

Mandatory Clearing Analysis

OTC Interest Rate Derivatives

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Introduction

Section 723 (a)(3) of the Dodd-Frank Act provides that “it shall be unlawful for any person to engage in a swap unless that person submits such swap for clearing to a derivatives clearing organization [(DCO)] that is registered under the [Commodity Exchange Act] or a [DCO] that is exempt from registration under [the CEA] if the swap is required to be cleared.”¹ The Commodity Futures Trading Commission (CFTC) recently adopted rules on the process that the CFTC will follow in reviewing swaps to determine whether they are required to be cleared.² Under Section 723, the CFTC is required to consider a number of factors before making a mandatory clearing determination.

This document provides some basic information on the size of the interest rate swaps market relative to the overall size of the OTC derivatives market. It also provides information on the percentage of the interest rate swap market cleared by SwapClear by product and currency.

The core of the document analyses the types of interest rate swaps that could be mandatorily cleared from a clearinghouse perspective. In LCH.Clearnet’s view, –a given type of interest rate swaps should be considered eligible for mandatory clearing if a central counterparty can accurately and reliably value, risk manage, and default manage it. We believe that the vast majority of linear (i.e. without optionality) single currency interest rate swaps meet this standard.

Finally, this document provides detailed information on the product specifications of all interest rate swaps that LCH.Clearnet listed for clearing on the date that Dodd-Frank was enacted (“Pre-Enactment Swaps”). This information may prove useful to the CFTC in deciding how to differentiate between swaps that it determines should be subject to mandatory clearing and those that should not.

Clearing a Broad Spectrum of OTC Derivatives

The Commission’s decision on which interest rate swaps it decides to subject to mandatory clearing will have a significant impact on the portion of the overall OTC derivatives market that falls under this requirement. Interest rate derivatives are, far and away, the largest portion of the OTC derivatives universe, representing over 75% of gross market value.³

Within the interest rate derivatives product category, the particular products that the Commission chooses to subject to mandatory clearing will affect the portion of the market covered. Products cleared by LCH.Clearnet prior to the enactment of Dodd-Frank (Interest Rate Swaps, Overnight Index Swaps, and Basis Swaps) represent 77% of outstanding notional and over 82% of all trades globally.⁴ If all of SwapClear’s Pre-Enactment Swaps were required to be cleared, we estimate that approximately 75% of the interest rate derivatives outstanding notional would be subject to mandatory clearing.⁵ Alternatively, if only USD 3m LIBOR swaps out to 30 years were made mandatory, we estimate that only 15-25% of the market would be subject to mandatory clearing.

The Commission also needs to consider the currency underlying the swaps that it subjects to the mandatory clearing requirement. The notional volume of 68% of interest rate derivatives is denominated in currencies other than USD. SwapClear clears interest rate derivatives in 17 currencies that represent over

¹ Section 2(h) (1)(A) of the Commodity Exchange Act, 7 U.S.C. 2(h)(1)(A).

² 76 F.R. 44464 (July 26, 2011). These rules go into effect on September 26, 2011.

³ Appendix A: Global OTC Derivatives

⁴ Appendix B: OTC Interest Rate Derivatives by Product Type

⁵ According to TriOptima, outstanding gross notional for vanilla swaps, basis swaps, OIS, & FRAs represents 77% of outstanding notional. Also according to TriOptima, SwapClear clears in currencies that represent 98% of all notional. Assuming the currencies also represent 98% of all vanilla swaps, basis swaps, & OIS results in 75% coverage (98%*77%). All stats are detailed further in the Appendix.

98% of outstanding notional (in order of outstanding notional: EUR, USD, JPY, GBP, AUD, CHF, SEK, CAD, ZAR, NZD, NOK, HKD, PLN, & DKK).⁶

The remaining outstanding notional in interest rate derivatives not cleared by SwapClear today is primarily composed of Forward Rate Agreements at 11% of outstanding notional (launching at SwapClear in Q4 2011) and OTC interest rate option derivatives at 8% of outstanding notional (currently under a feasibility study at SwapClear).

Suitability for Mandatory Clearing

Interest rate swaps are highly idiosyncratic and heterogeneous from a trade feature, operational, and cash flow basis (as they were originally designed as cash flow hedge instruments). They are generally categorized by their distinguishing trade feature (e.g. basis swaps, amortizing swaps, overnight index swaps, zero coupon swaps, etc.). While these categories are extremely important in assessing the economic terms of the swap, the fundamental issue to a clearinghouse is whether the individual swap type can be accurately and reliably valued, risk managed, and default managed.

The multiple shapes and sizes of interest rate swaps are irrelevant so long as the clearinghouse has the appropriate tools to represent their idiosyncratic features. For example, a portfolio of zero coupon swaps, basis swaps, plain vanilla swaps, overnight index swaps, and amortizing swaps of multiple different maturities is properly viewed as a portfolio of interest rate risk. To hedge and neutralize such a portfolio, LCH.Clearnet would first convert it into risk positions (such as delta, gamma, etc.). As a result, while interest rate swaps may come in multiple shapes and sizes, they are risk managed as an overall portfolio of interest rate risk.

For the purposes of our evaluation, it is helpful to break out the universe of interest rate swaps into three categories: single currency linear interest rate swaps (i.e. without optionality), single currency non-linear interest rate swaps (i.e. with optionality, such as cancellable swaps), and cross currency interest rate swaps (i.e. swaps between two different currencies). The valuation, risk management, and default management characteristics between these three categories differ substantially.

Valuation

A number of factors contribute to the ability of a clearinghouse to value an OTC interest rate derivative, including:

1. Forward rate projection/discounting -- the existence of a forward rate curve and discounting methodology
2. Static data -- the reference data associated with the instrument, such as currency, floating rate index, etc.
3. Trade data -- the economics of the trade, including the fixed interest rate, start date, etc.
4. Market data -- the existence of reliable, observable market data that can be used to drive daily valuations
5. Volatility -- the sensitivity of the instrument to volatility
6. Consensus on a valuation model -- a general consensus by the market as to the method of valuation for the instrument.

For single currency linear interest rate swaps, valuation is not controversial. The clearinghouse valuation model has existed for many years and, with the exception of the change to OIS discounting after the Lehman default, has not experienced substantial change. Static, trade, and market data is readily available. Complexities exist, however, with regard to the valuation of non-linear swaps and cross-currency swaps. For non-linear swaps, key issues include the existence of reliable sources of market data and the lack of a market consensus on a valuation model.

⁶ Appendix C: OTC Interest Rate Derivatives by Currency

Lack of valuation model consensus also exists for cross-currency swaps. For single currency swaps, the general consensus within clearinghouses is to post collateral to cover mark-to-market movements in the currency of the underlying swap, as that reflects the funding nature of a cleared trade. As cross currency swaps include two currencies, consensus does not exist on (a) the currency of collateralization, and, as a result, (b) the valuation model.

Valuation Criteria	Single Currency Linear Products	Single Currency Non-linear Products	Cross Currency Linear Products
Forward Rate Projections/Discounting	Non-issue	Non-issue	Non-issue
Static Data	Non-issue	Non-issue	Non-issue
Trade Data	Non-issue	Non-issue	Non-issue
Market Data	Non-issue	Moderate Issue	Non-issue
Volatility	n/a	Moderate Issue	n/a
Consensus on Valuation Model	Non-issue	Significant Issue	Moderate Issue

Risk & Default Management

Moving to risk and default management, a portfolio composed of only single currency linear products is exposed to the following risks:

1. Curve Risk – the sensitivity of the portfolio to movements, correlated or otherwise, in the market prices of hedge instruments, primarily IRS rates across the yield curve
2. Reset Risk – the sensitivity of the portfolio to differences between projected forward rates and realised fixings
3. Basis Risk – the sensitivity of the portfolio to different index tenors (ie 1M, 3M, 6M LIBOR)
4. OIS Risk – the sensitivity of the portfolio to the spread between LIBOR and overnight index swaps
5. Liquidity Risk – the ability to liquidate or hedge the portfolio without causing a significant movement in price or loss of value

These risks are quantified by a clearinghouse through the delta and gamma risk measurements, although it should be noted that linear swaps have far less gamma sensitivity than non-linear swaps (delta represents the price sensitivity to shifts in the underlying yield curve and gamma represents the sensitivity of delta to changes in the underlying price). Further, liquidity risks are managed by the clearinghouse by implementing concentration multipliers to ensure additional margin is called when liquidity risk exists.

Risk and default management for single currency non-linear products is substantially more complex. First, non-linear products are exposed to additional risks, the most important of which can be measured by vega (the sensitivity of the portfolio to volatility). Vega sensitivity substantially increases the portfolio's sensitivity to delta and gamma, which means that profit and loss changes can be far more sensitive to movements in underlying interest rates than linear products. Second, liquidity risks are significantly greater in non-linear swaps. Single currency non-linear products are not currently cleared, however they may be clearable at some point in the future.

For cross currency linear products, the primary additional risk driver is settlement risk. Unlike single currency interest rate swaps, the notional principals for cross currency swaps are actually exchanged. This exposes a clearinghouse to Herstatt risk, or the risk that one counterparty pays and the second counterparty defaults before paying. Settlement risk in the FX markets is currently mitigated by CLS Group, the world's largest multi-currency cash settlement system, and market participants are investigating methods of incorporating clearing houses into the existing FX settlement model. Additional risks include FX risk, although this risk in and of itself is not an obstacle to central clearing. As with non-linear products, cross currency swaps are not currently cleared, but they may be clearable at some point in the future.

SwapClear Product Specifications

While LCH.Clearnet believes from a risk perspective that the majority of single currency linear swaps can be mandatorily cleared, from an operational perspective many swaps exist that contain subtle variations in attributes that are not supported by a clearinghouse.

In order to assist the Commission in describing the product specifications of swaps that it determines should be mandatorily cleared, LCH.Clearnet is attaching detailed product specifications for all of our Pre-Enactment Swaps. Each of the SwapClear Product Specification Matrices includes a Definitions and Specifications page outlining the attributes of the products covered. Prior to clearing, SwapClear actively evaluated the underlying products to ensure that the products can be reliably valued, risk managed, and default managed. The liquidity of the underlying product determined the acceptable maturity, or term, that is eligible for clearing at SwapClear (e.g. 2Y, 10Y, 30Y, or 50Y).



SwapClear_Contract
Specs_PreDF.xlsx

Conclusion

In LCH.Clearnet's view, the vast majority of linear (i.e. without optionality) single currency interest rate swaps can be accurately and reliably processed, valued, risk managed, and default managed. The Commission should consider this information as it evaluates all of the factors in Section 723 of the Dodd-Frank Act in determining which interest rate swaps should be subject to mandatory clearing.

Appendix A: Global OTC Derivatives

Global OTC derivatives market¹
 Amounts outstanding, in billions of US dollars

	Notional amounts outstanding		Gross market value	
	end-June 2007	end-June 2010	end-June 2007	end-June 2010
GRAND TOTAL	507,907	582,655	11,118	24,673
A. Foreign exchange contracts	57,604	62,933	1,613	3,158
Outright forwards and forex swaps	29,775	31,935	668	1,330
Currency swaps	14,130	18,890	666	1,372
Options	13,662	12,107	279	456
Other	37	1		
B. Interest rate contracts²	381,357	478,093	6,730	18,508
FRAs	25,607	60,028	145	204
Swaps	299,155	367,541	5,818	16,703
Options	56,587	50,519	767	1,600
Other	7	5		
C. Equity-linked contracts	9,518	6,868	1,212	796
Forwards and swaps	2,668	1,854	262	202
Options	6,850	5,013	950	595
D. Commodity contracts³	8,255	3,273	656	492
Gold	1,051	669	56	52
Other	7,204	2,604	600	439
Forwards and swaps	3,481	1,686		
Options	3,724	918		
E. Credit derivatives	51,095	31,416	906	1,708
Forwards and swaps	49,974	31,331		
CDS	45,179	31,057	768	1,694
Single-name instruments	25,104	18,806	430	1,012
Multi-name instruments	20,075	12,251	338	682
Index products		7,614		
Options	1,121	85		
F. Other derivatives	78	72	1	12
Forwards and swaps	73	38		
Options	6	34		
GROSS CREDIT EXPOSURE⁴			2,672	3,578
<i>Memo: Exchange-traded contracts⁵</i>	95,099	75,461		

¹ All figures are adjusted for double-counting. Notional amounts outstanding have been adjusted by halving positions vis-à-vis other reporting dealers. Gross market values have been calculated as the sum of the total gross positive market value of contracts and the absolute value of the gross negative market value of contracts with nonreporting counterparties. ² Single currency contracts only. ³ Adjustments for double-counting partly estimated. ⁴ Gross market values after taking into account legally enforceable bilateral netting agreements. ⁵ Sources: FOW TRADEdata; Futures Industry Association; various futures and options exchanges.

Global OTC Derivatives, sourced from BIS

Appendix B: OTC Interest Rate Derivatives by Product Type

Product Type	Gross Notional (BUSD Eqv.)	Gross Notional (%)	Trade Count	Trade Count (%)
CC - Swap	9,049	2%	126,059	3%
CC - Swap Exotic	1,051	0%	11,101	0%
IR - Basis Swap	20,574	4%	95,408	2%
IR - Cap/Floor	12,714	2%	77,169	2%
IR - Debt Option	1,042	0%	5,015	0%
IR - FRA	56,393	11%	151,617	4%
IR - Inflation Swap	2,167	0%	56,743	1%
IR - OIS	73,411	14%	108,968	3%
IR - Option Exotic	1,260	0%	16,481	0%
IR - Swap	313,492	59%	3,137,382	77%
IR - Swap Exotic	5,485	1%	66,439	2%
IR - Swaption	33,996	6%	207,473	5%
Grand Total	530,635		4,059,855	

Interest Rate Derivative Breakdown by Product, sourced from Trioptima

Appendix C: OTC Interest Rate Derivatives by Currency

Currency	Gross Notional (Billions)	Gross Notional (BUSD Eqv.)	Trade Count
EUR	135,637	195,738	1,033,232
USD	172,289	172,289	1,292,791
JPY	5,328,644	64,166	574,491
GBP	34,689	56,622	402,266
AUD	8,861	9,366	87,854
CHF	5,566	6,223	74,187
SEK	28,685	4,640	48,478
CAD	4,005	4,175	36,699
ZAR	18,121	2,666	42,288
KRW	2,208,511	2,028	55,799
NZD	2,158	1,725	27,381
NOK	7,890	1,469	18,399
MXN	16,553	1,420	64,799
HKD	8,108	1,043	34,564
PLN	2,470	903	27,628
INR	36,190	816	48,722
BRL	1,226	778	15,870
SGD	802	645	20,975
THB	16,854	559	24,368
TWD	15,209	524	22,565
HUF	89,039	481	19,111
DKK	2,224	430	6,972
CZK	6,351	378	12,265

Interest Rate Derivative Breakdown by Currency, sourced from Trioptima