S4

Contracts for Difference
Product Definition

S4 Ltd.

P.O. Box 159, Twickenham TW2 5YF

020-8894 3832

cfd@s4systems.com

Version 8; September 2002

Contracts for Difference on Equities
Product Definition

1. Objective

1. The purpose of the facility is to enable clients to run synthetic positions (commonly known as *Contracts for Difference (CfD)*, *Synthetic Equities, Daily Equity Swaps*) in a manner that replicates the economics of running a short or long position without requiring physical settlement.
2. Broker ABC Ltd would benefit from commission earned on each trade, increased order flow for the equity market makers and would earn a spread on all interest payments.

2. Method (Short)

1. The basic principle is to create a cash settled forward contract on the underlying equity. Broker ABC Ltd would have a long position in such a contract while the client would be short. Broker ABC Ltd would simultaneously run an offsetting short stock position.
2. Equivalently the product may be characterised as a flexible equity swap facility with periodic settlement and a flexible maturity subject to an upper limit. The client receives a floating rate return on cash and pays the return on an underlying equity including dividends.
3. The pricing of the forward contract should, in theory, reflect the interest earned on the stock borrowing and the impact of dividends and other benefits and stock situations arising during the term of the forward contract.
4. When the client wants to close out the synthetic short position Broker ABC Ltd would simultaneously reverse its long forward position and buy back its short stock position.
5. Note that in the notes below it is assumed that Broker ABC Ltd is not holding the physical stock. To the extent that it is, of course, it would not need to borrow. Instead of earning interest on stock borrowing there would be a saving interest at a higher rate on bank overdrafts.
6. Appendix 1 gives a schematic representation of all cash flows and stock about the trader.
7. Trades in long positions generally follow a reverse model of the above method.

3. Dealing and Hedging

1. The current form of the facility agreement is normally restricted to listed UK equities and leading Euro and US stocks.
2. The method of dealing in CfD s will be similar to dealing in the underlying equity.
3. The CfD dealer will simultaneously sell the physical stock to the relevant market maker usually at the same price as the opening CfD trade. The same procedure applies in reverse when the CfD position is closed.
4. The client can close out any position by mutual consent at any time during normal trading hours but by the nature of the product can only do so through Broker ABC Ltd.
5. Broker ABC Ltd has the right, under the currently proposed agreement, to close a position if:
   - Broker ABC Ltd can no longer borrow the underlying physical stock to support its short hedge position.
   - There is a take-over offer made in respect of the equity security underlying the CfD.
6. All CfD transactions (opening and closing) must be confirmed by Broker ABC Ltd by means of a confirmation note sent by fax or telex.

4. Mark-to-Market

1. Days on which a CfD position is marked to market are termed *Price Determination Dates* (PDDs). A *Reference Price* of the equity underlying the contract is obtained on a PDD at COB for the purpose of calculating the mark to market (MTM) differences.
2. The Reference Price of an equity on a PDD is the closing mid-price as published on SEAQ.
3. A CfD position will be marked according to pre-determined rules for the underlying client. Calls are traditionally made on a daily basis to minimise exposure, but larger institutions may insist on a less frequent activity, say weekly or fortnightly.
4. The Business Day immediately preceding the Opening Settlement date (defined to be the normal settlement date of a physical equity trade done on the contract opening date) is also deemed to be a PDD. Similarly, the Business Day immediately preceding the Closing Settlement date (defined to be the normal settlement date of a physical equity trade done on a contract closing date) is also deemed to be a PDD. These definitions are operationally useful and also enable the CfD cash flows to mirror the physical cash flows relating to the stock borrowing.
5. The amount that Broker ABC Ltd settles is the difference between the Reference Price and the *Previous Price* (the Reference Price at the previous PDD) for the period.
6. Settlement of the difference take place on the *Payment Date* for the PDD which is defined to be the Business Day immediately following the PDD.

5. Margin

1. a.k.a. Collateral
2. The client pay a margin equal to 5%-20% of the market value of the position on the Open Settlement's PDD.
3. Further margin payments occur on other PDDs, amounting to the same margin percentage of the movement between the Previous Price and the Reference Price.
4. The rationale for such margin payments is twofold: Firstly it provides some protection against client defaults and usually more than satisfies the FSA's CRR requirements. Secondly, it provides the financing required for the CfD stock borrowing. The latter advantage is, however, lost unless the margin balances are excluded from the FSA Client Money protection rules. The CfD agreement explicitly requires the client to agree that all such margin amounts will not be subject to the Client Money rules.
5. Margin payments commence on the Settlement Date which means that the CfD cash flows mirror the corresponding margin on stock borrowing cash flows.
6. The margin balance is repaid to the client on the Closing Settlement Date.

6. Calculation of Notional Value Interest

Short

1. NV Interest is accrued daily from the Treasury, which is calculated on the basis of the cash paid to date (i.e. the initial amount to borrow the stock, plus all subsequent (re)payments up to the last PDD). This benefit is passed on to the client. Accrual begins on the Opening Settlement date and continues up to the Closing Settlement date's PDD, inclusive.

2. The *NV Interest* formula in the CfD agreement is of the form:

$$NV_i = R_n V_n (L_n - y) (z_n/365)$$

where:
NV_i = the notional value interest for the nth to $n+1$th business day period.
R_n = the Reference (or previous) price at the last PDD.
V_n = the open volume at the last PDD.
z_n = the actual number of days between the nth and $n+1$th business days.
$L_n - y$ = the net interest rate to be paid to client.
L_n = 14 day LIBOR as set at the last Payment Date.
y = Broker ABC Ltd's spread.

3. The accrued interest is paid on each Payment Date.

Long

4. NV Interest is accrued daily to the Treasury. This cost finances the purchase of the long position. Accrual begins on the Opening Settlement date and continues up to the Closing Settlement date's PDD, inclusive.

5. The *NV Interest* formula in the CfD agreement is of the form:

$$NV_i = R_n V_n (L_n + y) (z_n/365)$$

where:
NV_i = the notional value interest for the nth to $n+1$th business day period.
R_n = the Reference (or previous) price at the last PDD.
V_n = the open volume at the last PDD.
z_n = the actual number of days between the nth and $n+1$th business days.
$L_n + y$ = the net interest rate to be paid by client.
L_n = 14 day LIBID as set at the last Payment Date.
y = Broker ABC Ltd's spread.

6. The accrued interest is paid on each Payment Date.

7. Margin Interest

1. The *Margin Interest* formula in the CfD agreement is of the form:

$$C_i = C\,(L_n - e)\,(z_n/365)$$

where:
C_i = the margin interest for the nth to $n+1$th business day period.
C = the total margin currently held by Broker ABC Ltd for the trade.
z_n = the actual number of days between the nth and $n+1$th business days.
$L_n - e$ = the net interest rate to be paid to client.
    L_n = 14 day LIBOR as set at the last Payment Date.
    e = Broker ABC Ltd's margin interest spread.

2. The accrued interest is paid on each Payment Date.

8. Price Determination Dates

1. All clients will encounter PDDs according to a maintained schedule which can be as frequent as every day, or up to scheduled fortnightly calls.
2. Other events between these scheduled dates can also trigger a PDD on a client's portfolio. These include:
   - a trade has reached its Opening or Closing Settlement PDD.
   - a client is explicitly called, e.g. on a ex-dividend date or other stock event (see 10 and 11 below).
   - when the notional value of a client's portfolio of trades that were open on the previous PDD moves by more than the client's predefined Movement Limit (e.g. £25,000) from that previous PDD's total value.
   - when the notional value of a client's portfolio of trades that were open on the previous PDD moves by more than that client's predefined Percent Movement Limit (typically 10%) from that on the previous PDD.
3. A substantial price movement in any of the open positions can also trigger a PDD for all relevant clients.
4. For operational convenience, all open contracts for a called client are marked to market.
5. On a PDD, the following changes occur:
   - the Reference Price is stored in a trade as the Previous Price for the next period.
   - the current interest rates are used as a trade's rates for the next period.

9. Settlement of Differences

1. The amounts calculated each day for price differences, margin and accrued interest are settled on the Payment Date for a PDD.
2. In short contracts, if the Reference Price is greater than the Previous Price, the client pays Broker ABC Ltd as well as supplying further collateral The opposite happens when the Reference Price is less than the Previous Price. Interest is always paid to the client.
3. In long contracts, if the Reference Price is less than the Previous Price, the client pays Broker ABC Ltd as well as supplying further collateral The opposite happens when the

Reference Price is greater than the Previous Price. Notional Value Interest is paid to Broker ABC Ltd; Margin Interest is always paid to the client.

10. Contract Closing

1. Under the CfD agreement the client may, by mutual consent with Broker ABC Ltd, close the whole or a part of a contract on any business day. Broker ABC Ltd will at the same time inform the client of the contract Closing Price which would normally be the Broker ABC Ltd market maker's price at the time.
2. MTM P & L postings for the Closed volume cease on the Closing Date.
3. It is important to note that after the Closing Date, there is no net "position" (to the extent of the quantity closed) in the CfD and therefore no longer any need to post MTM P & L on the closing portion of the CfD. Dividends and any stock events after the Closing Date will also have no impact.
4. In order to ensure that the CfD cash flows continue to mirror the underlying stock borrowing cash flows however, the CfD position (which is long in Broker ABC Ltd's books) continues to attract MTM differences, margin and interest calculations up to the Final Settlement Date. Broker ABC Ltd should never be in a situation where it has a material financing requirement, say, as a result of a sharp increase in the equity price between the Closing Date and the Final Settlement Date. There is no need to create a notional short to match MTM P/L postings during this period.
5. In effect, the net of all MTM difference payments made between the Closing date and Final Settlement Date for a closed trade is zero.

11. Dividends

1. An ex-dividend date generates an extraordinary cash event for all affected clients.
2. An ex-dividend date does **not** generate a PDD.
3. In the case of short CfDs, Gross Dividends will be called for payment to Broker ABC Ltd on such dates. Dividend payments do not affect any trade information. (Details of the underlying trades will be created automatically in each payment's freeform notes field.)
4. The Dividends department will supply a schedule of upcoming ex-dividend dates with associated amount per share. The CfD system can then automatically generate extraordinary cash entries for all corresponding trades. Staff will have the opportunity to adjust such schedules up to and including the appropriate ex-dividend dates to reflect any changes found in the various information sources

12. Rights Issues

1. In the short term, (in order to expedite production of the legal agreement), either party has the right to close the trade on an ex-right date.
2. Practically, this means that Broker ABC Ltd can inform the client that all underlying positions will be closed.
3. The general market practice is for the client not to take up the rights issue in order to simply the trade (because the issue creates a new line of stock which eventually disappears when the issue has been registered and merges into the original - or parent - line). In effect,

the client pays the cost of the ex-rights at the nil paid market cost. This amount will be compensated by an equivalent revaluation in the parent stock price.
4. The ex-rights day generates an extraordinary cash event for all affected clients (when the nil paid rights are first traded).
5. The ex-rights day does **not** generate a PDD.
6. In the case of short CfDs, nil paid rights of the issue will be called for payment to HGSL.
7. In this manner Broker ABC Ltd receives a value approximating the cost of covering its short position in the nil paid rights resulting from its short position in the equity.
8. Should the stock lender instruct Broker ABC Ltd to purchase the rights, the cost will be at least offset by the sale of the new line through the Market Maker.

13. Scrip Issues/Stock Splits
1. The adjustment must ensure that the value of each affected contract remains (theoretically) unchanged over the ex-scrip/split date.
2. When an election has been received from the registered stockholder in order to receive the additional stock.
   - the ex-scrip/split date **does** generate a PDD
   - any open positions in the underlying securities will be immediately closed with a Closing Price equal to the COB price.
   - a corresponding number of new trades are opened immediately.
   - the new open volume = closed volume * (1 + scrip ratio)
   - the new open price = previous closed volume * COB price / new open volume.
   - For example, a 1 for 1 scrip issue would result in the number of issued shares doubling and the market price halving. Thus the Contract Volume of the new (automatically created) trade would double on the ex-scrip date.
   - both the closing and open trades will be subject to a special Settlement Period equal to the Payment Period (i.e. a PDD on the ex date), since the additional stock will be passed immediately from HGSL's stock borrower without the usual settlement arrangements.
3. When no election has been received (and no other mandate exists), the event behaves in identical manner to a Dividend above.

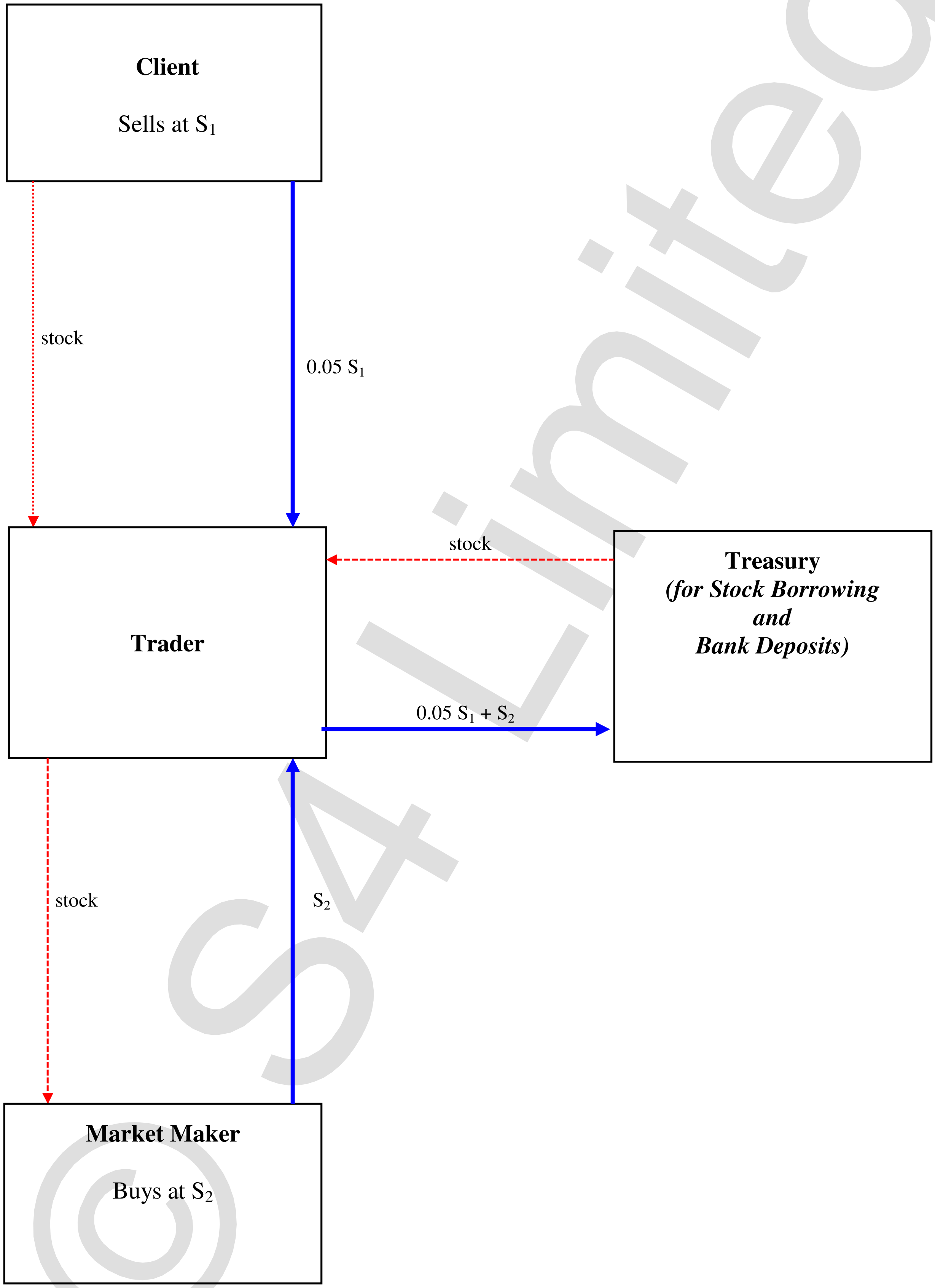
14. Asset Distributions
1. The adjustment required to account for an asset distribution will be identical to one of the above stock events, and will be specified as such.

15. Takeovers
1. During the period of a takeover offer on a stock on any underlying trade, Broker ABC Ltd can give notice to the client that it wishes to close the contract. The date of such notice then becomes a Closing Date and the Closing Price is then determined by Broker ABC Ltd and the Contract Closing provisions apply as described above.
2. In the context of the agreement, the major problem likely to arise from a takeover situation is the difficulty or even impossibility of borrowing the stock of the target company. In these circumstances, Broker ABC Ltd can give notice of contract closing to the client provided it can produce reasonable evidence that the stock cannot be borrowed.

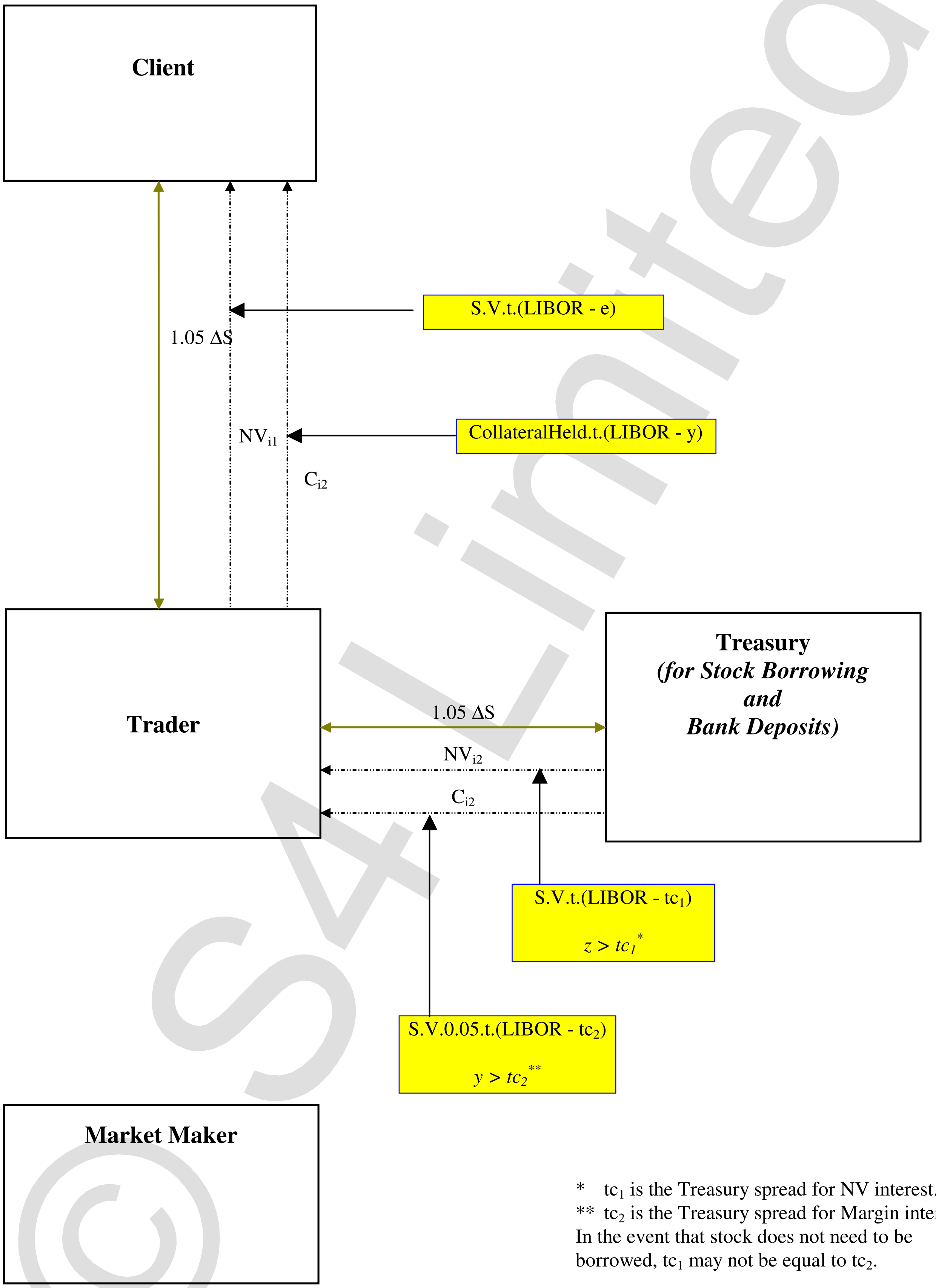
16. Suspensions

1. The suspension of a stock, while it halts all exchange based trading, does not actually affect the borrowing of the stock which will continue with a collateral requirement based on the suspension price.
2. A stock suspension does **not** generate a PDD.
3. Each underlying trade behaves as normal during the suspension period. Scheduled PDDs will be called as well as any others affected by the client's portfolio. By the nature of the suspension, only interest payments on the trade will be made (because the price is frozen).
4. Any trade whose underlying stock is suspended within an Open or Closing settlement period continues as normal with all obligations being honoured by both parties. If the stock is still suspended on the settlement's PDD, the suspension price is used in the PDD calculations.
5. The client will not be able to close any trade with a suspended stock position until the suspension has been lifted.
6. Any trade which reaches its natural Expiry date while its underlying stock is suspended remains open until the end of the suspension, when it will be closed automatically.

Appendix 1: Schematic of Open Trade Cash and Stock Flows on a Short CfD
i) Open & Settlement



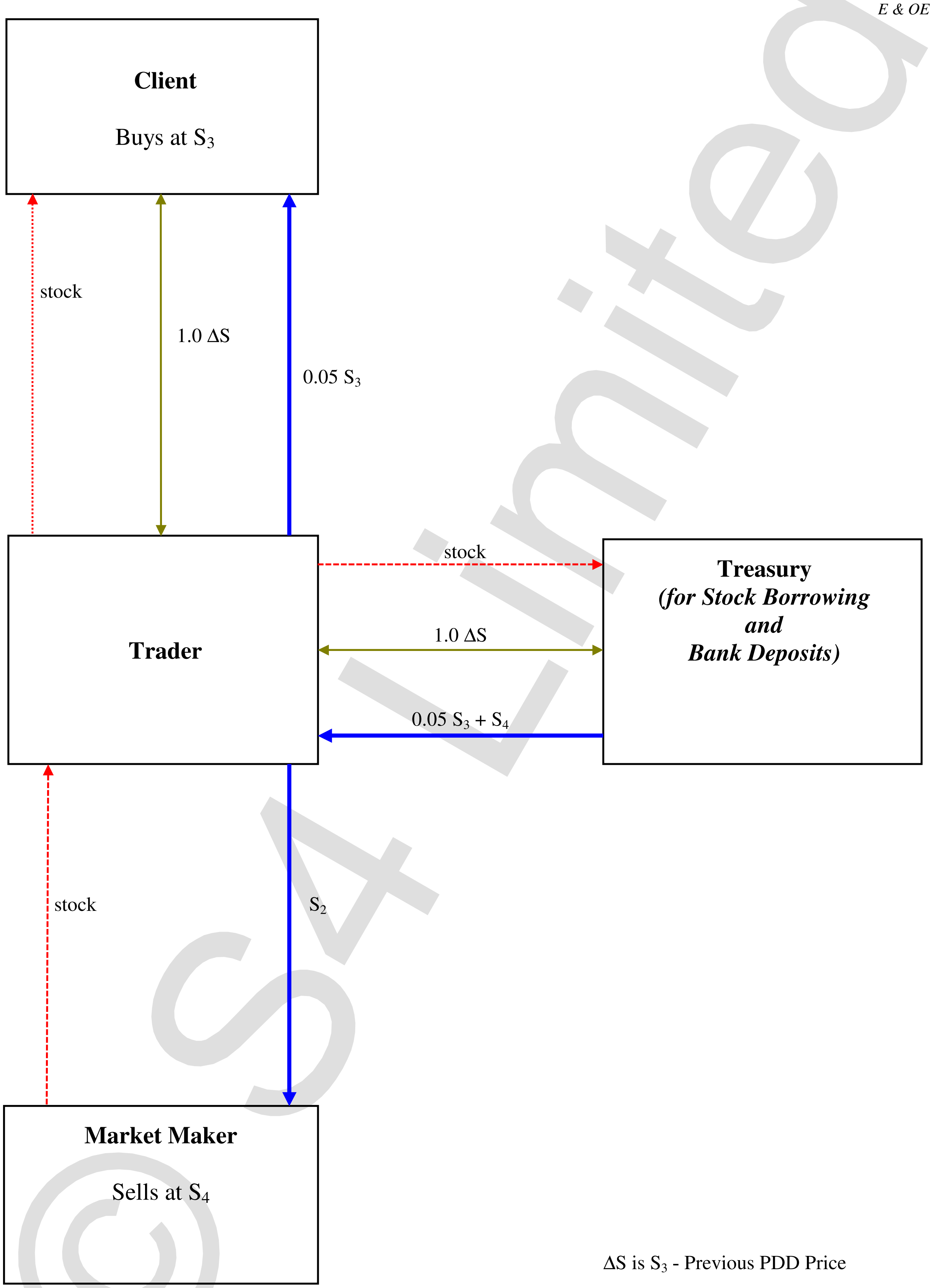
ii) Price Determination Date



* tc_1 is the Treasury spread for NV interest.
** tc_2 is the Treasury spread for Margin interest.
In the event that stock does not need to be borrowed, tc_1 may not be equal to tc_2.

iii) Trade Close

E & OE



ΔS is S_3 - Previous PDD Price