April 2018

ISDA Research Study

ISDA MARGIN SURVEY FULL YEAR 2017

The ISDA Margin Survey considers the impact of regulatory and other changes on collateral practices, and analyzes the amount and type of initial margin (IM) and variation margin (VM) posted for non-cleared derivatives, and the IM posted for cleared transactions.

The survey finds that the amount of IM collected by the 20 largest market participants (phase-one firms) for their non-cleared derivatives increased by nearly 22% to $130.6 billion at year-end 2017 compared to the first quarter of 2017. Of this amount, $73.7 billion represented margin posted by counterparties currently in scope of the rules (an increase of 58%), and $56.9 billion comprised discretionary IM posted by counterparties not currently in scope (a decrease of 6%).

The survey also finds that $194.1 billion in IM had been posted by all market participants to major central counterparties (CCPs) for their cleared interest rate derivatives (IRD) and credit default swap (CDS) transactions at the end of 2017.

CONTENTS

SUMMARY

Initial and variation margin collected by the 20 phase-one firms for their non-cleared derivatives transactions totaled $1.02 trillion at year-end 2017

- The amount of regulatory IM has been increasing since the introduction of margin rules for non-cleared derivatives in September 2016, with more new transactions subject to the requirements.
- IM collected by the top 20 derivatives market participants (phase-one firms) for their non-cleared derivatives transactions totaled approximately $130.6 billion at year-end 2017[1,2]. This compares to $107.1 billion at the end of the first quarter of 2017[3,4].
    - $73.7 billion of the amount collected by phase-one firms was required under global margin regulations and came from the 20 phase-one firms and six phase-two firms currently in scope of the margin rules. This represents an increase of almost 60% compared with the end of the first quarter of 2017.
    - Approximately $56.9 billion of IM collected by phase-one firms was discretionary IM, and was collected under existing collateral agreements from counterparties not currently in scope of the margin rules. This compares to $60.5 billion at the end of the first quarter of 2017.
    - Phase-one firms also posted about $6.4 billion of discretionary IM for non-cleared derivatives transactions at the end of the fourth quarter of 2017, compared to $16.3 billion at the end of the first quarter of 2017. The difference in discretionary IM collected/posted ($56.9 billion versus $6.4 billion) is probably because phase-one firms are more likely to have one-way collateral agreements in place that only require their non-phase-one and non-phase-two counterparties to post IM.
- VM posted by phase-one firms for non-cleared derivatives totaled $631.7 billion, and VM received by phase-one firms was $893.7 billion as of December 29, 2017. For comparison, phase-one firms posted $685 billion and received $870.4 billion of VM as of March 31, 2017.
- For cleared IRD and both single-name and index CDS, IM posted at all major CCPs by all market participants totaled $194.1 billion at year-end 2017. This represents an increase of 6% from $183.2 billion as of March 31, 2017.
    - $159 billion of this amount represents IM posted for IRD products. Open interest in IRD products across five major CCPs totaled $320.8 trillion at year-end 2017.
    - $35.1 billion of IM was posted by market participants for CDS transactions. Open interest in CDS products at five major CCPs was $2 trillion at year-end 2017.

---

1 These amounts exclude related party transactions (ie, inter-company or inter-affiliate)

2 An explanation of phase-one firms is included in the Methodology section

3 ISDA conducted its prior margin survey as of March 31, 2017, and this margin survey compares the margin amounts as of December 29, 2017 with the amounts as of March 31, 2017

4 Please see the appendix for a brief summary of the margin regulations

METHODOLOGY AND PARTICIPANTS

ISDA's Margin Survey analyzes the amount and type of collateral posted for non-cleared and cleared derivatives transactions

- Recent regulation in many jurisdictions requires or will require firms over certain thresholds to post and collect IM and to exchange VM.

- Margining practices prior to these regulations varied among derivatives users, with many adhering to ISDA collateral best practices. The exchange of VM for derivatives transactions was common, and some firms also posted IM under bilaterally negotiated collateral arrangements.

- ISDA's Margin Survey assesses the amount and type of collateral that is being posted for non-cleared and cleared derivatives transactions.

- For non-cleared derivatives, we surveyed 20 firms with the largest derivatives exposures. These firms were subject to the first phase of the new margining regulations for non-cleared derivatives in the US, Canada and Japan from September 2016, and in Europe from February 2017 (known as 'phase-one' firms)[5]. Of the 20 phase-one firms, 19 responded. We estimated one missing figure based on last year's response and available portfolio data.

- For cleared derivatives, the survey uses publicly available margin data from two US CCPs (CME Group and ICE Clear Credit), three European CCPs (Eurex Clearing, ICE Clear Europe, and LCH Group (including LCH Ltd and LCH SA)) and two Asian CCPs (Japan Securities Clearing Corporation (JSCC) and OTC Clearing Hong Kong Limited (OTC Clear)). The collected data only reflects margin for IRD and CDS. This data is published by CCPs under public quantitative disclosure standards set out by the Committee on Payments and Market Infrastructures (CPMI) and the International Organization of Securities Commissions (IOSCO).

[5] We also surveyed phase-two firms that were subject to the regulations from March 30, 2017. However, we did not receive sufficient responses and so did not include phase-two data in the survey

IM AND VM FOR NON-CLEARED DERIVATIVES

The amount of regulatory IM posted grew by about 59% to $75.2 billion

At the end of the fourth quarter of 2017, phase-one firms posted about $75.2 billion and received $73.7 billion of regulatory IM for non-cleared derivatives transactions[6]. Given the margin rules for non-cleared derivatives require two-way IM exchange between phase-one and phase-two counterparties (each counterparty is required to post IM to and/or collect IM from its counterparty), the amount of IM received and the amount of IM delivered are approximately the same[7].

The amount of regulatory IM posted and received grew by about 59% and 58%, respectively, at the end of the fourth quarter 2017 compared with the end of the first quarter 2017[8]. In ISDA's view, the increase in regulatory IM was mainly driven by new non-cleared derivatives transactions executed by phase-one and phase-two firms, which are now subject to the IM requirements. As transactions that took place before the rule implementation date are exempt from the IM rules, a larger part of the portfolio falls under the scope of the new regulation each month. At the end of the first quarter of 2017, phase-one firms posted $47.2 billion of regulatory IM and received $46.6 billion of regulatory IM for non-cleared derivatives transactions.

In addition to regulatory IM, phase-one firms posted $6.4 billion of discretionary IM for non-cleared derivatives transactions as of December 29, 2017, and received $56.9 billion of discretionary IM. Discretionary IM reflects IM posted and/or collected under collateral agreements with counterparties not currently in scope of the margin rules. The difference in discretionary IM posted and received is probably because phase-one firms are more likely to have one-way credit support documentation in place that only requires their non-phase-one and non-phase-two counterparties (but not themselves) to post IM.

The amount of discretionary IM posted declined by about 61%, while discretionary IM received decreased by 6% from March 31, 2017 to December 29, 2017. As of March 31, 2017, phase-one firms posted an estimated $16.3 billion of discretionary IM for non-cleared derivatives transactions and received $60.5 billion of discretionary IM. The much larger decline in discretionary IM posted compared with discretionary IM received is likely because, as more transactions fall under the mandatory IM rules, phase-one firms post less discretionary IM, but continue to collect discretionary IM from their non-phase-one and non-phase-two counterparties. As more firms become subject to the margin requirements, ISDA expects discretionary IM received to decline and regulatory IM to continue to grow.

IM and VM for Non-cleared Derivatives

	Q4 2017	Q1 2017	Q4 vs. Q1
Regulatory Initial Margin Posted	75.2	47.2	59%
Regulatory Initial Margin Received	73.7	46.6	58%
Discretionary Initial Margin Posted	6.4	16.3	-61%
Discretionary Initial Margin Received	56.9	60.5	-6%
Variation Margin Posted	631.7	685.0	-8%
Variation Margin Received	893.7	870.4	3%

In US$ billions; Q4 2017 and Q1 2017 numbers are converted to US$ based on the exchange rates as of December 29, 2017 and March 31, 2017, respectively (https://www.x-rates.com/table/?from=USD&amount=1)

[6] These amounts exclude collateral received or delivered in connection with spot foreign exchange transactions. However, some firms indicated that collateral posted or received in connection with spot FX transactions may be included should the credit support annex (CSA) determine that these should be collateralized

[7] Variations between regulatory IM delivered and received are assumed to be attributed in part to differences in the scope of derivatives subject to regulatory IM in different jurisdictions

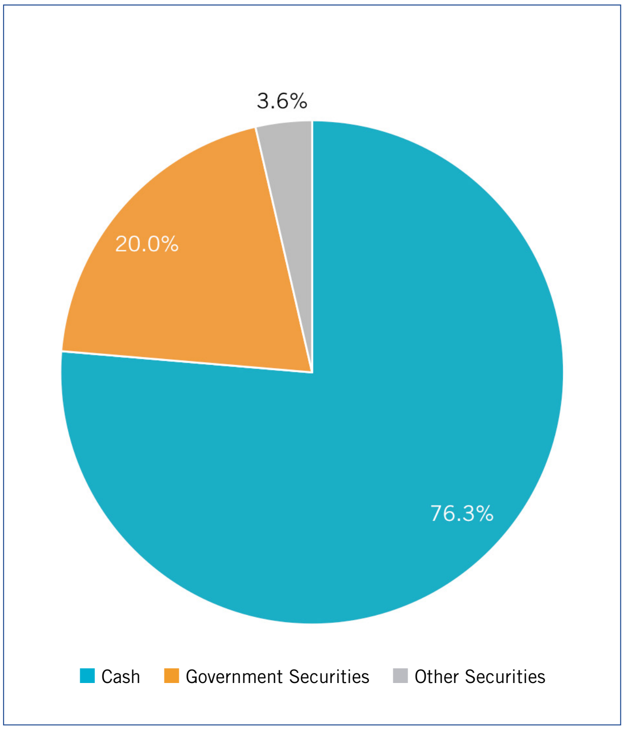
[8] The data in the prior ISDA Margin Survey was collected as of March 31, 2017. The amounts are ISDA estimates to account for two firms that did not respond to the survey

VM for non-cleared derivatives posted and received by phase-one firms totaled $631.7 billion and $893.7 billion, respectively, at the end of the fourth quarter 2017. This includes both regulatory and discretionary VM[9]. VM posted decreased by about 8% and VM received increased by 3% compared with ISDA's VM estimate of $685 billion and $870.4 billion, respectively, as of March 31, 2017.

Posted Collateral by Asset Type

The survey results show that cash represented the majority of the collateral posted by phase-one participants, which includes regulatory and discretionary IM posted and VM posted. As of December 29, 2017, cash contributed 76.3% of total posted collateral, government securities comprised 20% and other securities made up 3.6%.

Posted Collateral by Asset Type



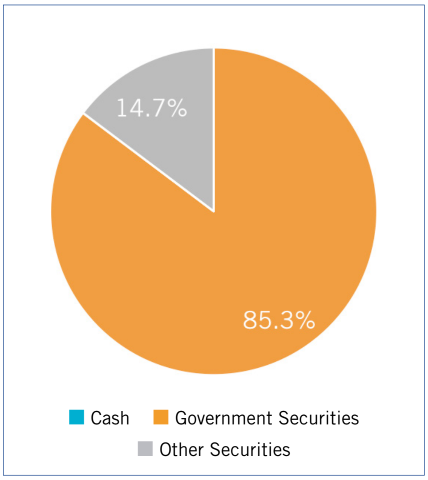
[9] As not all survey participants provided the split between regulatory and discretionary VM, this analysis uses the combined number

Composition of Collateral for IM and VM

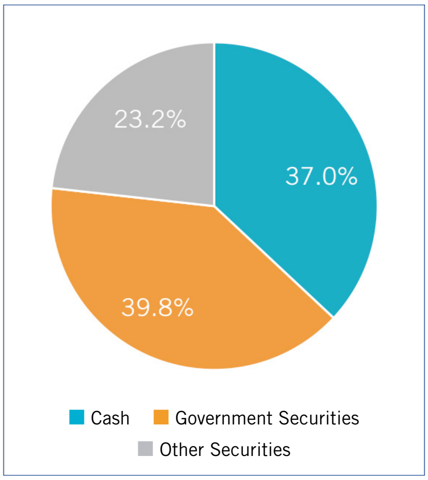
Based on the survey results, phase-one market participants mostly use government securities for meeting regulatory IM requirements. That is because the margin regulations stipulate that IM has to be bankruptcy remote, which is much easier to implement using securities[10]. As of December 29, 2017, regulatory IM posted included 85.3% of government securities and 14.7% of other securities.

For discretionary IM and VM, cash is more widely used. VM covers mark-to-market movements and can change daily. The VM a firm receives for a non-cleared derivatives position might be required to cover the VM of the cleared hedge position. These flows can be more easily implemented with cash. As of December 29, 2017, discretionary IM posted included 39.8% of government securities, 37% of cash and 23.2% of other securities. Cash contributed 85.8% of VM posted, while government securities and other securities were 12.1% and 2.1%, respectively.

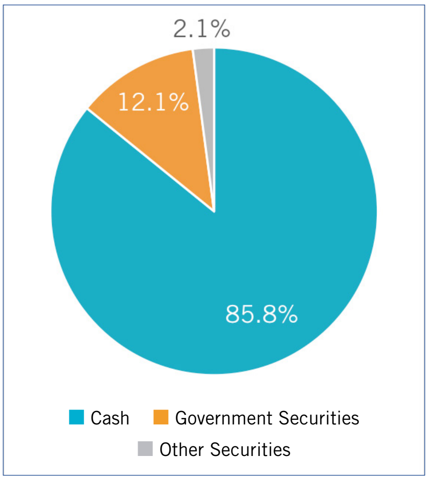
Regulatory Initial Margin Posted



Discretionary Initial Margin Posted



Variation Margin Posted



Composition of Collateral for Posted and Received Margin

Cash comprised 76.3% of total margin posted (including IM and VM) compared to 68.3% of total margin received. Government securities and other securities contributed 20% and 3.6%, respectively, of total margin posted, and 20.5% and 11.2%, respectively, of total margin received at the end of the fourth quarter of 2017.

Composition of Collateral

	Total Margin Posted	Total Margin Received
Cash	**76.3%**	**68.3%**
Government Securities	**20.0%**	**20.5%**
Other Securities	**3.6%**	**11.2%**

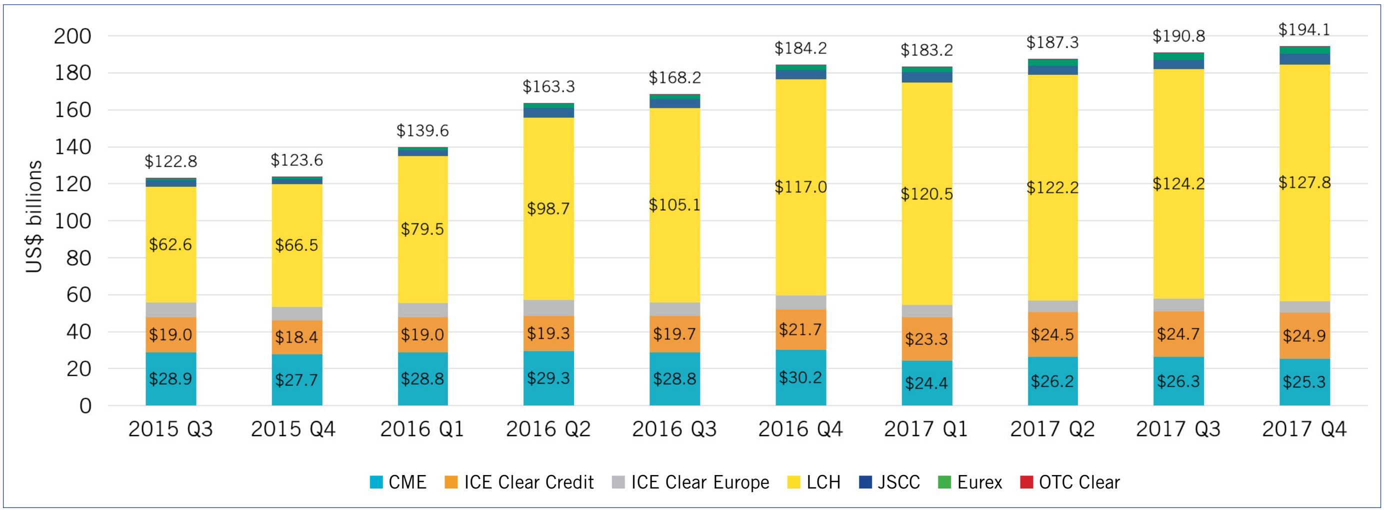
[10] If cash was held with the third-party custodian, it could be bankruptcy remote from the counterparty receiving the collateral, but it would not be bankruptcy remote from the custodian (with certain exceptions possible in a few jurisdictions)

The IM posted for cleared IRD and CDS reached $194.1 billion at the end of 2017

IM FOR CLEARED DERIVATIVES

Based on the CPMI-IOSCO public quantitative disclosures for CCPs, the amount of IM for cleared derivatives, including IRD and CDS, continued to increase in 2017. At the end of the fourth quarter 2017, total IM for IRD and CDS products reached $194.1 billion compared with $184.2 billion at the end of the fourth quarter 2016[11].

Required IM for IRD and CDS

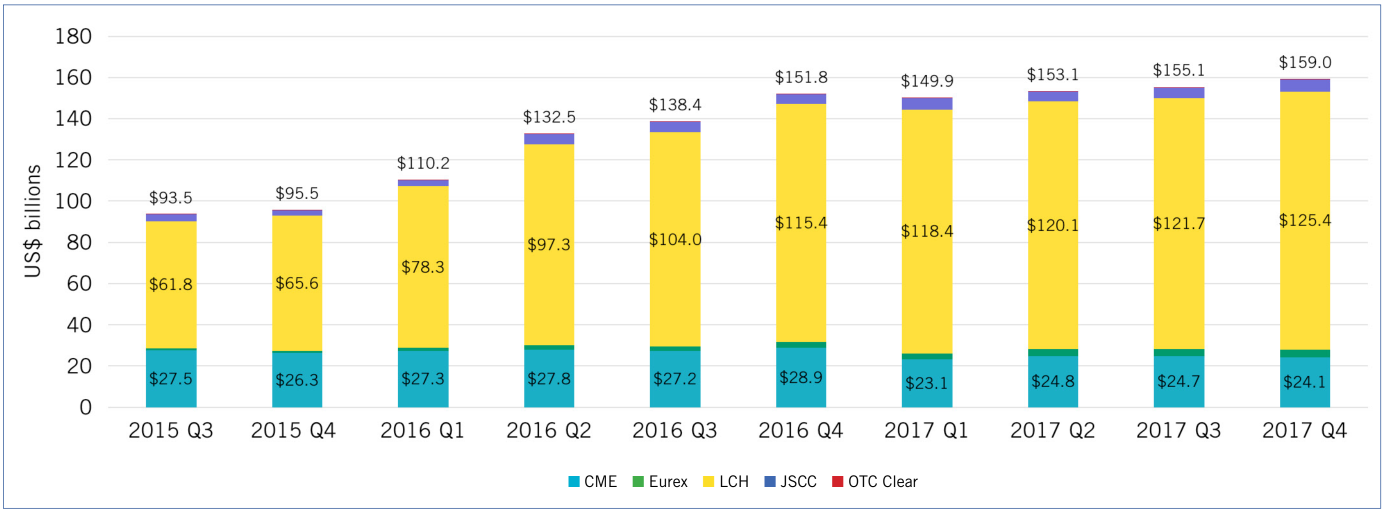


Source: CCP disclosures

Required IM for Cleared IRD and CDS

During 2017, required IM for IRD grew by about 4.8%, from $151.8 billion at the end of the fourth quarter of 2016 to $159 billion at the end of the fourth quarter of 2017. The growth in IM was mainly driven by an 8.7% IM increase at LCH, which was partially offset by a 16.6% decline of IM at CME.

Required IM for Cleared IRD

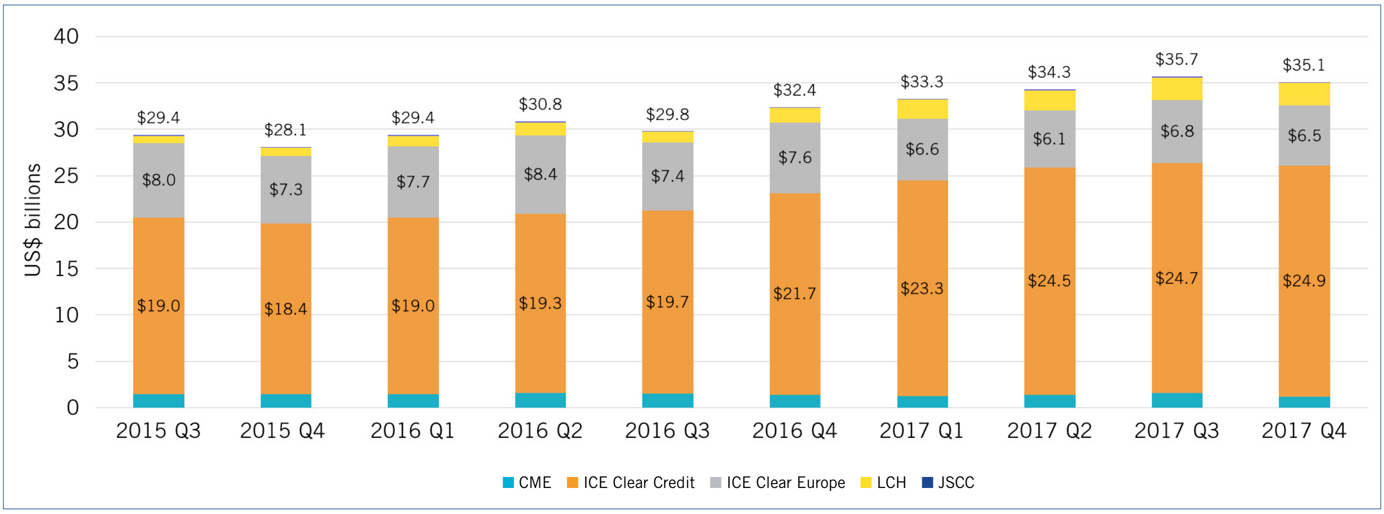


Source: CCP disclosures

[11] CCPs have been providing quarterly CPMI-IOSCO public quantitative disclosures since the third quarter of 2015. All numbers are converted to US$ based on the exchange rates as of December 29, 2017: https://www.x-rates.com/historical/?from=USD&amount=1&date=2017-12-29

IM for CDS grew by 8.3%, from $32.4 billion at the end of the fourth quarter of 2016 to $35.1 billion at the end of the fourth quarter of 2017. The amount of IM increased by 14.5% at ICE Clear Credit, but declined at CME and ICE Clear Europe by 13.2% and 15%, respectively.

Required IM for Cleared CDS

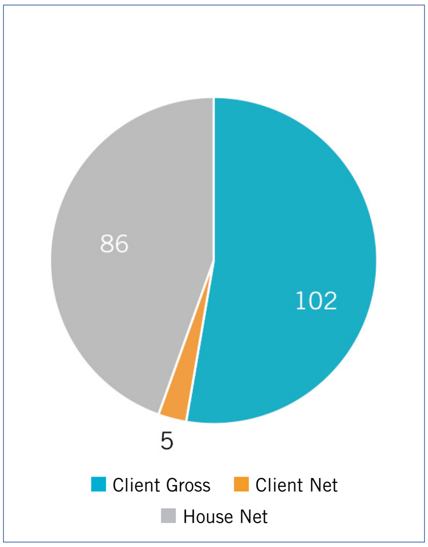


Source: CCP disclosures

Client and House Required IM

At the end of the fourth quarter of 2017, IM posted by clearing members for their own positions (house net) totaled $86.4 billion compared with $107.7 billion of client IM, out of which $102.3 billion was margin calculated on a gross basis and $5.4 billion on a net basis[12].

Client and House Required IM (US$ billions)

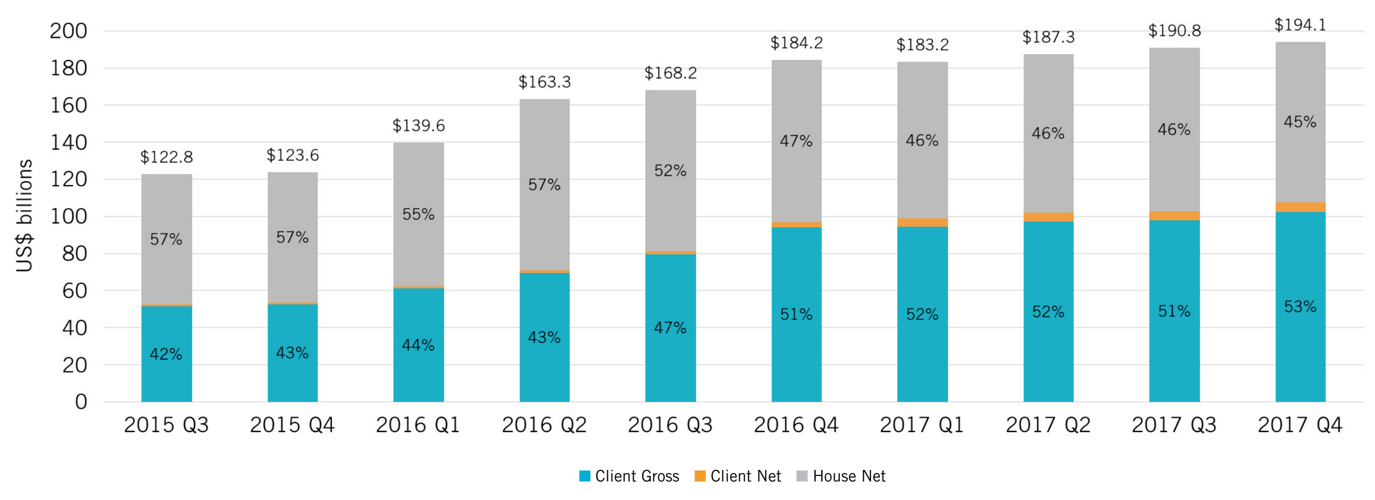


Source: CCPs disclosure as of Q4 2017

[12] Under a net margin structure, a clearing member only passes through to the CCP the net margin across a set of clients, thereby retaining part of the client margin. Under a gross structure, the margin of all clients is posted in full to the CCP

The portion of the client IM relative to house IM remained relatively unchanged during 2017. At the end of the fourth quarter of 2017, client gross margin represented about 53% of total IM, while house net margin was 45%. Client net margin contributed about 2% of total IM.

Client and House Required IM



Source: CCP disclosures

Open Interest

As of December 29, 2017, IRD open interest across five major CCPs totaled $320.8 trillion, while total CDS open interest at five major CCPs was about $2 trillion[13,14]. Against these exposures, CCPs collected $159 billion of IM for IRD products and $35.1 billion of IM for CDS products.

Open Interest (US$ trillions)

	IRD	CDS
CME Group*	15.1	0.1
Eurex Clearing	2.3	-
ICE Clear Credit	-	1.1
ICE Clear Europe	-	0.6
Japan Securities Clearing Corporation (JSCC)	11.4	0.0
LCH SA**	-	0.2
LCH Ltd	292.0	-
OTC Clearing Hong Kong Limited (OTC Clear)	0.0	-
Total	**320.8**	**2.0**

*CME Group's exit of the CDS clearing business, announced in September 2017, has likely affected its open interest at the end of the quarter
**LCH SA open interest is as of April 11, 2018, as the company does not disclose historical data
Source: CCPs websites

[13] Open interest is a common concept in futures and options market, but is also used in the over-the-counter derivatives market to indicate notional outstanding. For IRD products, open interest is the total notional outstanding of the aggregated double-counted volume of all active trades. When a derivative trade is cleared by a CCP, the initial contract between two counterparties is replaced by two new contracts between each counterparty and a CCP. For CDS products, open interest is the sum of all clearing participants' outstanding net long positions against a CCP, which results in single-sided amounts

[14] Data on open interest was collected from CCP websites. All numbers are converted to US$ based on the exchange rates as of December 29, 2017: https://www.x-rates.com/historical/?from=USD&amount=1&date=2017-12-29

OVERVIEW OF THE MARGIN RULES FOR NON-CLEARED DERIVATIVES

IM requirements for non-cleared derivatives are being rolled out to a wider universe of derivatives users

The margin rules for non-cleared derivatives, which require the mandatory posting of IM and VM for over-the-counter (OTC) derivatives that are not cleared through CCPs, originate from a global policy framework and schedule established by the Basel Committee on Banking Supervision and IOSCO.

In the US, Canada and Japan, the IM requirements took effect on September 1, 2016 for phase-one entities (those with notional amounts of non-cleared derivatives above $3 trillion, C$5 trillion or ¥420 trillion, respectively). Phase-two firms (those with notional amounts of non-cleared derivatives above $2.25 trillion, C$3.75 trillion or ¥315 trillion, respectively) became subject to the IM rules on September 1, 2017. The IM requirements for other entities subject to the rules will be phased-in through September 2020, in line with the Basel Committee-IOSCO schedule. Phase-three implementation of IM requirements will go into effect on September 1, 2018.

VM requirements came into effect for a wider universe of entities from March 1, 2017. However, the US Commodity Futures Trading Commission issued a no-action relief letter providing a six-month grace period for registered swap dealers to comply with the VM rules, as many market participants were not ready to meet the new requirements. Similar transitional relief or guidelines were provided by other regulators, including US prudential regulators, the Office of the Superintendent of Financial Institutions, the Japanese Financial Services Agency and the European Supervisory Authorities.

In Europe, the rules requiring the mandatory posting of IM and VM came into force in February 2017 for entities with group notional amounts above €3 trillion (phase-one firms). All other in-scope entities were supposed to start posting VM in March 2017, but may have been able to take advantage of regulatory guidance that gave them additional time to come into full compliance. Phase-two entities with group notional amounts above €2.25 trillion became subject to the IM rules in September 2017. The IM requirements for other entities subject to the rules will be phased-in through September 2020, in line with the Basel Committee-IOSCO schedule. Phase-three implementation of the IM requirements is scheduled to come into effect in September 2018.

Margin rules apply to covered swap entities and financial end users under the US rules, and financial counterparties and systemically important non-financial entities above the clearing threshold under the EU framework. The margin requirements cover non-centrally cleared OTC derivatives and apply only to new transactions that take place after the rule implementation date. The margin rules are based on the average aggregate notional amounts of non-cleared derivatives (on a consolidated basis with affiliates), which determine the compliance dates for IM and VM. The rules provide exemptions for certain products (eg, physically settled FX swaps and FX forwards) and certain entities (eg, sovereigns, and central banks)[15,16].

[15] Physically settled FX swaps and forwards are subject to variation margin requirements under EU rules

[16] Additional exemptions vary between jurisdictions, but may include:

- Intra-group transactions
- Exemption for IM (referred to as a 'threshold amount' under a credit support annex) between two firms, up to a maximum of €50 million (or a similar figure in the currency of the national rules), calculated at a group level
- Hedging in covered bond issues
- In some jurisdictions, a counterparty will not be required to post any VM or IM for OTC derivatives with counterparties domiciled in non-netting jurisdictions, but may still be required to collect margin from those counterparties. Under EU regulations, there is no requirement for a counterparty to collect or post VM or IM when certain conditions are met and the counterparty is in a non-netting jurisdiction, subject to a cap of 2.5% of the regulated party's OTC derivatives by notional amount

ISDA has published other recent research papers:

- ***SwapsInfo Full Year 2017 and Fourth Quarter 2017 Review,*** February 2018
  https://www.isda.org/a/IhhEE/SwapsInfo-Full-Year-and-Q4-2017-Review.pdf

- ***Asia-Pacific OTC Derivatives Study,*** November 2017
  https://www.isda.org/a/jRTEE/Asia-Pacific-Derivatives-Study-November-2017.pdf

- ***ISDA Margin Survey 2017,*** September 2017
  http://www2.isda.org/attachment/OTYyMg==/Margin%20Survey%20FINAL1.pdf

For questions on ISDA Research, please contact:

Olga Roman
Director of Research
International Swaps and Derivatives Association, Inc. (ISDA)
Office: 212-901-6017
oroman@isda.org

ABOUT ISDA

Since 1985, ISDA has worked to make the global derivatives markets safer and more efficient. Today, ISDA has more than 900 member institutions from 68 countries. These members comprise a broad range of derivatives market participants, including corporations, investment managers, government and supranational entities, insurance companies, energy and commodities firms, and international and regional banks. In addition to market participants, members also include key components of the derivatives market infrastructure, such as exchanges, clearing houses and repositories, as well as law firms, accounting firms and other service providers. Information about ISDA and its activities is available on the Association's web site: www.isda.org. Follow us on Twitter @ISDA.