). This in large part appears to have reflected increased hedging and positioning amid shifting prospects for growth and monetary policy, although other factors also played a role.<sup>1</sup> As discussed below, more comprehensive coverage in the 2019 survey boosted the overall turnover figures. In addition, short-term instruments, which are rolled over more often, accounted for much of the turnover in April. Exchange rate movements had only a minor impact on the aggregate turnover figures between 2016 and 2019 (Table 1).

### More comprehensive reporting

Part of the increase between the 2016 and 2019 surveys reflected more comprehensive reporting of particular types of trades.

First, dealers in several trading jurisdictions noted an increase in “related party trades” in the 2019 survey – in particular, “back-to-back trades”.<sup>2</sup> Related party trades, which are reported as an “of which” item (without a breakdown by counterparty sector, instrument or currency), jumped significantly, from 15% of total turnover in the 2016 survey to 24% in the 2019 survey. The increase in these trades accounted for 30 percentage points of the 143% increase in total turnover since the 2016 survey (Graph 1, left-hand panel, red dots). The greater coverage boosted positions between reporting dealers (red bar), but also positions between dealers and “other financial institutions” (blue bar). Overall, after adjusting for these trades (by keeping the share of related party trades constant), average daily turnover in April 2019 is estimated to have been closer to \$5.8 trillion, up around 120% since the 2016 survey. This growth in turnover is broadly in line with trends evident in other data sources.<sup>3</sup>

Second, several reporting dealers also noted that compression trades, which are not reported as a separate item in the survey, contributed more to their turnover figures as reported in the 2019 survey than in the 2016 survey. Compression trades replace existing contracts with new ones to reduce outstanding notional amounts, while keeping net exposures unchanged.<sup>4</sup>

<sup>1</sup> See BIS, “Markets retreat and rebound”, *BIS Quarterly Review*, March 2019, pp 1–14.

<sup>2</sup> Back-to-back deals are linked deals where the liabilities, obligations and rights of the second deal are exactly the same as those of the original deal. They are normally conducted between affiliates of the same consolidated group to facilitate either internal risk management or internal bookkeeping. Feedback from reporting central banks participating in the survey suggest that many reporting dealers that did not include these trades in the 2016 survey were able to report them in the 2019 survey (in line with the survey guidelines).

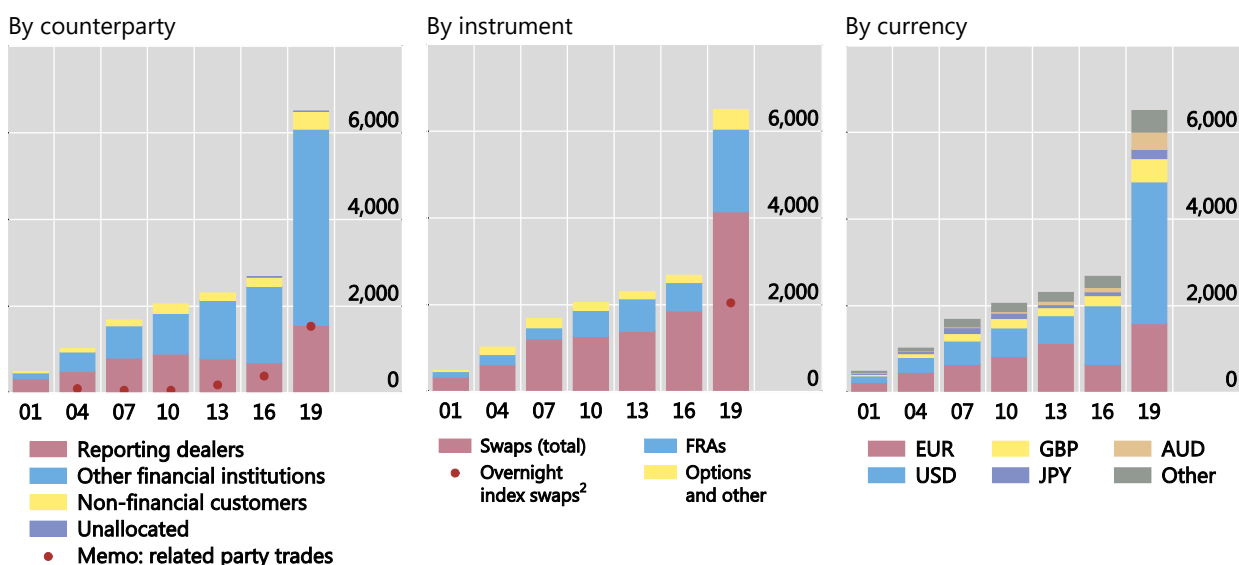
<sup>3</sup> For example, data from Clarus FT point to a similar rate of growth in turnover in OTC interest rate derivatives (FRAs, OIS and other single currency interest rate swaps) from April 2016 to April 2019. These data cover notional trading volumes reported by all major central clearing counterparties (CCPs) globally but are on a post-novation basis, while data collected for the Triennial Survey are on a pre-novation basis. BIS monthly statistics on the turnover of interest rate derivatives on exchanges show a lower rate of growth, about 50%, between April 2016 and April 2019.

<sup>4</sup> See A Schrimpf, “Outstanding OTC derivatives positions dwindle as compression gains further traction”, *BIS Quarterly Review*, December 2015, pp 24–5; and T Ehlers and E Eren, “The changing shape of interest rate derivatives markets”, *BIS Quarterly Review*, December 2016, pp 54–65.

## Turnover of OTC interest rate derivatives

Net-net basis,<sup>1</sup> daily averages in April, in billions of US dollars

Graph 1



<sup>1</sup> Adjusted for local and cross-border inter-dealer double-counting. <sup>2</sup> Overnight index swaps are included in total swap turnover. Data available only from 2019.

Source: BIS Triennial Central Bank Survey. For additional data by instrument, counterparty and currency, see Tables 1–4 on pages 8–11, respectively.

### Turnover by instrument

Interest rate swaps continued to dominate in global OTC interest rate derivatives turnover (Table 1). Turnover of these contracts accounted for 64% (\$4.1 trillion) of the global total in April 2019 (Graph 1, centre panel, and Table 2), down from 69% in the 2016 survey. In contrast, FRAs as well as options and other products both took larger market shares than in the previous survey. Daily turnover in FRAs averaged \$1.9 trillion, or 29% of total turnover (up from 24% in 2016), and that in options and other products averaged \$456 billion, or 7% of global turnover (up from 6% in 2016).

Instruments that are typically of shorter maturity – OIS and FRAs – accounted for more than half (61%) of the total turnover in all instruments. Shorter-maturity instruments tend to boost turnover, since these contracts are replaced more often. Turnover of OIS – reported separately for the first time in this survey – was \$2.0 trillion, or 31% of total turnover.

### Turnover by counterparty

Since at least the 2007 Triennial Survey, the share of trading among reporting dealers has fallen while trading with other financial institutions has been on the rise (Table 2). This trend continued in 2019, as turnover with other reporting dealers (Graph 1, left-hand panel) increased less rapidly than trades with other counterparties. As a result, the share of turnover with reporting dealers in global turnover fell to 24% in April 2019, down from 26% in 2016 and 47% in 2007 (Table 2). At the same time, the share of turnover with other financial institutions rose to 70% in 2019, up from 66% in 2016 and 44% in 2007. The share of trades with non-financial customers has been relatively stable in all surveys, accounting for 6% of global turnover in 2019, compared with 8% in 2016 and 8% in 2007.

## Turnover by currency

Turnover in US dollar-denominated contracts reached \$3.3 trillion in April 2019, accounting for about half of total turnover in all currencies, as in the 2016 survey (Graph 1, right-hand panel, and Table 3). This share is up from close to 30% in the 2013 and 2010 surveys. Turnover in euro-denominated contracts amounted to \$1.6 trillion in 2019, or 24% of turnover in all currencies (similar to its share in 2016, but down from that in previous surveys). Turnover in sterling amounted to \$538 billion per day, followed that in the Australian dollar (\$401 billion) and the Japanese yen (\$213 billion).

Among the currencies of emerging market economies (EMEs), renminbi-denominated contracts were the most actively traded, at \$33 billion per day in April 2019, or 0.5% of total global turnover. This was followed by the Korean won, at \$27 billion per day or 0.4%. Turnover in contracts denominated in the Mexican peso (which had been the most heavily traded EME currency in the 2016 survey) fell slightly to \$23 billion in April 2019, or 0.4% of the global market.

Contracts denominated in other major emerging Asia currencies increased their global market share, reaching \$18 billion for the Hong Kong dollar (0.3% global market share), \$17 billion for the Indian rupee (0.3%) and \$15 billion for the Singapore dollar (0.2%). Similarly, contracts in the major central and eastern European currencies recorded relatively higher turnover numbers, and correspondingly higher shares in total turnover: \$12 billion per day for the Czech koruna (from \$1 billion in 2016) and \$8.3 billion per day for the Polish zloty (from \$5 billion in 2016).

In other major EME currencies, average daily turnover of OTC interest rate derivative contracts remained relatively low. Turnover for contracts denominated in the Brazilian real was \$8 billion per day, in the Russian rouble \$1.2 billion and in the Turkish lira \$0.6 billion.

## Geographical distribution of turnover

In April 2019, sales desks located in the United Kingdom recorded the highest average daily turnover in interest rate derivatives on a “net-gross” basis<sup>5</sup> (Graph 2 and Table 5). Turnover there amounted to \$3.7 trillion, or 50% of the global total. This is a considerably higher share than in the 2016 survey (39%), but in line with the 2013 and 2010 surveys (50% and 47%, respectively). Dealers in the United Kingdom, which has historically been the main trading location for euro-denominated contracts, accounted for 86% of all such contracts in April 2019 (up from 75% in April 2016). They also reported a higher share of contracts denominated in US dollars (33% in 2019, compared with 14% in 2016).

For their part, dealers in the United States accounted for 32% of the global turnover in 2019. This is down from their share in the 2016 survey (41%), but closer to their 23–24% shares reported in previous surveys (Table 5). The change since 2016 in part reflected a lower share of related party trades reported by dealers in the United States in the 2019 survey.

Turnover reported at sales desks in euro area countries remained relatively low, reaching \$256 billion, or 3.5% of the total turnover in April 2019. The largest euro area trading centre, France, saw turnover decrease to \$120 billion; as a result, its share in global turnover fell markedly, to 1.6% from 4.6% in 2016 and 8.1% in 2007.

The shares of trading in other advanced economies remained relatively stable. Trading in Japan was 1.8% of total turnover in the 2019 survey, the same share as in 2016. The share of total turnover reported by dealers in Canada rose slightly (to 1.7% from 1.1%). By contrast, the share reported by dealers in Australia fell (to 1.3% from 1.9%).

<sup>5</sup> “Net-gross” turnover is adjusted for inter-dealer trades within the same jurisdiction, but not for cross-border trades between dealers. All turnover numbers by trading location are reported on a “net-gross” basis.



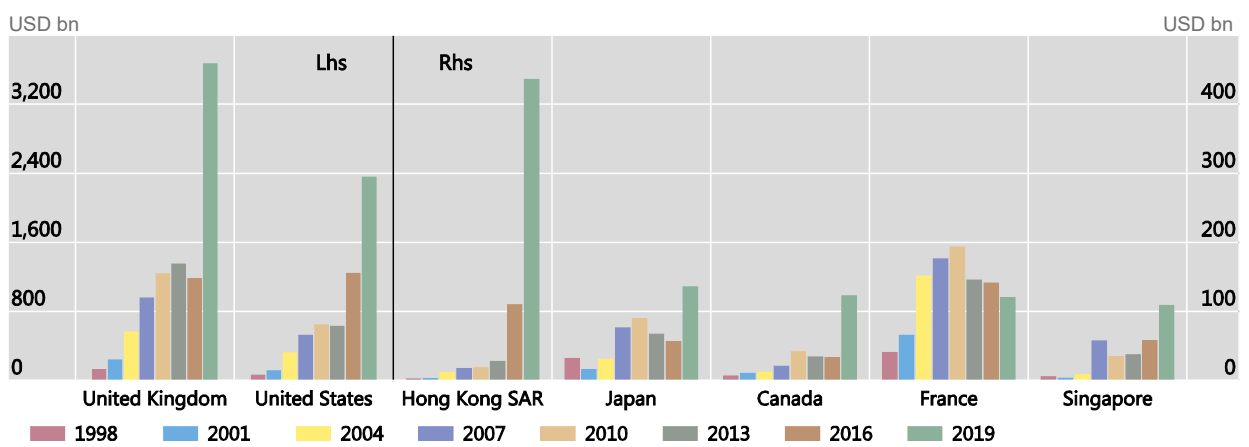
Trading in the major Asian financial centres – Hong Kong SAR and Singapore – diverged. Dealers in Hong Kong reported a higher market share in April 2019 (6%) than in April 2016 (3.6%), driven largely by greater turnover in Australian dollar-denominated contracts. By contrast, turnover reported by dealers in Singapore dropped to 1.5% of the global total in 2019, from 1.9% in 2016.

Sales desks in other EMEs continued to account for a small share of global interest rate derivatives turnover. Only China (0.2%), South Africa (0.2%), Korea (0.1%) and India (0.1%) reached global market shares equal to or above 0.1%. These shares are below the global market shares of their respective currencies, reflecting the fact that contracts in major EME currencies are mainly traded offshore.

## Geographical distribution of OTC interest rate derivatives turnover

Net-gross basis,<sup>1</sup> daily averages in April

Graph 2



<sup>1</sup> Adjusted for local inter-dealer double-counting.

Source: BIS Triennial Central Bank Survey. For additional data by country, see Table 5 on page 12.

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#### OTC interest rate derivatives turnover by instrument<sup>1</sup>

Net-net basis,<sup>2</sup> daily averages in April, in billions of US dollars

Table 1

Instrument	2004	2007	2010	2013	2016	2019
Interest rate instruments	1,025	1,686	2,054	2,311	2,677	<b>6,501</b>
FRAs	233	258	600	749	653	<b>1,900</b>
Swaps	620	1,210	1,272	1,388	1,859	<b>4,144</b>
Overnight index swaps	...	...	...	...	...	<b>2,045</b>
Other swaps	...	...	...	...	...	<b>2,099</b>
Options and other products <sup>3</sup>	171	217	182	174	166	<b>456</b>
<i>Memo:</i>						
<i>Turnover at April 2019 exchange rates<sup>4</sup></i>	966	1,500	1,827	2,047	2,632	<b>6,501</b>
<i>Exchange-traded derivatives<sup>5</sup></i>	4,498	6,067	7,693	4,698	5,066	<b>7,718</b>

<sup>1</sup>Single currency interest rate contracts only. <sup>2</sup>Adjusted for local and cross-border inter-dealer double-counting (ie "net-net" basis).

<sup>3</sup>The category "other interest rate products" covers highly leveraged transactions and/or trades whose notional amount is variable and where a decomposition into individual plain vanilla components was impractical or impossible. <sup>4</sup>Non-US dollar legs of foreign currency transactions were converted into original currency amounts at average exchange rates for April of each survey year and then reconverted into US dollar amounts at average April 2019 exchange rates. <sup>5</sup>Sources: Euromoney Tradedata; Futures Industry Association; The Options Clearing Corporation; BIS derivatives statistics. Foreign exchange futures and options traded worldwide.

## OTC interest rate derivatives turnover by instrument and counterparty<sup>1</sup>

Net-net basis,<sup>2</sup> daily averages in April, in billions of US dollars and percentages

Table 2

Instrument/counterparty	2004		2007		2010		2013		2016		2019	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
Total	1,025	100	1,686	100	2,054	100	2,311	100	2,677	100	<b>6,501</b>	<b>100</b>
with reporting dealers	494	48	800	47	896	44	786	34	693	26	<b>1,553</b>	<b>24</b>
with other financial institutions	450	44	747	44	937	46	1,352	59	1,772	66	<b>4,526</b>	<b>70</b>
with non-financial customers	79	8	136	8	221	11	169	7	210	8	<b>416</b>	<b>6</b>
Local	414	40	564	33	756	37	1,059	46	890	33	<b>3,157</b>	<b>49</b>
Cross-border	609	59	1,120	66	1,298	63	1,248	54	1,785	67	<b>3,338</b>	<b>51</b>
FRAs	233	23	258	15	600	29	749	32	653	24	<b>1,900</b>	<b>29</b>
with reporting dealers	112	48	143	55	296	49	241	32	171	26	<b>363</b>	<b>19</b>
with other financial institutions	113	48	89	34	266	44	492	66	475	73	<b>1,322</b>	<b>70</b>
with non-financial customers	8	3	27	10	37	6	16	2	7	1	<b>215</b>	<b>11</b>
Swaps	620	61	1,210	72	1,272	62	1,388	60	1,859	69	<b>4,144</b>	<b>64</b>
with reporting dealers	325	52	552	46	535	42	473	34	461	25	<b>909</b>	<b>22</b>
with other financial institutions	241	39	574	47	585	46	775	56	1,204	65	<b>3,040</b>	<b>73</b>
with non-financial customers	55	9	85	7	154	12	139	10	194	10	<b>195</b>	<b>5</b>
Options and other products <sup>3</sup>	171	17	217	13	182	9	174	8	166	6	<b>456</b>	<b>7</b>
with reporting dealers	57	34	106	49	65	36	71	41	61	37	<b>282</b>	<b>62</b>
with other financial institutions	96	56	85	39	86	47	85	49	93	56	<b>163</b>	<b>36</b>
with non-financial customers	16	9	24	11	30	16	13	8	9	5	<b>5</b>	<b>1</b>

<sup>1</sup> Single currency interest rate contracts only. <sup>2</sup> Adjusted for local and cross-border inter-dealer double-counting (ie "net-net" basis). <sup>3</sup> The category "other interest rate products" covers highly leveraged transactions and/or trades whose notional amount is variable and where a decomposition into individual plain vanilla components was impractical or impossible.

## OTC interest rate derivatives turnover by currency<sup>1</sup>

Net-net basis,<sup>2</sup> daily averages in April, in billions of US dollars

Table 3

Currency	2004		2007		2010		2013		2016		2019	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
Total	1,025		1,686		2,054		2,311		2,677		<b>6,501</b>	
USD	347	33.9	532	31.6	654	31.8	639	27.7	1,357	50.7	<b>3,270</b>	<b>50.3</b>
EUR	461	45.0	656	38.9	834	40.6	1,133	49.0	641	23.9	<b>1,587</b>	<b>24.4</b>
GBP	90	8.8	172	10.2	213	10.4	187	8.1	237	8.9	<b>538</b>	<b>8.3</b>
AUD	12	1.2	19	1.1	37	1.8	76	3.3	108	4.0	<b>401</b>	<b>6.2</b>
JPY	46	4.5	137	8.1	124	6.0	69	3.0	83	3.1	<b>213</b>	<b>3.3</b>
CAD	8	0.7	15	0.9	48	2.4	30	1.3	39	1.4	<b>90</b>	<b>1.4</b>
SEK	13	1.3	33	2.0	20	1.0	36	1.6	19	0.7	<b>61</b>	<b>0.9</b>
NZD <sup>3</sup>	2	0.2	7	0.4	4	0.2	5	0.2	26	1.0	<b>56</b>	<b>0.9</b>
CNY <sup>3</sup>	...	...	0	0.0	2	0.1	14	0.6	10	0.4	<b>33</b>	<b>0.5</b>
NOK <sup>3</sup>	8	0.8	8	0.5	15	0.7	9	0.4	15	0.5	<b>31</b>	<b>0.5</b>
KRW <sup>3</sup>	0	0.0	5	0.3	16	0.8	12	0.5	13	0.5	<b>27</b>	<b>0.4</b>
CHF	10	1.0	19	1.1	20	1.0	14	0.6	14	0.5	<b>26</b>	<b>0.4</b>
ZAR <sup>3</sup>	2	0.2	3	0.2	5	0.3	16	0.7	16	0.6	<b>25</b>	<b>0.4</b>
MXN <sup>3</sup>	2	0.2	5	0.3	5	0.2	10	0.4	26	1.0	<b>23</b>	<b>0.4</b>
HKD <sup>3</sup>	4	0.4	9	0.5	3	0.2	2	0.1	5	0.2	<b>18</b>	<b>0.3</b>
INR <sup>3</sup>	0	0.0	3	0.2	2	0.1	6	0.3	6	0.2	<b>17</b>	<b>0.3</b>
SGD <sup>3</sup>	3	0.3	4	0.2	4	0.2	4	0.2	12	0.4	<b>15</b>	<b>0.2</b>
CZK <sup>3</sup>	0	0.0	1	0.0	0	0.0	1	0.0	1	0.1	<b>12</b>	<b>0.2</b>
PLN <sup>3</sup>	1	0.1	2	0.1	1	0.1	7	0.3	5	0.2	<b>8</b>	<b>0.1</b>
BRL <sup>3</sup>	1	0.1	2	0.1	3	0.1	16	0.7	7	0.2	<b>8</b>	<b>0.1</b>
HUF <sup>3</sup>	0	0.0	1	0.1	0	0.0	2	0.1	8	0.3	<b>8</b>	<b>0.1</b>
THB <sup>3</sup>	0	0.0	0	0.0	1	0.1	3	0.1	2	0.1	<b>6</b>	<b>0.1</b>
TWD <sup>3</sup>	0	0.0	1	0.1	1	0.1	1	0.0	2	0.1	<b>4</b>	<b>0.1</b>
DKK <sup>3</sup>	2	0.2	1	0.1	2	0.1	4	0.2	2	0.1	<b>3</b>	<b>0.0</b>
MYR <sup>3</sup>	0	0.0	0	0.0	0	0.0	2	0.1	3	0.1	<b>2</b>	<b>0.0</b>
ILS <sup>3</sup>	...	...	0	0.0	0	0.0	2	0.1	1	0.0	<b>2</b>	<b>0.0</b>
CLP <sup>3</sup>	...	...	0	0.0	0	0.0	1	0.1	4	0.2	<b>1</b>	<b>0.0</b>
RUB <sup>3</sup>	...	...	0	0.0	0	0.0	0	0.0	0	0.0	<b>1</b>	<b>0.0</b>
SAR <sup>3</sup>	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0	<b>1</b>	<b>0.0</b>
COP <sup>3</sup>	...	...	0	0.0	0	0.0	0	0.0	1	0.1	<b>1</b>	<b>0.0</b>
AED	...	...	...	...	...	...	...	...	...	...	<b>1</b>	<b>0.0</b>
TRY <sup>3</sup>	...	...	...	...	...	...	0	0.0	0	0.0	<b>1</b>	<b>0.0</b>
BHD <sup>3</sup>	...	...	0	0.0	...	...	0	0.0	0	0.0	<b>0</b>	<b>0.0</b>
IDR <sup>3</sup>	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	<b>0</b>	<b>0.0</b>
PHP <sup>3</sup>	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	<b>0</b>	<b>0.0</b>
ARS <sup>3</sup>	...	...	...	...	...	...	0	0.0	0	0.0	<b>0</b>	<b>0.0</b>
RON <sup>3</sup>	...	...	...	...	0	0.0	0	0.0	0	0.0	<b>0</b>	<b>0.0</b>
PEN <sup>3</sup>	...	...	0	0.0	0	0.0	0	0.0	0	0.0	<b>0</b>	<b>0.0</b>
BGN <sup>3</sup>	...	...	...	...	...	...	0	0.0	0	0.0	<b>0</b>	<b>0.0</b>
LTL <sup>3</sup>	...	...	0	0.0	0	0.0	0	0.0	...	...	...	...
OTH	12	1.2	50	3.0	36	1.8	7	0.3	14	0.5	<b>11</b>	<b>0.2</b>

<sup>1</sup> Single currency interest rate contracts only. <sup>2</sup> Adjusted for local and cross-border inter-dealer double-counting (ie "net-net" basis).

<sup>3</sup> Turnover for years prior to 2013 may be underestimated owing to incomplete reporting in previous surveys. Methodological changes in the 2013 survey ensured more complete coverage of activity in emerging market and other currencies.

## OTC interest rate derivatives turnover by instrument and currency<sup>1</sup>

Net-net basis,<sup>2</sup> daily averages in April, in billions of US dollars

Table 4

Instrument/currency	2004	2007	2010	2013	2016	2019
<b>Total</b>	<b>1,025</b>	<b>1,686</b>	<b>2,054</b>	<b>2,311</b>	<b>2,677</b>	<b>6,501</b>
AUD	12	19	37	76	108	401
CAD	8	15	48	30	39	90
CNY <sup>3</sup>	...	0	2	14	10	33
EUR	461	656	834	1,133	641	1,587
GBP	90	172	213	187	237	538
JPY	46	137	124	69	83	213
NOK <sup>3</sup>	8	8	15	9	15	31
NZD <sup>3</sup>	2	7	4	5	26	56
SEK	13	33	20	36	19	61
USD	347	532	654	639	1,357	3,270
OTH	38	107	103	113	142	221
<b>FRAs</b>	<b>233</b>	<b>258</b>	<b>600</b>	<b>749</b>	<b>653</b>	<b>1,900</b>
AUD	5	3	8	11	2	0
CAD	2	1	9	2	0	0
CNY <sup>3</sup>	...	...	...	0	0	0
EUR	116	66	202	395	170	387
GBP	25	42	53	88	91	172
JPY	0	4	2	0	0	2
NOK <sup>3</sup>	7	7	7	7	4	8
NZD <sup>3</sup>	1	1	1	1	0	0
SEK	9	18	10	19	10	29
USD	59	98	282	193	341	1,261
OTH	11	18	27	33	34	39
<b>Swaps</b>	<b>620</b>	<b>1,210</b>	<b>1,272</b>	<b>1,388</b>	<b>1,859</b>	<b>4,144</b>
AUD	7	14	28	63	105	398
CAD	5	12	38	27	38	89
CNY <sup>3</sup>	...	0	1	14	10	31
EUR	288	528	561	684	445	917
GBP	59	124	141	92	138	358
JPY	35	110	114	59	76	201
NOK <sup>3</sup>	2	1	8	3	11	21
NZD <sup>3</sup>	1	6	3	3	26	56
SEK	4	13	7	15	9	31
USD	195	322	302	356	898	1,869
OTH	25	82	68	71	104	173
<b>Options and other products<sup>4</sup></b>	<b>171</b>	<b>217</b>	<b>182</b>	<b>174</b>	<b>166</b>	<b>456</b>
AUD	1	1	1	2	2	2
CAD	1	3	1	1	0	1
CNY <sup>3</sup>	...	0	1	0	0	2
EUR	57	62	70	54	26	283
GBP	6	6	19	7	8	7
JPY	10	23	8	10	7	10
NOK <sup>3</sup>	0	0	0	0	0	2
NZD <sup>3</sup>	0	0	0	0	0	0
SEK	0	1	4	2	1	1
USD	93	113	70	89	117	140
OTH	3	7	8	9	5	9

<sup>1</sup>Single currency interest rate contracts only. <sup>2</sup>Adjusted for local and cross-border inter-dealer double-counting (ie "net-net" basis). <sup>3</sup>Turnover for years prior to 2013 may be underestimated owing to incomplete reporting in previous surveys. Methodological changes in the 2013 survey ensured more complete coverage of activity in emerging market and other currencies. <sup>4</sup>The category "other interest rate products" covers highly leveraged transactions and/or trades whose notional amount is variable and where a decomposition into individual plain vanilla components was impractical or impossible.

## Geographical distribution of OTC interest rate derivatives turnover<sup>1</sup>

Net-gross basis,<sup>2</sup> daily averages in April, in billions of US dollars and percentages

Table 5

Country	2004		2007		2010		2013		2016		2019	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
Argentina	...	...	...	...	...	...	0	0.0	0	0.0	0	0.0
Australia	13	1.0	23	1.0	41	1.5	66	2.4	56	1.9	97	1.3
Austria	14	1.0	5	0.2	5	0.2	1	0.0	1	0.0	1	0.0
Bahrain	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0
Belgium	31	2.3	22	1.0	10	0.4	9	0.3	17	0.5	12	0.2
Brazil	1	0.1	0	0.0	7	0.3	4	0.1	1	0.0	2	0.0
Bulgaria	...	...	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Canada	12	0.9	21	0.9	42	1.6	34	1.3	33	1.1	123	1.7
Chile	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
China	...	...	...	...	2	0.1	13	0.5	4	0.1	16	0.2
Chinese Taipei	2	0.1	1	0.1	2	0.1	1	0.0	1	0.0	1	0.0
Colombia	...	...	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Czech Republic	1	0.0	1	0.0	0	0.0	0	0.0	0	0.0	2	0.0
Denmark	11	0.8	10	0.5	16	0.6	59	2.2	10	0.3	10	0.1
Estonia	...	...	0	0.0	0	0.0	0	0.0	...	...	...	...
Finland	0	0.0	3	0.1	1	0.1	2	0.1	2	0.1	4	0.0
France	151	11.4	176	8.1	193	7.3	146	5.4	141	4.6	120	1.6
Germany	43	3.2	90	4.2	48	1.8	101	3.8	31	1.0	56	0.8
Greece	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Hong Kong SAR	11	0.8	17	0.8	18	0.7	28	1.0	110	3.6	436	6.0
Hungary	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0
India	1	0.1	3	0.2	3	0.1	3	0.1	2	0.1	5	0.1
Indonesia	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Ireland	12	0.9	7	0.3	7	0.3	3	0.1	1	0.0	7	0.1
Israel	...	...	...	...	...	...	0	0.0	0	0.0	1	0.0
Italy	38	2.8	30	1.4	27	1.0	24	0.9	14	0.5	11	0.2
Japan	31	2.3	76	3.5	90	3.4	67	2.5	56	1.8	135	1.8
Korea	1	0.1	5	0.2	11	0.4	8	0.3	7	0.2	9	0.1
Latvia	...	...	...	...	...	...	...	...	...	...	0	0.0
Lithuania	0	0.0	0	0.0	0	0.0	...	...	0	0.0	0	0.0
Luxembourg	7	0.6	3	0.2	2	0.1	0	0.0	0	0.0	0	0.0
Malaysia	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Mexico	1	0.1	3	0.1	1	0.1	2	0.1	1	0.0	2	0.0
Netherlands	19	1.4	27	1.2	61	2.3	29	1.1	22	0.7	28	0.4
New Zealand	1	0.1	3	0.1	2	0.1	3	0.1	5	0.2	16	0.2
Norway	5	0.4	7	0.3	12	0.5	6	0.2	4	0.1	6	0.1
Peru	...	...	0	0.0	0	0.0	0	0.0	...	...	0	0.0
Philippines	0	0.0	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0
Poland	1	0.1	3	0.1	2	0.1	3	0.1	1	0.0	2	0.0
Portugal	1	0.1	1	0.0	1	0.0	1	0.0	0	0.0	0	0.0
Romania	...	...	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Russia	...	...	...	...	...	...	0	0.0	0	0.0	1	0.0
Saudi Arabia	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0
Singapore	9	0.6	57	2.6	35	1.3	37	1.4	58	1.9	109	1.5
Slovakia	...	...	...	...	0	0.0	0	0.0	0	0.0	0	0.0
Slovenia	...	...	0	0.0	...	...	...	...	...	...	...	...
South Africa	3	0.2	4	0.2	6	0.2	11	0.4	9	0.3	14	0.2
Spain	12	0.9	17	0.8	31	1.2	14	0.5	6	0.2	16	0.2
Sweden	7	0.6	12	0.6	18	0.7	17	0.6	14	0.5	9	0.1
Switzerland	12	0.9	61	2.8	75	2.8	33	1.2	8	0.3	32	0.4
Thailand	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	1	0.0
Turkey	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
United Arab Emirates	...	...	...	...	...	...	...	...	...	...	3	0.0
United Kingdom	563	42.3	957	44.0	1,235	46.6	1,348	49.9	1,180	38.8	3,670	50.2
United States	317	23.9	525	24.2	642	24.2	628	23.2	1,241	40.8	2,356	32.2
<b>Total</b>	<b>1,330</b>	<b>100.0</b>	<b>2,173</b>	<b>100.0</b>	<b>2,649</b>	<b>100.0</b>	<b>2,702</b>	<b>100.0</b>	<b>3,039</b>	<b>100.0</b>	<b>7,316</b>	<b>100.0</b>

<sup>1</sup> Single currency interest rate contracts only. Data may differ from national survey data owing to differences in aggregation procedures and rounding. Data for the Netherlands are not fully comparable over time due to reporting improvements in 2013. The 2019 data for Switzerland are not fully comparable with past periods due to reporting improvements in 2019. <sup>2</sup> Adjusted for local inter-dealer double-counting (ie "net-gross" basis).

## B Explanatory notes

The methodology and structure of the interest rate derivatives turnover part of the 2019 Triennial Central Bank Survey were unchanged from 2016. However, in some jurisdictions reporting was more comprehensive and thus the completeness and quality of data improved in the 2019 Triennial Survey.

### Participating authorities

Central banks and other authorities in 53 jurisdictions participated in the 2019 Triennial Survey.

<b>Argentina</b>	Central Bank of Argentina	<b>Latvia</b>	Bank of Latvia
<b>Australia</b>	Reserve Bank of Australia	<b>Lithuania</b>	Bank of Lithuania
<b>Austria</b>	Central Bank of the Republic of Austria	<b>Luxembourg</b>	Central Bank of Luxembourg
<b>Bahrain</b>	Bahrain Monetary Agency	<b>Malaysia</b>	Central Bank of Malaysia
<b>Belgium</b>	National Bank of Belgium	<b>Mexico</b>	Bank of Mexico
<b>Brazil</b>	Central Bank of Brazil	<b>Netherlands</b>	Netherlands Bank
<b>Bulgaria</b>	Bulgarian National Bank	<b>New Zealand</b>	Reserve Bank of New Zealand
<b>Canada</b>	Bank of Canada	<b>Norway</b>	Central Bank of Norway
<b>Chile</b>	Central Bank of Chile	<b>Peru</b>	Central Reserve Bank of Peru
<b>China</b>	People's Bank of China	<b>Philippines</b>	Bangko Sentral ng Pilipinas
	State Administration of Foreign Exchange	<b>Poland</b>	Narodowy Bank Polski
<b>Chinese Taipei</b>	Central Bank of China	<b>Portugal</b>	Bank of Portugal
<b>Colombia</b>	Bank of the Republic	<b>Romania</b>	National Bank of Romania
<b>Czech Republic</b>	Czech National Bank	<b>Russia</b>	Central Bank of the Russian Federation
<b>Denmark</b>	Danmarks Nationalbank	<b>Saudi Arabia</b>	Saudi Arabian Monetary Authority
<b>Finland</b>	Bank of Finland	<b>Singapore</b>	Monetary Authority of Singapore
<b>France</b>	Bank of France	<b>Slovakia</b>	National Bank of Slovakia
<b>Germany</b>	Deutsche Bundesbank	<b>South Africa</b>	South African Reserve Bank
<b>Greece</b>	Bank of Greece	<b>Spain</b>	Bank of Spain
<b>Hong Kong SAR</b>	Hong Kong Monetary Authority	<b>Sweden</b>	Sveriges Riksbank
<b>Hungary</b>	Magyar Nemzeti Bank		Statistics Sweden
<b>India</b>	Reserve Bank of India	<b>Switzerland</b>	Swiss National Bank
<b>Indonesia</b>	Bank Indonesia	<b>Thailand</b>	Bank of Thailand
<b>Ireland</b>	Central Bank of Ireland	<b>Turkey</b>	Central Bank of the Republic of Turkey
<b>Israel</b>	Bank of Israel	<b>United Kingdom</b>	Bank of England
<b>Italy</b>	Bank of Italy	<b>United States</b>	Federal Reserve Bank of New York
<b>Japan</b>	Bank of Japan		
<b>Korea</b>	Bank of Korea	<b>United Arab Emirates</b>	Central Bank of the United Arab Emirates

## Coverage

The Triennial Survey of OTC interest rate derivatives turnover covers contracts related to an interest-bearing financial instrument whose cash flows are determined by referencing interest rates or another interest rate contract, eg an option on a futures contract to purchase a Treasury bill. This category is restricted to those deals where all the legs are exposed to only one currency's interest rate. Thus, it excludes contracts involving the exchange of one or more foreign currencies, eg cross-currency swaps, and other contracts whose predominant risk characteristic is foreign exchange risk, which are to be reported as foreign exchange contracts.

The basis for reporting was in principle the location of the sales desk of any trade, even if deals entered into in different locations were booked in a central location. Thus, transactions concluded by offices located abroad were not reported by the country of location of the head office, but by that of the office abroad (insofar as the latter was a reporting institution in one of the other reporting countries). Where no sales desk was involved in a deal, the trading desk was used to determine the location of deals.

The survey collected turnover data for both proprietary and commissioned business of the reporting institutions. "Commissioned business" refers to reporting institutions' transactions as a result of deals as an agent or trustee in their own name, but on behalf of third parties, such as customers or other entities.

## Turnover data

Turnover data provide a measure of market activity, and can also be seen as a rough proxy for market liquidity. Turnover is defined as the gross value of all new deals entered into during a given period, and is measured in terms of the nominal or notional amount of the contracts. No distinction was made between sales and purchases (eg a purchase of \$5 million and a sale of \$7 million would amount to a gross turnover of \$12 million). The gross amount of each transaction was recorded once, and netting arrangements and offsets were ignored.

OTC derivatives transactions that are centrally cleared via central counterparties (CCPs) were reported on a pre-novation basis (ie with the original execution counterpart as counterparty). Any post-trade transaction records that arise from central clearing via CCPs (eg through novation) were not reported as additional transactions.

Turnover data were collected over a one-month period, the month of April, in order to reduce the likelihood of very short-term variations in activity contaminating the data. The data collected for the survey reflected all transactions entered into during the calendar month of April 2019, regardless of whether delivery or settlement was made during that month. In order to allow comparison across countries, daily averages of turnover were computed by dividing aggregate monthly turnover for the country in question by the number of days in April on which the foreign exchange and derivatives markets in that country were open.

Transactions are reported to the BIS in US dollar equivalents, with non-dollar amounts generally converted into US dollars using the exchange rate prevailing on the date of the trade

## Instruments

The Triennial Survey of interest rate derivatives turnover covers forward rate agreements, interest rate swaps and interest rate options. The instruments are defined and categorised as follows.



<b>forward rate agreements (FRAs)</b>	Interest rate forward contracts in which the rate to be paid or received on a specific obligation for a set period of time, beginning at some time in the future, is determined at contract initiation.
<b>swaps</b>	Agreements to exchange periodic payments related to interest rates on a single currency; can be fixed for floating, or floating for floating based on different indices. This group includes those swaps whose notional principal is amortised according to a fixed schedule independent of interest rates.
<b>overnight index swaps (OIS)</b>	Contracts to exchange periodic payments related to interest rates on a single currency, fixed for floating where the periodic floating payment is based on a designated overnight rate or overnight index rate.
<b>other swaps</b>	Contracts to exchange periodic payments related to interest rates on a single currency; can be fixed for floating, or floating for floating based on different indices. This group excludes OIS. It includes those swaps whose notional principal is amortised according to a fixed schedule independent of interest rates.
<b>OTC options</b>	<p>Option contracts that give the right to pay or receive a specific interest rate on a predetermined principal for a set period of time.</p> <p>OTC options include:</p> <ul style="list-style-type: none"> <li>• The interest rate cap: an OTC option that pays the difference between a floating interest rate and the cap rate.</li> <li>• The interest rate floor: an OTC option that pays the difference between the floor rate and a floating interest rate.</li> <li>• The interest rate collar: a combination of cap and floor.</li> <li>• The interest rate corridor: (i) a combination of two caps, one purchased by a borrower at a set strike and the other sold by the borrower at a higher strike to, in effect, offset part of the premium of the first cap; (ii) a collar on a swap created with two swaptions, the structure and participation interval being determined by the strikes and types of the swaptions; (iii) a digital knockout option with two barriers bracketing the current level of a long-term interest rate.</li> <li>• The interest rate swaption: an OTC option to enter into an interest rate swap contract, purchasing the right to pay or receive a certain fixed rate.</li> <li>• The interest rate warrant: an OTC option; long-dated (over one year) interest rate option.</li> </ul>
<b>other products</b>	Other derivative products are instruments where decomposition into individual plain vanilla instruments such as FRAs, swaps or options is impractical or impossible. An example of "other" products is instruments with leveraged payoffs and/or those whose notional principal varies as a function of interest rates, such as swaps based on Libor squared or index-amortising rate swaps.

## Counterparties

Reporting institutions were requested to provide for each instrument a breakdown of contracts by counterparty as follows: reporting dealers, other financial institutions and non-financial customers, with separate information on local and cross-border transactions. The distinction between local and cross-border was determined according to the location of the counterparty and not its nationality.

<b>reporting dealers</b>	<p>Financial institutions that participate as reporters in the Triennial Survey.</p> <p>These are mainly large commercial and investment banks and securities houses that (i) participate in the inter-dealer market and/or (ii) have an active business with large customers, such as large corporate firms, governments and non-reporting financial institutions; in other words, reporting dealers are institutions that actively buy and sell currency and OTC derivatives both for their own account and/or in meeting customer demand.</p> <p>In practice, reporting dealers are often those institutions that actively or regularly deal through electronic platforms, such as EBS or Reuters dealing facilities.</p> <p>This category also includes the branches and subsidiaries of institutions operating in multiple locations that do not have a trading desk but do have a sales desk in those locations that conducts active business with large customers.</p> <p>The identification of transactions with reporting dealers allows the BIS to adjust for double-counting in inter-dealer trades.</p>
<b>other financial institutions</b>	<p>Financial institutions that are not classified as “reporting dealers” in the survey.</p> <p>These are typically regarded as foreign exchange and interest rate derivatives market end users. They mainly cover all other financial institutions, such as smaller commercial banks, investment banks and securities houses, and mutual funds, pension funds, hedge funds, currency funds, money market funds, building societies, leasing companies, insurance companies, other financial subsidiaries of corporate firms and central banks.</p>
<b>non-financial customers</b>	<p>Any counterparty other than those described above, ie mainly non-financial end users, such as corporations and non-financial government entities. May also include private individuals who directly transact with reporting dealers for investment purposes, either on the online retail trading platforms operated by the reporting dealers or by other means (eg giving trading instructions by phone).</p>

## Trading relationships

As in previous surveys, reporting dealers were requested to identify how much of their OTC interest rate derivatives turnover was attributed to “related party” transactions.

<b>related party trades</b>	<p>Transactions between desks and offices, transactions with branches and subsidiaries, and transactions between affiliated firms. These trades are included regardless of whether the counterparty is resident in the same country as the reporting dealer or in another country. Back-to-back trades that involve the transfer of risk from the sales desk to another affiliate are included. However, trades conducted as back-to-back deals and trades to facilitate internal bookkeeping and internal risk management within the same sales desk (ie reporting dealer) are excluded.</p>
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## Currencies

For turnover of single currency interest rate contracts, the following breakdown of currencies was requested: AED, ARS, AUD, BGN, BHD, BRL, CAD, CHF, CLP, CNY, COP, CZK, DKK, EUR, GBP, HKD, HUF, IDR, ILS, INR, JPY, KRW, MXN, MYR, NOK, NZD, PEN, PHP, PLN, RON, RUB, SAR, SEK, SGD, THB, TRY, TWD, USD, ZAR and other.

Transactions conducted in a special unit of account adjusted to inflation (such as CLF, COU and MXV) were treated as having been executed in the main currency (respectively, CLP, COP and MXN). Transactions in offshore renminbi (CNH) are included in CNY.

## Elimination of double-counting

Double-counting arises because transactions between two reporting entities are recorded by each of them, ie twice. In order to derive meaningful measures of overall market size, it is therefore necessary to halve the data on transactions between reporting dealers. To permit this, reporters are asked to distinguish deals contracted with other reporters (dealers).

The following methods of adjustment were applied: data on local deals with other reporters were first divided by two, and this figure was subtracted from total gross data to arrive at so-called "net-gross" figures, ie business net of local inter-dealer double-counting. In a second step, data on cross-border deals with other reporters were also divided by two, and this figure was subtracted from total "net-gross" data to obtain so-called "net-net" figures, ie business net of local and cross-border inter-dealer double-counting.

<b>Gross turnover</b>	Minus	<b>= Net-gross turnover</b>	Minus	<b>= Net-net turnover</b>
Not adjusted for inter-dealer double-counting (ie "gross-gross" basis)	half of the turnover with local reporting dealers	Adjusted for local inter-dealer double-counting (ie "net-gross" basis)	half of the turnover with reporting dealers abroad	Adjusted for local and cross-border inter-dealer double-counting (ie "net-net" basis)