



July 2015

Research Note

The Impact of Compression on the Interest Rate Derivatives Market

Compression activity has increased significantly over the past year, driven by new regulations and developments in clearing technology. In particular, the implementation of the Basel III leverage ratio has acted as a major incentive for banks to reduce the size of their legacy derivatives books. Developments in compression services – and especially the unlinking of cleared trades – have helped facilitate increased activity. Total interest rate derivatives notional outstanding has dropped as a result.

This report considers how market participants are using compression technology, and the impact this is having on the interest rate derivatives market.

Compression volumes have increased significantly over the past year, driven by changes in regulation and improvements in compression technology

SUMMARY

In its most recent derivatives market review, the Bank for International Settlements (BIS) reported a 10.3% decrease in interest rate derivatives (IRD) gross notional outstanding in the six months to December 31, 2014, from \$563.3 trillion to \$505.4 trillion.

The BIS has attributed this decline to increased use of compression. While compression is not a new concept, and has been used for more than a decade as a way of enhancing operational efficiencies, new market regulations and capital requirements are currently fueling an increase in compression activity among sell-side firms because of the need to reduce the size of bank balance sheets and derivatives portfolios.

For the buy side, a prime motivation for compression is to reduce line items and achieve cost and operational efficiencies.

In this analysis, we outline the impact compression is having on the IRD market.

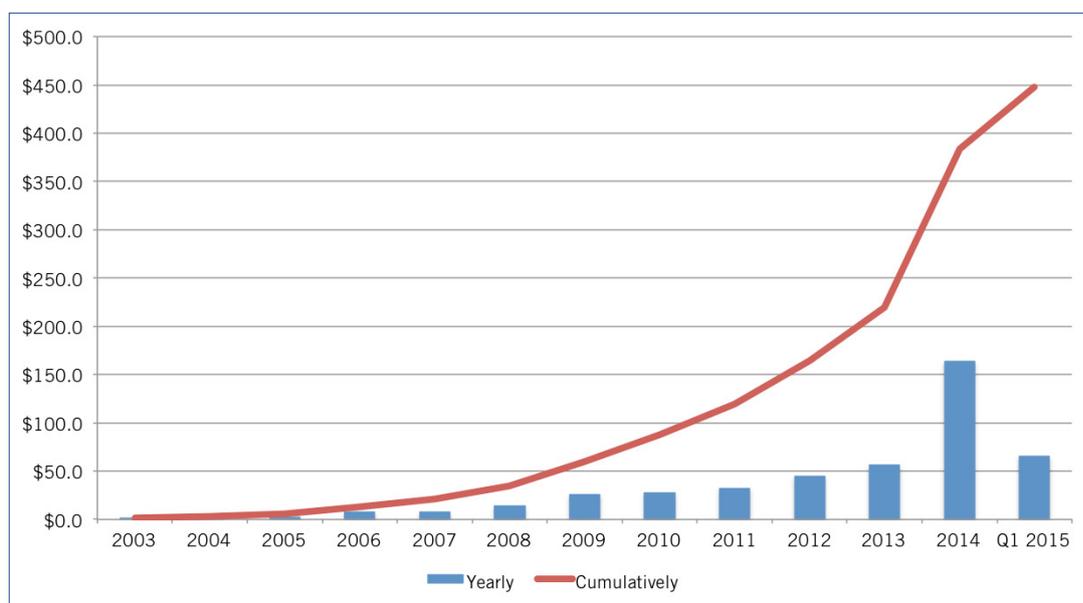
Key trends include:

- Approximately \$448.1 trillion of IRD notional outstanding has been eliminated through compression from 2003 through to month-end March 2015 (Figure 1)¹. That compares with an estimated cumulative total of \$384.1 trillion at the end of last year and \$219.8 trillion at the end of 2013.
- In 2014, an estimated \$164 trillion in IRD notional outstanding was compressed. That compares with \$56.2 trillion in 2013.
- For the quarter ending March 31, 2015, IRD compressions totaled \$65.4 trillion.
- As a result of compression activity, IRD notional outstanding fell from \$584.5 trillion at the end of 2013 to \$563.3 trillion at mid-year 2014 and \$505.5 trillion by the end of 2014, according to BIS figures.
- While compression reduces notional outstanding amounts, it is also beginning to have an impact on new IRD trading activity. Compression-related transactions accounted for an estimated 6-7% of swap execution facility (SEF) activity (on a notional basis), as reported to US swap data repositories (SDRs)².

¹ Bilateral trades are counted twice when cleared: one trade between Party A and the CCP and one between Party B and the CCP. All data in this report reflects single-counted compressed volumes from TriOptima, LCH.Clearnet and CME Group. The BIS figures are double counted

² Buy-side line-item reductions and compaction are likely understated as a percentage of total notional amounts reported to DTCC and Bloomberg SDRs since these amounts are capped in the publicly reported data

Figure 1: Total interest rate derivatives notional compressed yearly and cumulatively (2003 - Q1 2015 US\$ trillions)



Source: TriOptima, LCH.Clearnet, CME Group

Compression services have existed for more than a decade, but the emergence of the leverage ratio has increased the importance of shrinking derivatives portfolios

A Brief History of Compression

Compression is not a new concept, and emerged as a way for derivatives users to manage operational risks in 2003, with the launch of Stockholm-based TriOptima's triReduce service³. This multilateral service allows users to submit a portfolio of trades, which are then matched with the trades submitted by other participants to determine the transactions eligible for compression.

Initially available for non-cleared derivatives, the service expanded to include cleared IRD trades through LCH.Clearnet's SwapClear in 2009. As with the non-cleared service, firms submit a portfolio of trades to be matched, and set risk and mark-to-market limits – their risk constraints – to determine how much change in risk they will accept as a result of a reduction in the size of their portfolios.

A constraining factor on compression activity was the linking of trade records to the original counterparties after clearing, meaning both parties had to agree for a trade to be compressed. That changed late last year, with the 'unlinking' of trade records at LCH.Clearnet, which means it is now possible for each counterparty to compress the trades it has cleared through the central counterparty (CCP), without the involvement of the original parties. By the end of the fourth quarter of 2014, all euro-, US dollar- and sterling-denominated dealer-to-dealer trades at LCH.Clearnet had been unlinked⁴. The remaining currencies were converted at the start of 2015. TriOptima now runs unlinked multilateral compression cycles at LCH.Clearnet, Japan Securities Clearing Corporation and Singapore Exchange. It also plans to launch a multilateral service at CME Group in the second half of this year, initially for clearing members clearing US dollar interest rate swaps in their house accounts. Collaborations with Eurex and NASDAQ OMX are also under way.

The unlinking of trades has paved the way for new techniques, such as blended-rate solo compression and future cashflow netting⁵.

³ For more information, see www.trioptima.com

⁴ LCH.Clearnet client trades have always been unlinked, as were all CME Group cleared transactions

⁵ Future cashflow netting is a variation of solo compression that allows trades with different start dates but the same future cashflow characteristics to compress

Solo compression allows counterparties to tear up offsetting trades within their own portfolios, without the involvement of the counterparty. Blended-rate compression takes that one step further by enabling participants to compress trades with different interest rates but the same remaining cashflow dates, widening the universe of trades eligible for clearing. Both CME Group and LCH.Clearnet now run blended-rate compression services.

Recent regulatory changes – and in particular, the Basel III leverage ratio – have increased the incentives for compression. The leverage ratio is based on gross notional exposures, encouraging banks to decrease the size of their derivatives portfolios to reduce the potential for hitting leverage-ratio constraints.

Compression and Clearing

In this section, we break out the different types of compression that are occurring at LCH.Clearnet and CME Group.

A quarterly comparison of compressed CCP and non-CCP compression volumes from 2013 to the first quarter of 2015 is shown in Table 1. LCH.Clearnet/triReduce multilateral compression cycles are run weekly. Solo compression is run daily at LCH.Clearnet.

Table 1: Compression Volumes (US\$ billions)

| | Q1 '13 | Q2 '13 | Q3 '13 | Q4 '13 | Q1 '14 | Q2 '14 | Q3 '14 | Q4 '14 | Q1 '15 |
|----------------------------------|----------|----------|---------|----------|----------|----------|----------|----------|----------|
| triReduce Total (LCH) | 6,965.0 | 6,500.5 | 0.0 | 7,986.7 | 36,159.5 | 19,625.0 | 9,332.0 | 10,727.5 | 31,727.7 |
| Non-CCP Total (TriOptima) | 2,123.3 | 1,014.8 | 2,198.6 | 1,784.5 | 1,724.3 | 1,594.4 | 373.2 | 807.8 | 1,065.0 |
| Multi Total (LCH) | 0.0 | 0.0 | 0.0 | 0.0 | 487.4 | 41.0 | 0.0 | 0.0 | 0.0 |
| Duo Total (LCH) | 0.0 | 0.0 | 0.0 | 708.0 | 43.4 | 49.0 | 894.5 | 133.5 | 0.0 |
| Blended Total | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2,189.5 | 10,887.4 | 5,370.5 |
| Blended House (LCH) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2,093.5 | 8,449.0 | 3,581.1 |
| Blended House (CME) | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 1,401.5 | 1,675.9 |
| Blended Client (LCH) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 96.0 | 884.0 | 94.7 |
| Blended Client (CME) | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 152.8 | 18.9 |
| Solo Total | 6,280.4 | 6,226.7 | 5,174.5 | 8,409.2 | 12,548.9 | 16,012.5 | 15,241.0 | 25,796.5 | 26,882.8 |
| Solo House (LCH) | 0.0 | 0.0 | 0.0 | 1,452.2 | 2,953.6 | 1,388.0 | 1,823.0 | 1,144.0 | 3,627.1 |
| Solo House (CME) | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2,515.5 | 5,070.4 |
| Solo Client (LCH) | 6,280.4 | 6,226.7 | 5,174.5 | 6,957.1 | 9,595.3 | 14,624.5 | 13,418.0 | 12,352.0 | 9,174.5 |
| Solo Client (CME) | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 9,785.0 | 9,010.9 |
| Total Compressed Volumes | 15,368.7 | 13,742.0 | 7,373.1 | 18,828.3 | 50,920.1 | 37,321.9 | 28,030.2 | 48,352.6 | 65,046.1 |

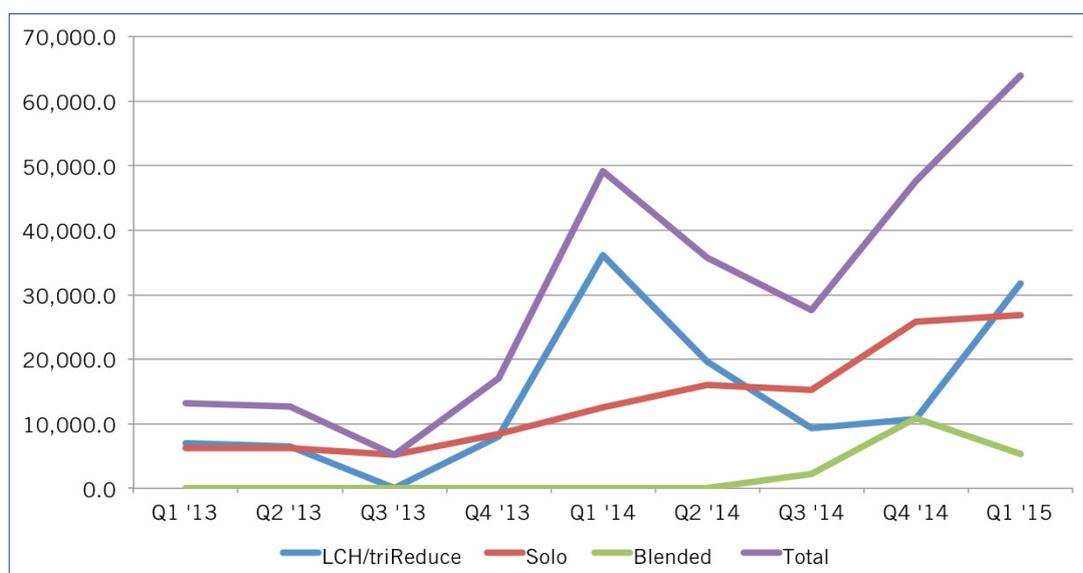
Source: CME Group, LCH.Clearnet, TriOptima

Note: Duo compression enables two parties to compress trades and is part of the legacy 'linked' model. The 'multi' category represents volumes from LCH.Clearnet's own multilateral compression activities, not including triReduce

Two trends are clearly evident. First, total compressed volumes have risen sharply since the first quarter of 2014. Quarterly volumes have fluctuated between \$28 trillion and \$65 trillion in each of the past five quarters.

Second, solo and multilateral risk-constrained compression have clearly emerged as the most popular compression types, with solo volumes eclipsing multilateral compression in the third and fourth quarters of 2014 in the run-up to the rollout of unlinked multilateral compression. Solo compression volumes have more than doubled over the past 18 months, reaching \$27 trillion in the first quarter of 2015.

Figure 2: Quarterly compression volumes by compression type (2013 – Q1 2015, US\$ billions)



Source: CME Group, LCH.Clearnet, TriOptima

At the clearing house level, LCH.Clearnet continues to account for the bulk of portfolio compression – more than three-quarters of the combined total compression volumes during the first quarter of 2015. triReduce multilateral compression accounted for the largest percentage of activity within LCH.Clearnet.

LCH.Clearnet/triReduce volumes have grown substantially over the past two years. Some \$75.8 trillion in volume was compressed during 2014 using this method, nearly half of total compression volume for the year⁶. In the first three months of 2015 alone, \$31.7 trillion of IRD notional has been eliminated via LCH.Clearnet/triReduce.

Once unlinking took effect, solo and blended compression picked up pace. Solo compression volumes have crept higher over the past five quarters, accounting for 41% of total IRD compression activity in the first quarter of 2015. Some \$96.5 trillion has been eliminated using solo compression methods over the past five quarters. Total solo compression volumes in the first quarter of 2015 were \$26.9 trillion – double the amount in the first quarter of 2014, and four times the volume in the first quarter of 2013.

The bulk of solo compression activity comprises cleared client trades⁷. Since the beginning of 2014, client trades have represented between 67% and 91% of solo compression activity. Solo house compression also continues to grow. Some \$18.5 trillion of notional has been compressed using the solo house method since the first quarter of 2014.

⁶ A spike in 2014 volumes may have resulted from a backlog of trades after LCH.Clearnet temporarily ceased compression activity to meet a new regulatory reporting requirement in 2013. As a result, compression volumes jumped sharply in the first quarter of 2014

⁷ Despite the rising volumes of client compression, buy-side firms report some difficulties in compression, primarily because of the challenges of managing exposures among the various fund accounts they manage

Blended-rate compression emerged during the second half of 2014, with CME Group launching its service in June 2014, and LCH.Clearnet following in September 2014. With both CCPs offering blended-rate compression, volumes surged in the fourth quarter of last year, with \$10.9 trillion compressed over the three-month period. However, activity dropped back to \$5.4 trillion in the first three months of this year, suggesting an initial burst of pent-up demand was processed after launch.

A growing proportion of SEF trading activity is related to compression and line-item reduction

SEFs in the Mix

A desire to reduce outstanding positions also influenced trading activity on SEFs. Several venues now offer netting and compression services, which allow participants to enter into new trades that offset existing cleared transactions.

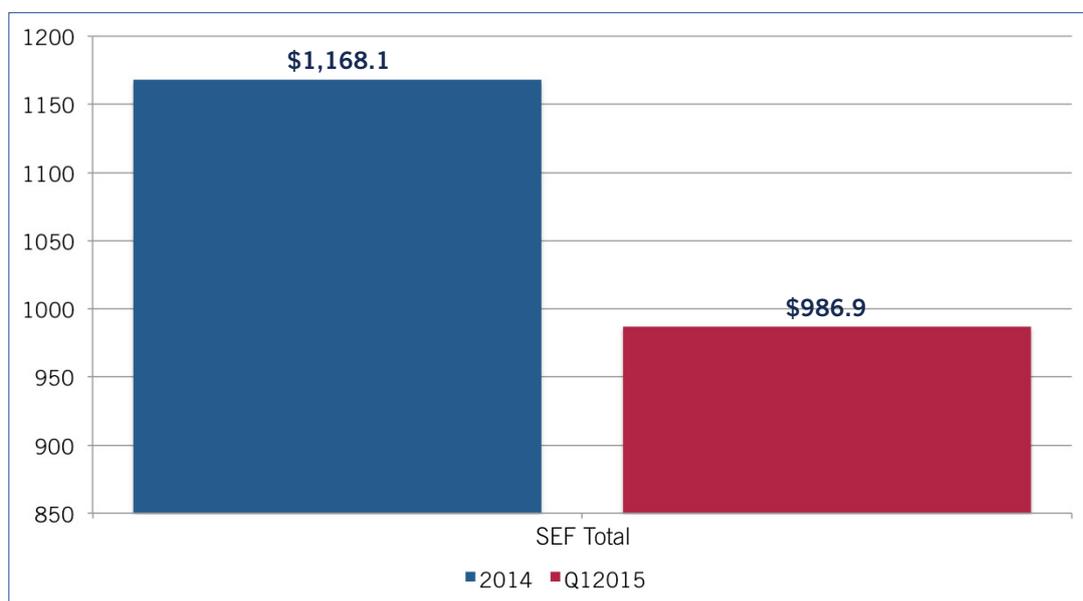
This was previously only achievable through a manual process, which was time-consuming and prone to operational risk. Since late 2013, however, participants have been able to automate this through SEFs such as Bloomberg, Tradeweb and trueEX.

These services enable firms to price and execute a package of hundreds of trades that match and offset existing cleared trades. These are then sent to clearing houses, which net those trades with the outstanding transactions. The result is fewer line items, lower clearing fees and potential margin and capital efficiencies.

In a further step, participants can execute new trades to retain the risk position of the original transactions but with a fewer number of line items – known as compaction.

The pace of compression-related activity has grown in recent months, reaching an estimated \$987 billion in the first quarter of 2015 – approximately 6-7% of total SEF trading volume over the period, according to ISDA estimates. That compares with approximately \$1.17 trillion over the whole of 2014 (see Figure 3).

Figure 3: SEF line-item reduction and compaction volume 2014 vs Q1 2015 (US\$ billions)



Source: Tradeweb, trueEx, Bloomberg SEF

Increased compression activity has contributed to a decrease in IRD notional outstanding

Conclusion

Total IRD notional outstanding has fallen since the end of 2013, with the most recent semiannual figures from the BIS showing a steep decline from \$563.3 trillion as of June 30, 2014 to \$505.5 trillion at the end of that year. The BIS attributes this decline to increased compression activity in 2014.

A primary driver of this activity has been concern about the impact of the leverage ratio, which will hit banks with large derivatives portfolios, increasing the importance of controlling and reducing gross notional exposures. As it stands, the leverage ratio will be particularly problematic for banks with client clearing businesses, as segregated client initial margin counts towards the bank's exposure calculation.

Another driver has been rapid developments in compression technology, with the unlinking of trades at LCH.Clearnet at the end of last year prompting an uptick in activity. The emergence of blended-rate compression at CME Group and LCH.Clearnet has also created the opportunity for more trades to be compressed.

Glossary

CCP linked model: This describes the relationship of two parties to an original transaction, both of which must agree to compress legacy positions. Dealer-to-dealer cleared transactions at LCH.Clearnet were linked until September 2014, when the unlinking process of legacy and new trades began. CME Group transactions have always been unlinked.

CCP unlinked model: Unlike the legacy linked model, unlinking allows clearing members to compress trades irrespective of the original counterparty to the trade. Unlinking enhances compression possibilities using multilateral, solo or blended-rate compression types.

Multilateral/triReduce compression: This enables two or more parties to compress portfolios with similar or risk-constrained economic characteristics. Weekly single-currency 'cycles' are conducted at LCH.Clearnet. These are designed to leave the clearing house cashflow neutral.

Solo compression: This enables a single party to unilaterally net eligible offsetting cleared trades with the same economic characteristics, irrespective of the original counterparty to the trade. Participants remain cashflow neutral in this process, which is also known as 'risk-free' compression.

Blended-rate compression: This service extends solo cleared compression by enabling a participant to net trades with different rates but otherwise identical economic terms.

Duo compression: A party works with another counterparty to agree to compress cleared trades conducted between them. This is part of the legacy linked model.

SEF compression and netting services: Firms are able to execute packages of trades specifically intended to match and offset existing cleared trades in an effort to reduce line items in their portfolios.

Compaction: A new trade is executed to replicate the risk of legacy trades that have been compressed. The counterparty will have the same or similar risk exposure, but fewer line items.



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- **SwapsInfo First Quarter 2015 Review** (April 2015): <http://www2.isda.org/attachment/NzUzNw==/SwapsInfo%20Q1%202015%20Review%20FINAL.pdf>
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