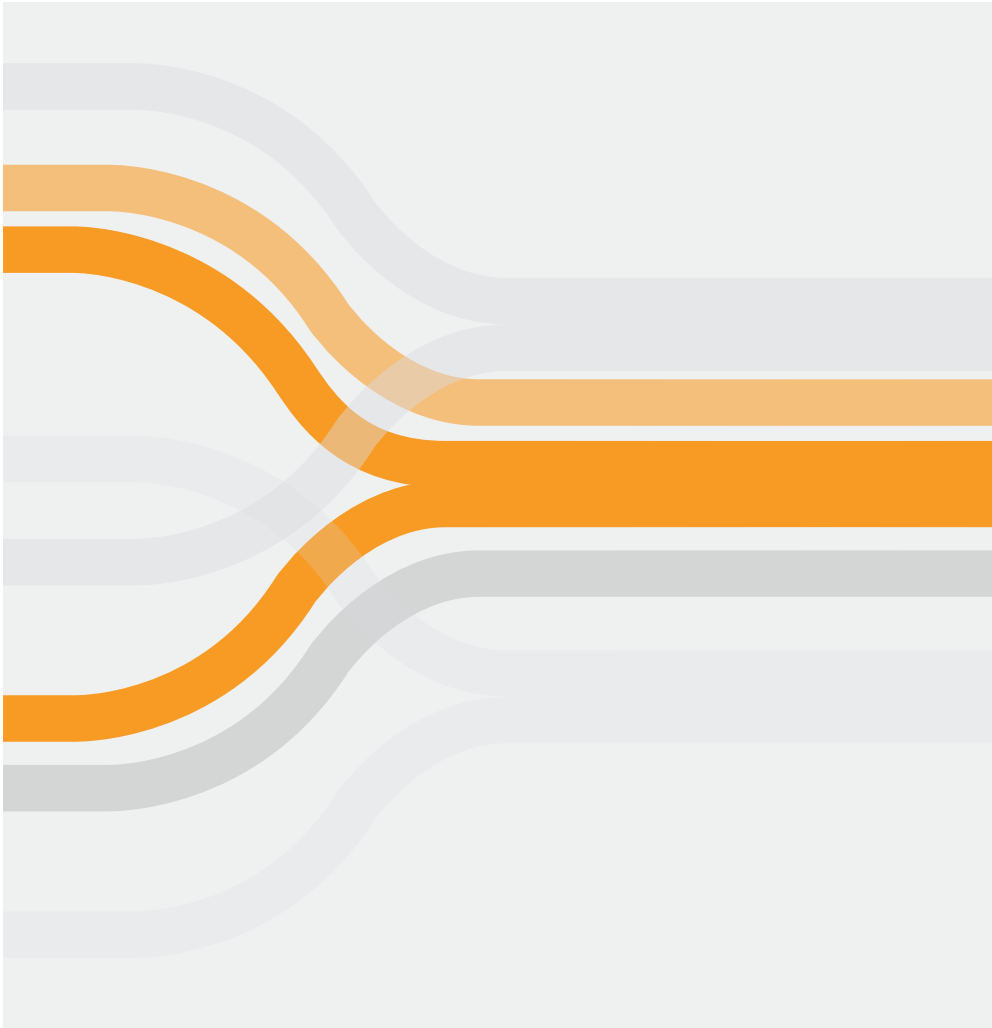



Compression with SwapClear

Unmatched Efficiency and Freedom

LCH The Markets'
Partner

SwapClear





SwapClear delivers unmatched efficiencies while protecting the integrity of the marketplace. Trade compression is one way we do this.

COMPRESS, TERMINATE, NET, TEAR UP

There are a number of words used in association with trade compression. All mean essentially the same thing. Members and buy-side clients can "terminate," "net" or "tear up" trades to reduce the overall notional and number of line items in a portfolio.

Compression Drives Unmatched Capital and Operational Efficiencies

With the introduction of compression, LCH has empowered participants to drastically reduce notional outstanding, significantly increasing operational efficiency for participants. Indeed, in the past 12 months,* as a result of the compression of more than \$944 trillion of swaps, notional outstanding only grew by \$17 trillion, evidence of the systemically important role that central clearing in general, and compression in particular, is playing in the market today.

Our enhancements to the range of compression options continues today, delivering unmatched freedom, flexibility and choice, as we enable our members and clients to meet the evolving demands of global regulation. Indeed, the introduction of Solo, Solo with Blended Rate, Duo and Multi Compression options has enabled the industry to terminate millions of portfolio line items and significantly simplify their operations.

By delivering these operational efficiencies, while freeing up capital for the world's largest financial institutions, LCH remains at the forefront of a rapidly evolving global marketplace for derivatives.

*As of October 2019

A New Benchmark

The introduction of compression has broad significance, heralding a new industry benchmark to replace notional outstanding as an indicator of performance. As a driver of efficiency, it also brings significant benefits to the full range of market participants.

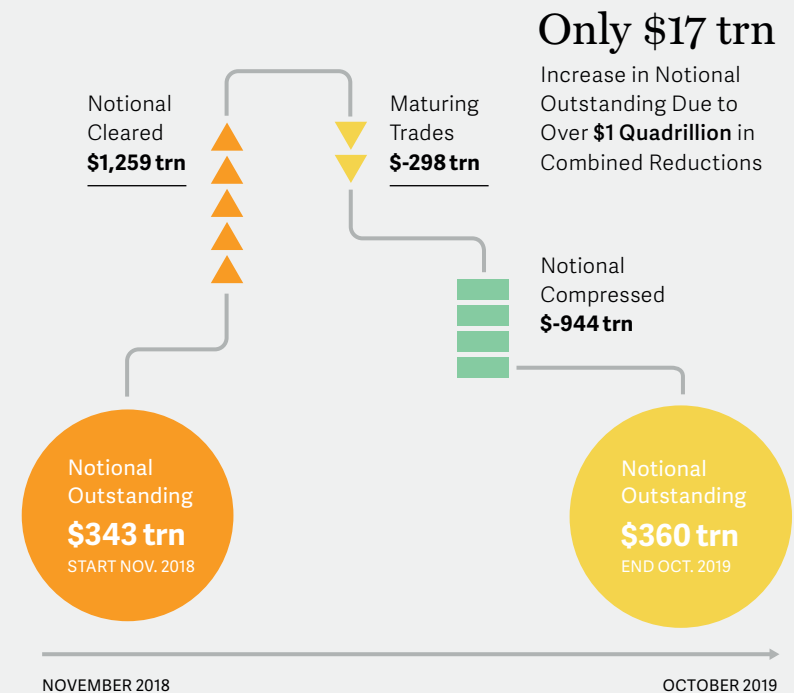
In 2015, thanks to Blended Rate Compression and a concerted effort by our members, LCH SwapClear achieved its first annual net reduction in notional outstanding in OTC interest rate derivatives. Since then, the service has experienced a sustained reduction in notional due to compression. The result: in the past year*, notional outstanding has been constrained to less than \$400 trillion, thanks to notional compression of \$944 trillion.

As demand for central clearing continues, compression is set to play a vital role in risk and operational management for years to come.

* November 2018 – October 2019

Holding Notional Down

THE VALUE OF COMPRESSION



What Is Compression?

Compression is the process by which swap market participants can reduce the number of individual positions and overall notional value of a portfolio by combining or offsetting trades with compatible characteristics.

WHY IT IS IMPORTANT

Regulations require members to hold capital against their interest rate swap positions. These capital requirements are usually calculated based on a number of factors, including the gross notional outstanding of the portfolio. So reducing the overall gross notional through compression may yield capital requirement relief. In addition, there are substantial operational benefits.

By participating in compression, firms can benefit from significant efficiencies, including:

01. Reduction of operational risks
02. Speed to auction in the event of a default
03. Fewer reconciliations
04. Simplified portfolio management
05. More efficient portfolio transfers
06. Capital savings in light of Basel III leverage ratios, as well as capital surcharges applied to G-SIBs

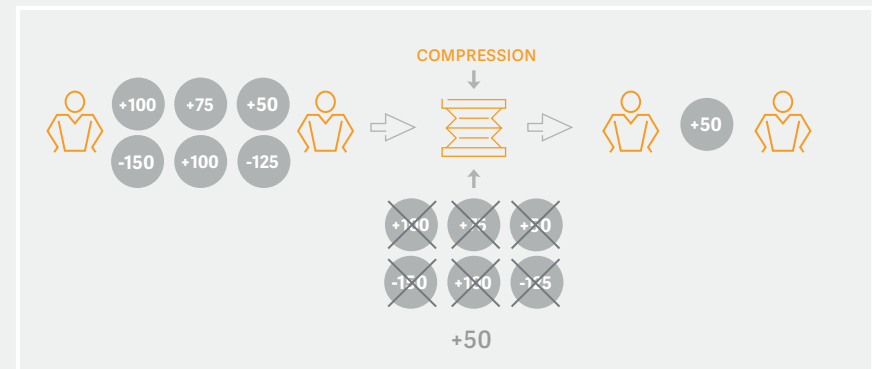
01.

A trade is agreed upon between two counterparties and then cleared by the clearinghouse.



02.

These positions then form a cleared swap portfolio.



03.

If a financial institution wants to reduce the number of line items in its portfolio, it can use SwapClear's compression offerings to tear up a trade by partially or wholly offsetting positions against other positions held by that financial institution or those of another financial institution.

SwapClear's Compression Choices

You're in control with SwapClear's compression options. You choose what, when and how you compress your trades. In order to give you maximum freedom and flexibility, we offer different proprietary styles of compression, as well as access via an Approved Compression Service Provider (ACSP).

SOLO COMPRESSION

Enables a party to tear up its own eligible trades independent of their counterparty.

SOLO WITH BLENDED RATE COMPRESSION

Blending replaces a number of individual line items with different fixed rates into a single risk replacement trade with one blended rate. With our SMART simulator, you can estimate the netting benefits possible on a portfolio before you even begin.

DUO COMPRESSION

A risk-constrained form of compression that enables two members to compress their trades together. Through the SwapClear Portal, members may increase their overall compression opportunity by partnering with other counterparties who have similar offsetting positions. Members will have the opportunity to reduce their portfolio of trades with a smaller number of standardised risk replacement trades.

MULTI COMPRESSION

Available through ACSPs, it enables two or more parties to compress trades together. Members and clients have the option of reducing their portfolio of trades with a smaller number of risk replacement trades. It also provides the benefit of allowing clearing members and clients to apply individual risk tolerances to achieve the most effective compression result.

All trades cleared using SwapClear are unlinked. Unlinked trades do not need the involvement of a counterparty to be compressed.

DELIVERING REAL EFFICIENCIES TODAY

Thanks to the array of options available to members and clients, compression at SwapClear has already reduced notional outstanding for cleared derivatives by more than \$940 trillion in the last 12 months*. This reduction helped members save an estimated \$37 million in capital requirements under Basel III, as well as generated significant operational efficiencies for all participants.

**As of October 2019*



Solo Compression

SwapClear's Solo Compression is an extremely flexible option because a member or client can terminate their offsetting trades, regardless of counterparties.

With the addition of Solo Compression with Blended Rate, participants can now compress much more than they were previously able to.

The core Solo offering works for all trades but requires the economics of the trades to be identical. The addition of future cash-flow netting increases the efficiency of Solo by allowing trades with different start dates but the same future cash-flow characteristics to compress.

Solo Compression is a fully automated process and does not need to be orchestrated as an event. To date, SwapClear has compressed more than \$2,015 trillion* through its Solo Compression offering.

*January 2016 – October 2019

01.

Trades are agreed by a number of counterparties, then submitted for clearing.



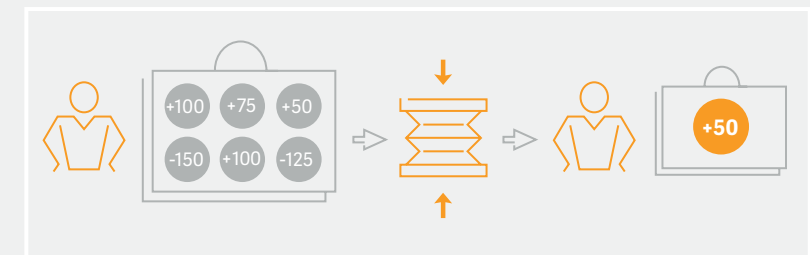
02.

Each side of the trade is registered and cleared as separate trades by SwapClear.



03.

This position then becomes part of your cleared swap portfolio.



04.

To create optimal efficiency, you may then compress these trades. This reduces your outstanding line items and gross notional.



Solo with Blended Rate Compression

While Solo provides significant operational and capital benefits to participants, the option of Blended Rate Compression enhances these benefits, enabling institutions to compress any trade with different interest rates but the same remaining cash-flow dates. This significantly expands the universe of eligible trades and the opportunity for portfolio efficiency. It also demonstrates how SwapClear works harder to make sure that you don't have to.

The key attributes of Solo with Blended Rate Compression are:

01. Trades will be terminated and/or replaced at a weighted average replacement rate
02. Replacement trades can be calculated to 6 decimal places
03. Reducing the number of open trades and corresponding notional helps meet investor preferences
04. Daily compression runs

SMART FOR COMPRESSION

SwapClear has harnessed its award-winning margin simulation technology, SMART, to provide similar capabilities for compression. This enables firms to more accurately and quickly determine their compression options.

COMPRESSION KEY FEATURES

Feature	Solo	Solo with Blended Rate Compression
Eligible Trades	<ul style="list-style-type: none"> Any trade with the same fixed rate and identical remaining cash flows Trades with outstanding front customisation 	<ul style="list-style-type: none"> Any trade with identical remaining cash-flow dates Trades with outstanding front customisation
Eligible Products	Inflation, IRS, OIS, Basis, FRA & VNS	Inflation, IRS, OIS, Basis & FRA
Compression Run Frequency	Daily	Daily
Reporting	<ul style="list-style-type: none"> Comprehensive reporting available Supported by Clearlink and ATSS Synch messaging 	<ul style="list-style-type: none"> Comprehensive reporting available Supported by Clearlink and ATSS Synch messaging
SMART for Compression	N.A.	Available to buy- and sell-side users

BLENDING RATE — HOW IT WORKS

Blended rate enables the compression of any number of positions with varying fixed rates but the same remaining cash-flow dates. This creates operational efficiency by reducing line items and can reduce capital requirements.

Line Items				
Trade	PAY/REC (Fixed)	Notional	Fixed Rate	Annualised Cash-Flow
1	REC	100,000,000	2.340000%	2,340,000.00
2	REC	75,000,000	2.360000%	1,770,000.00
3	REC	50,000,000	2.380000%	1,190,000.00
4	PAY	-150,000,000	2.350000%	-3,525,000.00
5	REC	100,000,000	2.280000%	2,280,000.00
6	PAY	-125,000,000	2.300000%	-2,875,000.00
TOTAL		50,000,000		1,180,000.00

Blended rate compression reduces six line items to one in this example

Blended Rate	
Annual (Coupon / Net Notional)	2.360000%

Positions reduced to one blended rate

Risk Replacement Trade				
Trade	PAY/REC (Fixed)	Notional	Fixed Rate	Annualised Cash-Flow
7	REC	50,000,000	2.360000%	1,180,000.00

SwapClear creates a single risk replacement trade to complete the process



Duo Compression

SwapClear's Duo Compression offering enables members to compress their portfolio by partnering with other members who have offsetting positions.

Through partnering with other counterparties who have similar offsetting positions, members may increase the universe of eligible trades and their overall compression opportunity.

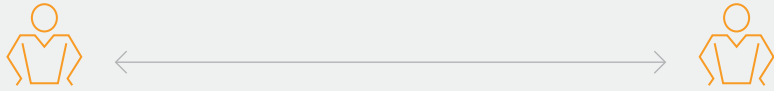
Once an opportunity is identified over the SwapClear Portal, the two members may build a compression event where they agree to flatten their offsetting positions as well as using standardised trades to replicate their risk.

The key attributes of Duo Compression are:

01. Members can view a daily, anonymised update of compression opportunities with other members
02. Initiating, building and agreeing a compression event is performed over the SwapClear Portal
03. An on-demand service where members initiate and progress compression runs on a daily basis
04. All approved trade events, terminations and replacements are created directly within SwapClear
05. Risk replacement trade templates are based on standardised trades so members may replace their risk with a smaller number of risk replacement trades

01.

Members must mutually agree on a compression run.



02.

Members will upload their in-scope trades to compress. LCH will identify and offset the similar positions across both portfolios.



03.

Both parties will include agreed risk replacement trades to the run, which LCH will match.



04.

Members will have a view of their run opportunity pre-execution, and, once agreed, LCH will execute the compression run.



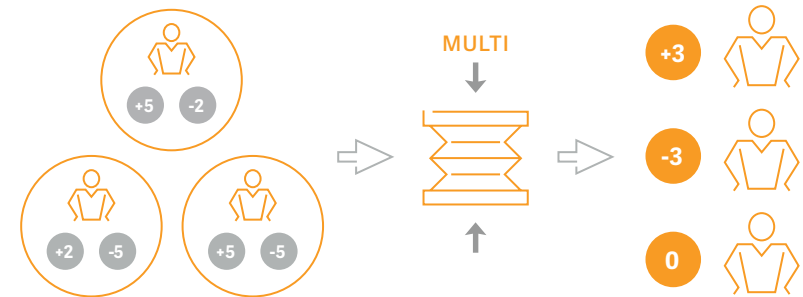
Multi Compression

When clearing with SwapClear, members and clients may also choose third-party multilateral compression through ACSPs.

It is a highly efficient option because a larger number of parties can participate to create a bigger pool with more opportunity for compression.

In addition, members and clients have the option of replacing the compressed trades with a smaller number of risk replacement trades.

SwapClear conducts multiple runs per week, with multiple currencies per cycle selected by the approved third-party provider.



ABOUT LCH AND SWAPCLEAR

LCH has always built strong partnerships across the global markets to deliver best-in-class risk management. With our accumulated experience and expertise, we are uniquely positioned to help participants increase capital and operational efficiency, while adhering to an expanding and complex set of cross-border regulations.

SwapClear is the world's leading OTC interest rate derivatives clearing service, and provides access to the deepest pool of dealer liquidity. Trusted for more than two decades by our members, it is now the clearing service of choice for many of the world's leading buy-side participants.

Working together with our stakeholders, SwapClear and the other LCH services have helped the market transition to central clearing by introducing an array of innovative enhancements. These include solo compression with blended rate, an expanded set of customer protection options, and LCH Spider – our portfolio margining tool. When combined with an uncompromising commitment to service delivery, it is no surprise that LCH is the natural choice of the world's leading market participants.

LCH works across a range of execution venues and is majority-owned by the London Stock Exchange Group (LSEG), a diversified international exchange group that sits at the heart of the world's financial community.

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the 1990s, the government has been able to reduce the number of people who are uninsured from 15.5% in 1990 to 10.5% in 2000. The number of people who are covered by private health insurance has increased from 67.5% in 1990 to 75.5% in 2000. The number of people who are covered by public health insurance has increased from 17.0% in 1990 to 14.0% in 2000.

These changes in the health insurance market have been the result of a combination of factors. One major factor has been the expansion of private health insurance. This has been driven by a number of factors, including the growth of the private sector, the expansion of employer-based health insurance, and the growth of individual health insurance. Another major factor has been the expansion of public health insurance. This has been driven by a number of factors, including the expansion of Medicaid and the growth of public health insurance.

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