LONDON NOTICE No. 2908

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CHANGES TO THE PRO-RATA TRADING ALGORITHM USED IN SHORT TERM INTEREST RATE ("STIR") FUTURES CONTRACTS

Executive Summary

The purpose of this Notice is to advise members about changes to the trade matching algorithm used in Three Month Euro (EURIBOR) Interest Rate Futures, Three Month Sterling (Short Sterling) Interest Rate Futures and Three Month Swiss (Euroswiss) Interest Rate Futures Contracts.

A new version of the Pro Rata matching algorithm will be introduced for these Contracts, known as Time Pro Rata. Once implemented the allocation of incoming tradable volume to matching resting orders will be governed by both the size of the resting orders and the relative time of their entry.

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1.   Introduction

1.1   Short Term Interest Rate ("STIR") Futures Contracts are a key element of the Exchange's portfolio. The Exchange's goal is to continue to develop its STIR Futures Contracts, and to offer its members the most effective and efficient market place for trading.

1.2   The Exchange is seeking to increase opportunities for traders who add liquidity to the market. In order to achieve this, the new Time Pro Rata trade matching algorithm will allocate volume to resting orders at the best price by considering both the size of these orders and their relative time of entry to the market.

1.3   LIFFE CONNECT® will be upgraded to accommodate the new matching algorithm. This upgrade does not require any action from Independent Software Vendors or member developers as there will be no changes to the API associated with this release. However, members who have developed specific trading tools that take account of the features of the current matching algorithm(s) may wish to modify these in light of the changes detailed in this Notice.

1.4   The changes above will be implemented in the Three Month Sterling (Short Sterling) Interest Rate Futures Contract on Monday 20 August 2007, and the Three Month Euro (EURIBOR) Interest Rate Futures Contract and Three Month Swiss (Euroswiss) Interest Rate Futures Contract on Monday 24 September 2007.

1.5   Members may also wish to refer to London Circular No. 05/18, issued on 11 July 2005, which describes the current Pro Rata matching algorithm.

2. Time Pro Rata Algorithm

2.1 The Time Pro Rata algorithm will govern the allocation of incoming tradable volume according to both the size of resting orders and the relative time of their entry. This will be done in the following manner.

2.2 The allocation volume A, for each resting order n against incoming business of volume L lots, is calculated as follows:

$$A_n = MIN(v_n, \frac{f_n}{\sum_{r=1}^{N} f_r} \times L)$$

Where:

$$f_n = \left(\frac{v_n}{\sum_{r=1}^{N} v_r} \right) \times \left(\frac{(N+1)-n}{\sum_{r=1}^{N} r} \right)$$

The terms used above are defined as:

N   Total number of resting buy (sell) orders sorted by time, n = 1(oldest) to N (newest)
n   Individual order being considered
r   Ascending sequence, 1 to N
A_n Allocation for resting buy (sell) order, n
v_n Volume of resting order being considered, n
f_n 'Time Pro Rata Factor' calculated for resting buy (sell) order being considered, n
L   Incoming sell (buy) order volume

2.3 For example, in the table below three buy orders rest in the market at a price of 95.000, entered in the sequence shown. An incoming sell order for 140 lots at a price of 95.000 enters the market. The calculations performed for each resting order and the volume allocation awarded to each ("Time Pro Rata Volume") are shown below, as well as the volume that would be awarded under the current Pro Rata algorithm ("Pro Rata Volume"). Note that it is assumed that all Priority volume (see section 3) has traded out.

Order	Sequence n	Volume v_n	Pro Rata Volume	f_n	Allocation A_n	Time Pro Rata Volume
T1	1	100	35	$\frac{100}{400} \times \frac{3}{6} = \frac{3}{24}$	$\frac{3}{24} \times \frac{24}{7} \times 140$	60
T2	2	100	35	$\frac{100}{400} \times \frac{2}{6} = \frac{2}{24}$	$\frac{2}{24} \times \frac{24}{7} \times 140$	40
T3	3	200	70	$\frac{200}{400} \times \frac{1}{6} = \frac{2}{24}$	$\frac{2}{24} \times \frac{24}{7} \times 140$	40

2.4 In the example above, the traders that entered orders early have received greater volume under the Time Pro Rata algorithm than under the current Pro Rata algorithm.

2.5 If any volume remains unallocated following this sequence (for instance, as a result of rounding, or when the calculated allocation for an order is constrained by the MIN function above$_n$), then a further pass of the sequence will occur.

3.   Priority Orders

3.1   Currently, priority status is given to the first order to enter the market at best price, providing the order is greater than a pre-determined volume (the "collar"). An order with priority status will receive all incoming volume up to a certain level (the "cap"), before Pro Rata volume allocation proceeds.

3.2   For Three Month Euro (EURIBOR) Interest Rate Futures and Three Month Sterling (Short Sterling) Interest Rate Futures, the "collar" is 50 lots and the "cap" is 500 lots. For Three Month Swiss (Euroswiss) Interest Rate Futures, the "collar" is 25 lots and the "cap" is 250 lots.

3.3   The operation of priority status and all settings noted in paragraph 3.2 above will remain unchanged.
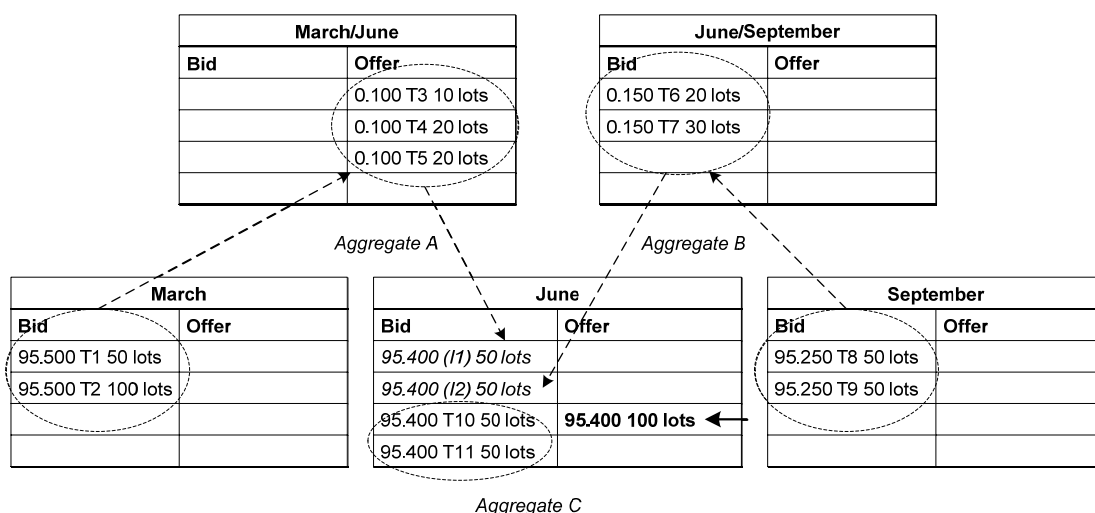
4.   Order Book Behaviour

4.1   The Exchange will monitor closely the impact of the changes to the trade matching algorithm on overall market quality and/or market behaviour. As part of this monitoring, the Exchange will seek to ensure that members are behaving in a responsible manner when submitting orders to the market and are not engaging in practices which could undermine the efficacy of the trade matching algorithm.

4.2   Members are reminded that if a member engages in practices which could undermine the efficacy of the trade matching algorithm, he may be deemed to be in contravention of Rule 8105, which prohibits members from engaging in practices which may cause a degradation of a Euronext Trading Platform or give rise to a disorderly market, or Rule 8102 which prescribes that members must behave in a responsible manner when using a Euronext Trading Platform.

4.3   For the avoidance of doubt, members are prohibited from entering multiple orders at the same price level for the specific purpose of attempting to obtain a greater proportion of any subsequent matching volume than would be the case if a single order had been submitted (i.e. order splitting)[1]. Examples of prohibited conduct would include:

(a)   submitting an order in multiple clips in an attempt to achieve a greater overall proportion of any subsequent matching volume; and

(b)   submitting one or more orders at the same price level after having submitted an original order whereby the purpose of the subsequent order(s) is to improve the relative position of the original order in the overall order sequence and once again to achieve a greater proportion of any subsequent matching volume.

4.4   The Exchange reserves the right to take whatever action it deems necessary, including suspending a member's access via a particular ITM or ITMs, pulling orders from the market and/or taking disciplinary action, in response to such prohibited behaviour.

4.5   The Time Pro Rata matching algorithm calculates trade allocations based on their relative size and their relative time of entry into the order book. This allocation will be based on the approach described in Section 2. As is currently the case, members are advised that it will remain impracticable for Euronext.liffe Market Services to provide members with underlying information on specific volume allocations.

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[1] It should be noted that, in any event, order splitting does not necessarily achieve a greater proportion of any subsequent matching volume.

5. **A comparison of Pro Rata and Time Pro Rata in STIR Futures Markets**

5.1 The new Time Pro Rata algorithm, like the current Pro Rata algorithm, determines the volume awarded to implied orders by considering "aggregate" resting orders, and then "constituent" orders that create these aggregates.

5.2 An aggregate implied order is all implied volume created by LIFFE CONNECT® via a single implied "route". A single aggregate implied order may be created by multiple constituent orders. In addition, all explicit volume at a single price level will be considered a single explicit aggregate order.

5.3 The current Pro Rata matching algorithm allocates volume on a Pro Rata basis to both aggregate orders and the constituent orders within these aggregates.

5.4 The new Time Pro Rata matching algorithm allocates volume on a Pro Rata basis to aggregate orders, but uses the approach described in Section 2 to allocate volume to the constituent orders within an aggregate order.

5.5 Suppose that the following order book order exists in a STIR Futures Contract. In this example, "(I)" indicates an implied order. All other orders are explicit orders. T1, T2, T3… indicates the sequence of order entry, with T1 being the first order entered. Note that this example assumes that all Priority volume (see section 3) has traded out.

March/June		June/September	
Bid	Offer	Bid	Offer
	0.100 T3 10 lots	0.150 T6 20 lots	
	0.100 T4 20 lots	0.150 T7 30 lots	
	0.100 T5 20 lots		

Aggregate A   *Aggregate B*

March		June		September	
Bid	Offer	Bid	Offer	Bid	Offer
95.500 T1 50 lots		95.400 (I1) 50 lots		95.250 T8 50 lots	
95.500 T2 100 lots		95.400 (I2) 50 lots		95.250 T9 50 lots	
		95.400 T10 50 lots	95.400 100 lots		
		95.400 T11 50 lots			

Aggregate C

5.6 There is a total of 100 lots of implied volume bid in the June market at a price of 95.400. This volume is created from two different implied routes and therefore creates two different aggregate implied orders, each of 50 lots. Each aggregate implied order is created from a number of constituents implied orders. The timestamps of the constituents determine the timestamps awarded to the aggregate[2]. Of the two aggregates, Aggregate A has an older timestamp because the oldest timestamp of its youngest constituent (T3) is older than the oldest timestamp of the youngest constituent of Aggregate B (T8).

5.7 In addition, there are two explicit bids in June at a price of 95.400, each of 50 lots. These create a single aggregate order of 100 lots, shown as Aggregate C.

5.8 The manner in which aggregate and constituent orders are created will not change.

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[2] The timestamp is used to determine the remaining allocation of lots following rounding, rather than the relative volume of the resting orders. See later in the example.

5.9 A 100 lot offer is then entered into the June market. This volume is allocated to the resting June aggregate bids on a Pro Rata basis:

Aggregate Order	Volume	Allocation
A	50	25
B	50	25
C	100	50
		Total 100

This stage of the allocation process will not change.

5.10 The aggregate allocations are then allocated to their constituent orders. This allocation will change from the current Pro Rata basis to the approach described in Section 2.

For implied Aggregate A, the 25 lots of volume allocated will be divided in the following manner under the current and new algorithms:

Market	Order	Order Volume	Current Pro Rata Allocation	New Time Pro Rata Allocation
March	T1	50	8	13[3]
March	T2	100	17	12
			Total 25	Total 25
March/June	T3	10	5	8
March/June	T4	20	10	12
March/June	T5	20	10	5
			Total 25	Total 25

For implied Aggregate B, the 25 lots of volume allocated will be divided in the following manner under the current and new algorithms:

Market	Order	Order Volume	Current Pro Rata Allocation	New Time Pro Rata Allocation
June/Sept	T6	20	10	15
June/Sept	T7	30	15	10
			Total 25	Total 25
September	T8	50	13	17
September	T9	50	12	8
			Total 25	Total 25

For Aggregate C, the 50 lots of volume allocated will be divided in the following manner under the current and new algorithms:

Market	Order	Order Volume	Current Pro Rata Allocation	New Time Pro Rata Allocation
June	T10	50	25	34
June	T11	50	25	16
			Total 50	Total 50

Early orders have received greater volume under the Time Pro Rata algorithm than under the current Pro Rata algorithm.

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[3] The calculated allocation of both T1 and T2 is 12.5. In the case of equal decimal allocations, the oldest timestamp benefits from rounding. In this case, T1 is awarded 13 lots because it has the oldest timestamp.

6. Schedule of Changes

6.1   The changes described in this Notice will be implemented in the Three Month Sterling (Short Sterling) Interest Rate Futures Contract on Monday 20 August 2007.

6.2   The changes will be implemented in Three Month Euro (EURIBOR) Interest Rate Futures and Three Month Swiss (Euroswiss) Interest Rate Futures Contracts on Monday 24 September 2007.

6.3   Consideration may be given to implementing these changes in other contracts in due course.

7. Customer Technical Support

7.1   The new algorithm will be available in the Customer Technical Support Group ("CTSG") test environment from Thursday 26 July 2007.

7.2   The Exchange strongly recommends that all users test and familiarise themselves with these changes in the CTSG environment.

7.3   For further information regarding CTSG and the configuration of contracts in this environment, please contact:

Helpdesk: + 44 (0)20 7655 7110/7111/7112
e-mail: ctsg@aems.net
website: http://www.euronext.com/ctsg

For further information in relation to this Notice, members should contact their Account Manager or the following:

Interest Rate Product Management   +44 (0)20 7379 2222   stirs@liffe.com