EURONEXT DERIVATIVES MARKETS

LONDON CIRCULAR No. 05/18

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LIFFE CONNECT® VERSION 9.0: AMENDMENTS TO TRADE MATCHING ALGORITHMS

Executive Summary

This Circular advises members of changes to the LIFFE CONNECT® trade matching algorithms which will become effective on and from 1 August 2005 as part of the forthcoming implementation of LIFFE CONNECT® Version 9.0. These changes involve streamlining the manner in which the LIFFE CONNECT® Financials Trading Host processes implied orders and allocates traded volume. This upgrade is part of a continual programme designed to improve the performance and reliability of the LIFFE CONNECT® system.

1.   Introduction

1.1   LIFFE CONNECT® has been developed as a state-of-the-art trading platform designed to provide optimum levels of performance and reliability. To that end, there is a continual programme of investment undertaken by the Exchange in order to meet the evolving demands of the market.

1.2   On Monday 1 August 2005, the LIFFE CONNECT® Financials Trading Host will be upgraded to Version 9.0 (the Attachment to this Circular contains a complete list of products which are available on the Financials Trading Host). This implementation does **not** require new front end software to be installed at member sites and does not involve any action from Independent Software Vendors or Member Developers as there will be no changes to the API at this time. On and from 1 August 2005, the Financials Trading Host will be running in "backward compatibility" mode. This effectively means that members will continue to trade on API 8, which is the current version of the LIFFE CONNECT® API. Functional changes in API 9 will not be implemented until November 2005 and further information on the new functionality and member testing will be made available in due course.

1.3   The Financials Trading Host upgrade on 1 August 2005 is designed to deliver significant performance improvements through changes in the trade matching algorithms used by LIFFE CONNECT®, which are summarised in this Circular. Members who have developed specific trading tools that take account of the features of the current trade matching algorithm(s) may wish to adjust these tools in light of the changes detailed in this Circular.

2.   The Pro-rata Trade Matching Algorithm

2.1   A full list of those products that are available for trading on the Financials Trading Host and which use the Pro-rata trade matching algorithm is contained in the Attachment to this Circular.

2.2   For those markets where implied functionality is available, the Trading Host calculates the related implied orders for each individual order submitted to that market's order book. Every subsequent order submitted to that market or related markets causes the implied orders to be re-calculated for all orders at that price level and below (bids) / above (offers) in the order book. These implied calculations consume considerable processing power at the Trading Host level and changes have been made to provide a more efficient process for performing the necessary calculations.

2.3   On and from 1 August 2005, all outright orders at a particular price level will be aggregated and, if applicable, a single implied price will be calculated in respect of the aggregate volume of such orders. The published implied market depth will remain as it is currently, but the number of calculations that the Trading Host will be required to perform will be significantly reduced. Furthermore, when the matching of orders occurs involving implied pricing, the pro-rata calculation will no longer take into account the time at which a particular order was submitted to the order book – i.e. a "pure" pro-rata calculation will be applied, subject to any priority attached to an order as a result of the application of volume caps/collars. A comparison of the current process and the new process is set out in sections 2.4 to 2.5 below in order to illustrate this change.

2.4   Current Process

(a)   If three outright bids at a price of 98.875 in March Euribor futures totalling 1,000 lots are sequentially submitted into the Trading Host and an offer to sell 400 lots of the March/June calendar spread at 0.10 is also submitted, the Trading Host will imply out three outright bids at 98.775 totalling 400 lots in June Euribor futures as this is the maximum volume that is available to be traded via implieds (implied orders are shown in italics and are denoted with an "I"; order time stamps are shown as t1, t2 etc.):

March/June

Bid	Offer
	0.10 400 lots

March

Bid	Offer
98.875 t1 100 lots	
98.875 t2 200 lots	
98.875 t3 700 lots	

June

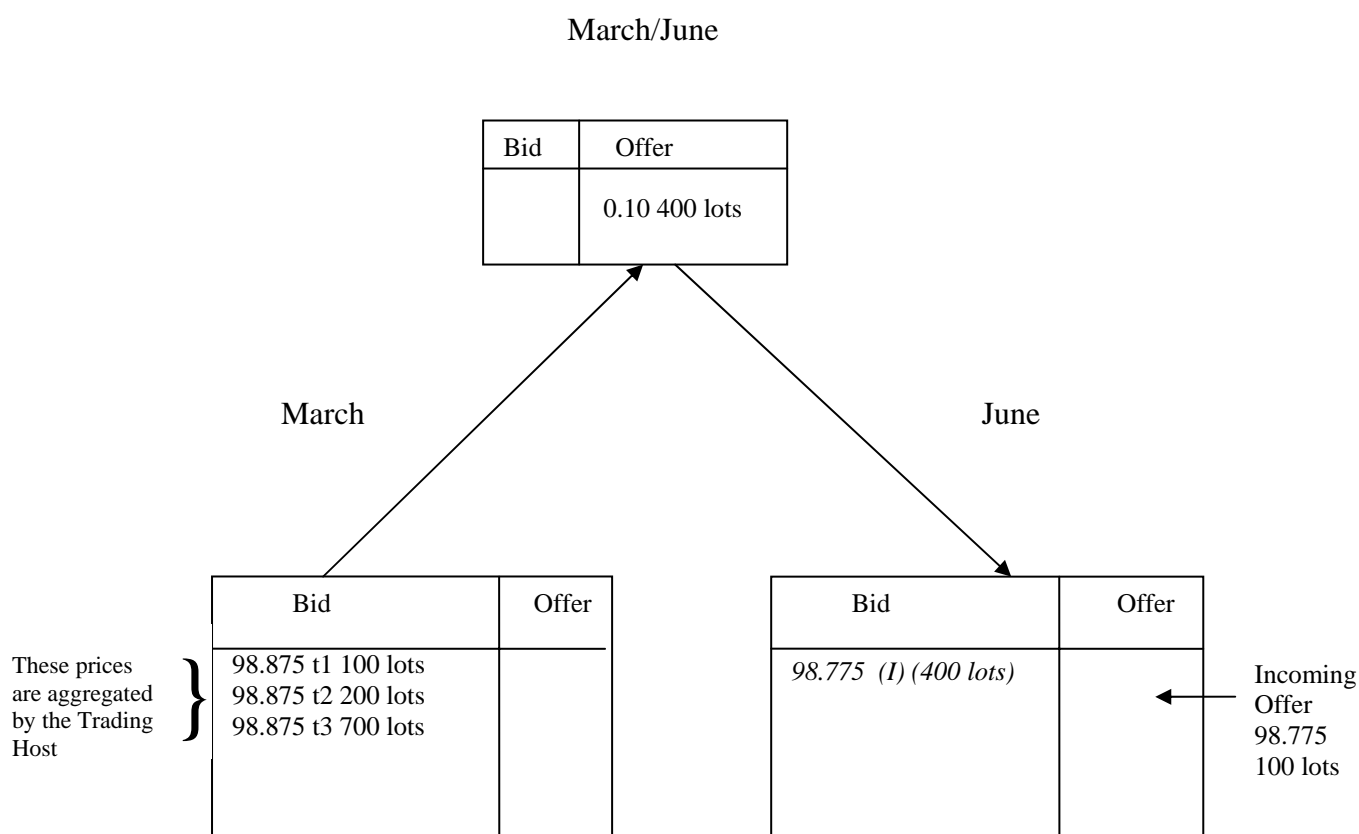| Bid	Offer
98.775 (I) t1 100 lots	
98.775 (I) t2 200 lots	
98.775 (I) t3 100 lots	

Incoming Offer
98.775
100 lots
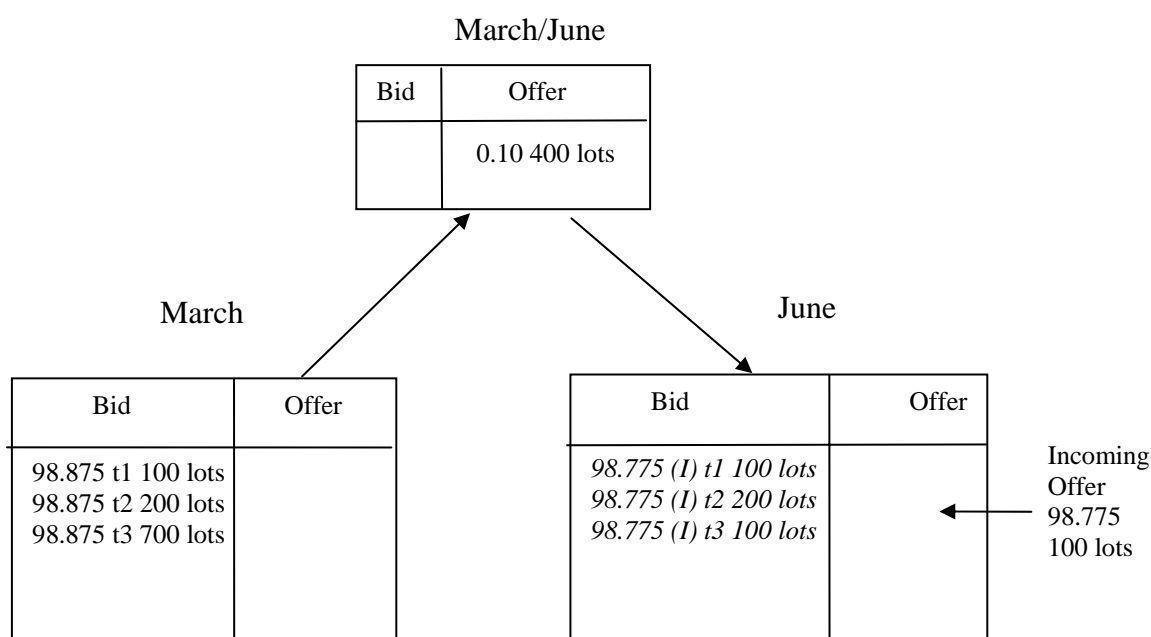
(b)   An incoming order to sell 100 lots of June Euribor futures at 98.775 will result in the following traded volume allocation in relation to the three outright bids in March Euribor futures, i.e. the implied functionality uses only the first 400 lots in the March market against which to pro-rata the 100 lots of the March leg of the March/June spread:

Order	Original Volume	Traded Volume
t1	100	25
t2	200	50
t3	700	25

2.5   New Process

(a)   Following the changes detailed in section 2.3, a single implied bid for 400 lots of June Euribor futures will be generated, rather than the three separate implied orders previously generated from the individual orders in the March market:

March/June

Bid	Offer
	0.10 400 lots

March

These prices are aggregated by the Trading Host }

Bid	Offer
98.875 t1 100 lots 98.875 t2 200 lots 98.875 t3 700 lots	

June

Bid	Offer
98.775 (I) (400 lots)	

Incoming Offer 98.775 100 lots

(b)   The incoming order to sell 100 lots of June Euribor futures at 98.775 will result in the following traded volume allocation against the outright bids in March Euribor futures, i.e. the implied functionality will pro-rata the 100 lots of the March leg of the March/June spread against the total available volume at that price in the March market:

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Order	Original Volume	Traded Volume
t1	100	10
t2	200	20
t3	700	70

(c)   It should be noted, therefore, that under the new process full pro-rata priority is restored in all instances.
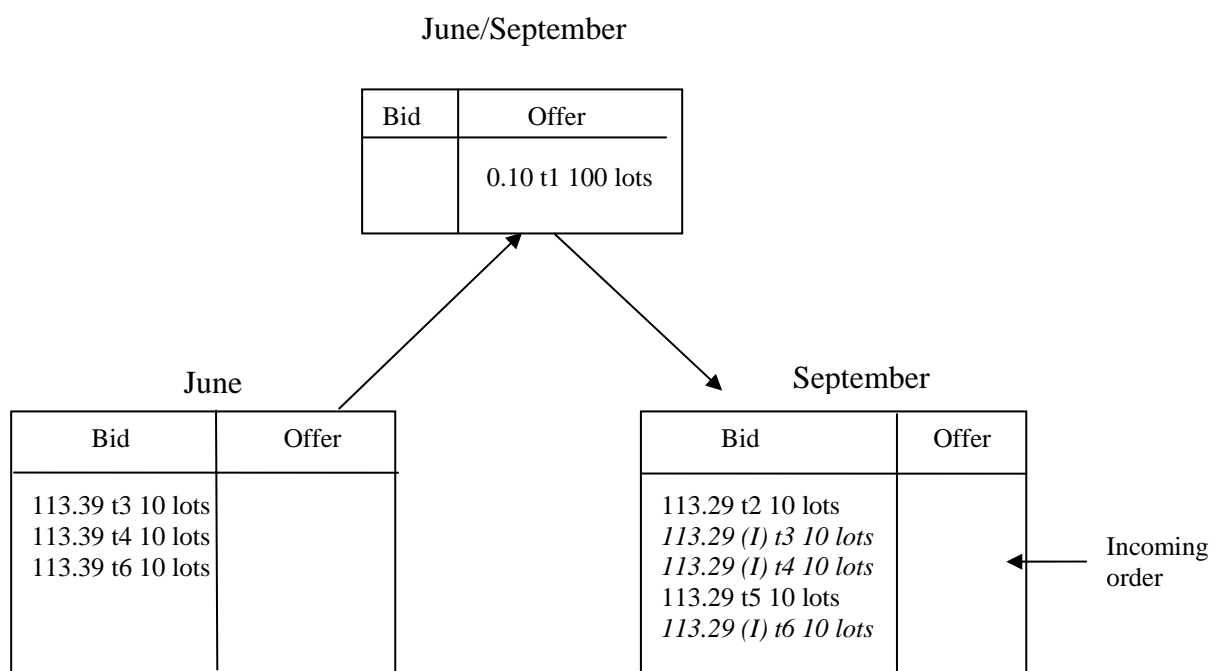
3.   The Price/Time Trade Matching Algorithm

3.1   A full list of those products that are available for trading on the Financials Trading Host and which use the Price/Time trade matching algorithm is contained in the Attachment to this Circular.

3.2   Currently, matching follows a strict price/time order. This means that the existing matching algorithm does not make a distinction between explicit and implied orders. On and from 1 August 2005, all explicit orders will be filled in their entirety ahead of any implied order unless an implied price is better than the then prevailing explicit price. A comparison of the current process and the new process is set out in sections 3.3 to 3.4 below in order to illustrate this change.
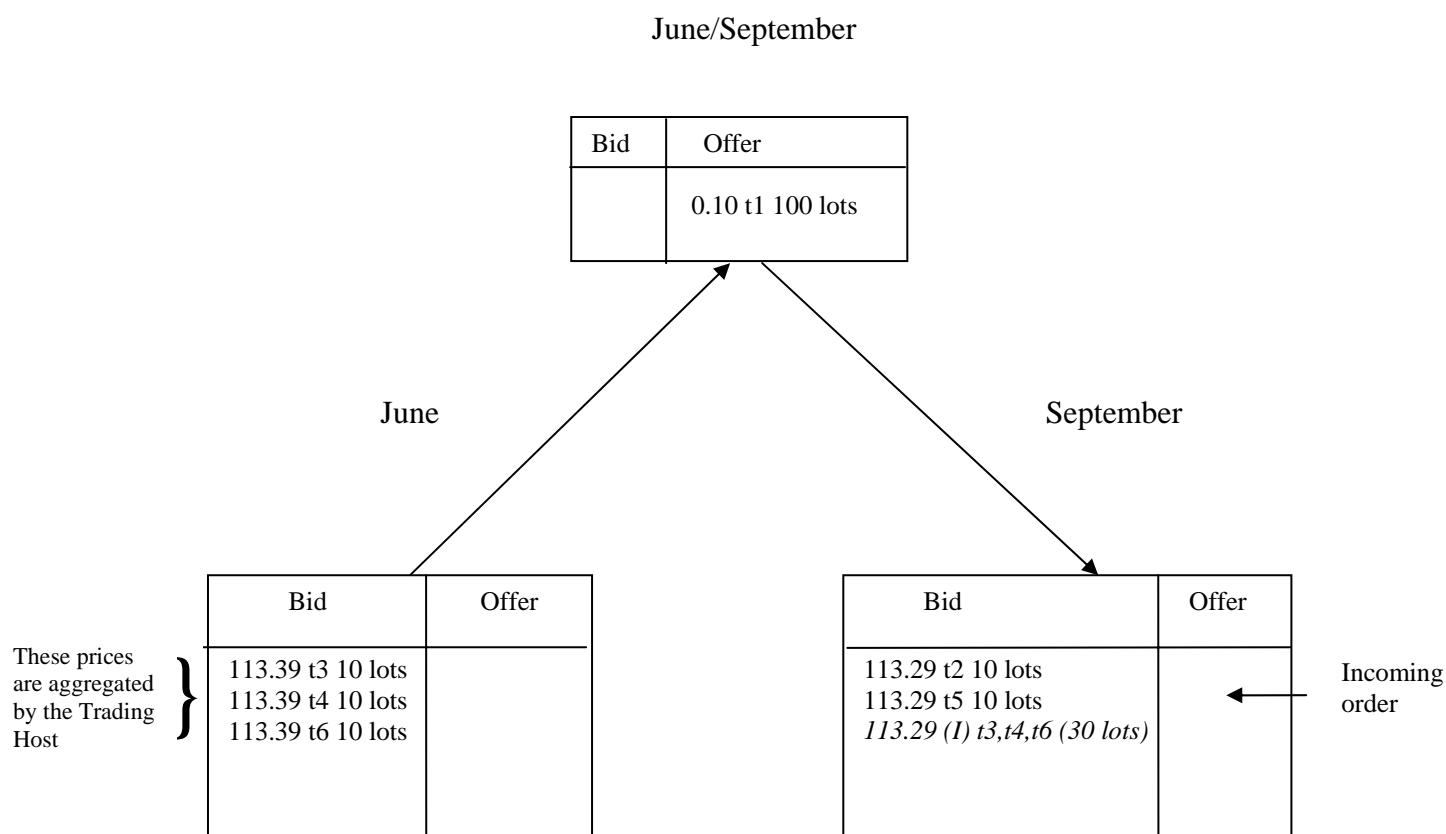
3.3   <u>Current Process</u>

(a)   The following example assumes the submission of the following orders into the Trading Host: an offer to sell 100 lots of the June/September Long Gilt futures calendar spread at 0.10, three bids for 10 lots each in June Long Gilt futures at 113.39, and two bids for 10 lots each in September Long Gilt futures at 113.29. The interaction of the explicit bids in June futures and the explicit offer in the June/September calendar spread results in three implied bids for 10 lots each in September futures which are interleaved with the existing September explicit bids.

June/September

Bid	Offer
	0.10 t1 100 lots

June

Bid	Offer
113.39 t3 10 lots	
113.39 t4 10 lots	
113.39 t6 10 lots	

September

Bid	Offer
113.29 t2 10 lots	
113.29 (I) t3 10 lots	
113.29 (I) t4 10 lots	
113.29 t5 10 lots	
113.29 (I) t6 10 lots	

Incoming order

(b)   An incoming outright order to sell September futures at 113.29 will match against the explicit and implied bids in September futures in the sequence shown in the diagram in section 3.3(a) above.

3.4   New Process

(a)   Applying the new process, the outright orders in June futures are aggregated and result in a single implied bid for a total of 30 lots in September futures.

June/September

Bid	Offer
	0.10 t1 100 lots

June   September

These prices
are aggregated
by the Trading
Host

Bid	Offer
113.39 t3 10 lots	
113.39 t4 10 lots	
113.39 t6 10 lots	

Bid	Offer
113.29 t2 10 lots	
113.29 t5 10 lots	
113.29 (I) t3,t4,t6 (30 lots)	

Incoming
order

(b)   The incoming outright order to sell September futures will first match against the two explicit bids in their entirety and any residual volume will then be allocated against the aggregate implied bid. Within the aggregate implied bid, orders will continue to trade in the time priority of their parent order in the March market.

For further information in relation to this Circular, members should contact their Account Manager or the U.S. Office. The equivalents of this Circular are being issued simultaneously in Lisbon and Paris and therefore members may receive duplicate information.

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Details of Contracts on the Financials Trading Host and the Trading Algorithm that applies to Each Contract

Contracts	Trading Algorithm Applied	
	Price/Time	Pro-rata
Lisbon Futures Contracts		
PSI 20®	✓	✗
Single Stock Futures	✓	✗
London Futures Contracts		
Euro (EURIBOR)	✗	✓
Eurodollar	✗	✓
Euroyen (TIBOR)	✓	✗
Euroswiss	✗	✓
EONIA	✗	✓
Short Sterling	✗	✓
Euro Swapnote®	✓	✗
U.S. Dollar Swapnote®	✗	✓
Long Gilt	✓	✗
Schatz	✓	✗
JGB	✓	✗
Bund	✓	✗
FTSE 100 Index	✓	✗
FTSE 250 Index	✓	✗
FTSEurofirst 80	✓	✗
FTSEurofirst 100	✓	✗
Other Pan-European Equity Indices	✓	✗
Universal Stock Futures (Physical Delivery)	✓	✗
Universal Stock Futures (Cash Settled)	✓	✗
Cocoa	✗	✓

Contracts	Trading Algorithm Applied	
	Price/Time	**Pro-rata**
Robusta Coffee	✗	✓
White Sugar	✗	✓
Wheat	✗	✓
Paris Futures Contracts		
CAC 40® Index	✓	✗
Rapeseed	✓	✗
Wheat	✓	✗
Corn	✓	✗
London Options Contracts		
Euro (EURIBOR) (including Mid-Curve)	✗	✓
Eurodollar (including Mid-Curve)	✗	✓
Euroswiss	✗	✓
Short Sterling (including Mid-Curve)	✗	✓
Euro Swapnote®	✗	✓
Long Gilt	✗	✓
Bund	✗	✓
FTSE 100 Index (ESX)	✗	✓
FTSE 100 Index FLEX®	N/A	N/A
FTSEurofirst 80	✓	✗
FTSEurofirst 100	✓	✗
Cocoa	✗	✓
Robusta Coffee	✗	✓
White Sugar	✗	✓
Wheat	✗	✓

Contracts	Trading Algorithm Applied	
	Price/Time	**Pro-rata**
Paris Options Contracts		
CAC 40® Index	✓	✖
Rapeseed	✓	✖
Wheat	✓	✖