TITLE

A method and a system with improved possibilities of keeping track of trading positions.

TECHNICAL FIELD

One task in a financial clearing system is to keep positions for different accounts, a position being defined as the balance of bought and sold contracts of a particular variety in the account.

In a clearing system, trades are received that affect the positions, said trades being executed during trading cycles, and the positions in the system are updated according to clearing cycles.

The present invention facilitates keeping track of one or several positions, which will be updated by a certain trade, regardless of when in a trading cycle that said trade is executed or reported to the clearing system.

BACKGROUND ART

As stated above, one of the main tasks of a financial clearing system is to keep track of positions for one or several accounts in the system. Usually, positions are "locked" or frozen at the end of a so called clearing cycle, with the trades that affected that particular clearing cycle having been executed during a corresponding so called trading cycle.

Until recently, a clearing cycle and its corresponding trading cycle would also essentially coincide in time, i.e. each clearing cycle would include trades having been executed before the closing time of the trading cycle, for example 5 P.M., with the clearing cycle possibly being open until a slightly later point in time, for example 5:30 PM, in order to enable trades that had been executed during the trading cycle to be processed by the clearing system.

In this way, it could always be seen which clearing cycle that a trade belonged to, and how the trade should thus update the positions in the system.

However, recently there has been a demand for the possibility of executing trades during extended opening hours, possibly on a 24-hour basis. Since a clearing cycle, inter alia for practical reasons, should be open longer than the corresponding trading cycle, this can lead to two clearing cycles being open at the same time, i.e. there might be an overlap in time for two different clearing cycles. This, in turn, might lead to difficulties or uncertainties when trying to get an overview of the total situation in an account, or in the system as a whole. Also data might be lost or misplaced.

The demands for longer trading cycles thus impose new demands on clearing systems, such as, for example, the following:

- Separation between trades which are executed during a current first trading clearing cycle but which are reported to the system during a later second trading cycle.
- The ability to show the proper balance for a position, where said balance reflects the actual situation with all transactions taken into account, said balance thus showing all trades, regardless of when in time that they were executed.

In addition, as with previously known clearing systems, it should be possible to let trades which are received comprise information as to how the trade should affect the position, in particular the variable known as “open” or “close”.

SUMMARY OF THE INVENTION

The new demands posed on clearing systems, as described above, are addressed by the present invention as claimed in the independent claims. Preferred embodiments of the invention are set out in the dependent claims.

Thus, the present invention relates to a method for use in a clearing system, in which system positions are held which are affected by trades, said trades being executed during trading cycles in time, and in which system the positions are updated by said trades according to clearing cycles in time. The method according to the invention comprises the steps of letting a first trade be executed and letting said first trade comprise information as to how the trade should affect the position.

According to the method, the first trade can be received by the clearing system at a point in time when both the clearing cycle for the first trade and another clearing cycle for subsequent trades are open, and the method additionally comprises the steps of

-letting a trade which belongs to a first clearing cycle update a first variable for a position for that clearing cycle;

-letting a trade, which belongs to a second clearing cycle, which is also open, update a second variable for the position for that clearing cycle.

Using the method of the invention, the first variable can be used as a measurement of the position to be held overnight (O/N).

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be described in more detail in the following by way of non-limiting examples and with reference to the appended drawings, in which

fig 1 is a timeline of events in a clearing system, and

fig 2 shows the timeline of fig 1, using the invention, and

figs 3 and 4 are tables illustrating steps which are comprised in calculations in an embodiment of the present invention, and

fig 5 is a table illustrating a transition between two cycles in a system, which uses the invention.

DESCRIPTION OF PREFERRED EMBODIMENTS

A timeline of events in a clearing system to which the present invention can be applied is shown in fig 1: A first trading cycle extends between two points in time, by way of example shown as 14:00 on consecutive days. A second trading cycle starts when the first trading cycle ends, i.e. at 14:00 the next day, a pattern which is then repeated for third, fourth, etc trading cycles. Naturally, there can also be short pauses in time during one and the same trading cycle or between two consecutive trading cycles.

As mentioned initially, for each trading cycle, there is a corresponding clearing cycle, during which trades that are executed during a certain trading cycle should be received and cleared by the system. In order for trades, which are executed late in a trading cycle to be cleared, the clearing cycle is usually open until a point in time, which extends beyond the closing point of the trading cycle. In fig 1 this is, by way of example, shown with the clearing cycle closing at 18:00 for a trading cycle, which closes at 14:00.

As illustrated in fig 1, problems can arise with trades that are executed or reported close to the end of one trading cycle or the beginning of the next trading cycle: a first clearing cycle for a first trading cycle closes at 18:00, with a second clearing cycle for a second trading cycle opening at 14:00, i.e. before the first clearing cycle has closed. There is thus an overlap in time (14:00 – 18:00) between successive clearing cycles.

Said overlap can cause problems, for example as illustrated in the following example, and shown in fig 1: a first trade is executed at a point in time t_1 during the second trading cycle, but is reported to the system at a point in time t_2 which occurs after the second trading cycle has closed and the third trading cycle has opened, during the overlap between the clearing cycles for the second and third trading cycles. There are thus two possible clearing cycles, which can receive this trade.

A second trade is also shown in fig 1, said second trade being executed at a point in time t_3 and reported at t_4, both of which times occur before t_2. Since the second trade is executed during the third trading cycle, it should be cleared during the clearing cycle, which corresponds to that trading cycle, i.e. the third clearing cycle. Again, there are two possible clearing cycles, which can receive this trade, the proper one being the third clearing cycle, although the trade was reported earlier than the first trade.

With the aid of fig 1, a sequence of events according to the method of the present invention will now be illustrated: for the sake of clarity, it is assumed that the position at the start of the sequence of events is 0/0, i.e. comprising two integers, one on each side of a slash sign, where the integer to the left of the slash is known as the "long" part of the position, and the integer on the right is the "short" part of the position, with "long" and "short" corresponding to the amounts bought and sold respectively in that account. Thus, at the start of the following example, the position is "empty".

Trades received can be either for "buy" or "sell", with the trade comprising additional information on how the trade should affect the position: "buy" or "sell" can be combined with either the information "open" or "close". Thus there will be four combinations, with the following meanings:

Buy open – increase the amount bought
Buy close – decrease the amount sold
Sell open – increase the amount sold
Sell close – decrease the amount bought

Turning now to fig 2, at a point in time t_1 during the second trading cycle, a first trade is executed, said trade by way of example being for "sell 10 close", i.e. sell 10, and let the trade decrease the amount bought, i.e. the amount on the left side of the slash sign. Although this first trade is executed during the second trading Cycle, TC_2, it is reported to the clearing system at a point in

time t_2 during the next trading cycle, TC_3. There could thus be a possible source of confusion here, since the clearing cycles for both the second and the third trading cycles are open at t_2.

In order to address this problem, according to the method of the invention, this first trade will update a variable for the trading cycle during which it was executed, said variable being defined by the present invention, and referred to as CTD (Current Trading Day). CTD will, since it represents a position, comprise two values, the "long" and "short" value, shown as two integers on either side of a slash sign, i.e. long/short, where "long" shows the amount bought, and "short" shows the amount sold.

According to the invention, the values comprised in the variable CTD can be either negative or positive, and since the starting position of the example was "0/0", the new position (CTD) will be –10/0. Traditionally, the position could not have assumed a negative value, but would instead have been seen as 0/10.

Assuming, for the sake of clarity, that no other trades are executed for that particular account during the second trading cycle, TC_2, the corresponding clearing cycle, CC2, will close at –10/0, (i.e. CTD = -10/0) which values for the position will be carried over as starting values for the next clearing cycle. The values which are "carried over" to the next day in this manner are also referred to as the overnight position, abbreviated as O/N.

Trades which are executed after the second trading cycle has closed, in the example after 14:00 on the second day, will thus belong to the third trading cycle, TC_3, and should be cleared in Clearing Cycle 3, CC_3.

Assume, again by way of example, to aid the understanding of the example, that a second trade is executed at a point in time t_3 during TC3, and is

reported to the clearing system at t_4. Both t_3 and t_4 occur before t_2, but this second trade should still be cleared within the third clearing cycle, CC_3.

This trade – and other such trades - will be used to update a variable according to the invention, referred to as NTD (Next Trading Day). As with the CTD variable, NTD may comprise both a long and a short value, and will thus have the same format as CTD, i.e. "long"/"short". In addition, also in similarity to the CTD variable, both the long and short value of NTD can be either positive or negative.

In addition, assume that this new trade is also for "sell 10 close". The values of the variable NTD will thus also be –10/0, whereas traditionally this trade would have been used together with the position of that account in the traditional form of the position, 0/10, to form a total position of 0/20.

As stated initially, one of the problems to be addressed by the present invention was that of enabling separation between trades which are received during a current clearing cycle but which can only be carried out during a second future clearing cycle, and trades received during the current trading cycle which can be carried out during the first clearing cycle. This has been achieved by means of the introduction of the CTD and the NTD variables, in addition to which the values comprised in CTD and NTD can be either positive or negative, with the advantages outlined earlier.

Thus, a user of the clearing system in which the invention is applied, wishing to see the current status of the account for the current clearing cycle as well as the next clearing cycle will be shown the CTD and the NTD variables.

However, since users are traditionally not familiar with the notion of negative numbers being used in positions, the CTD and the NTD will be translated into positive corresponding variables, in this case 0/10 as this is the positive corresponding position to the value of –10/0. Similarly, the negative values

will preferably only be used in internal calculations in the systems, all values preferably being converted to the positive corresponding value before being displayed to users, as this is more familiar to the user. The negative values used by the invention are, as has become evident, integers smaller than zero.

Another problem which is to be solved by the present invention in parallel with the solution to the "separation issue" was that of showing the proper balance for a position, said balance reflecting the actual situation with all transactions taken into account, meaning that the NTD variable should also be taken into account.

With reference to the table in fig 3, a description will now be given of how the variables of the invention will solve this problem.

The "starting values" for the positions in fig 3 will, as mentioned previously, be 0/0, which is the position "inherited" from the previous cycle. These starting values will be referred to as the overnight (O/N) position. How the O/N position is calculated will be explained in more detail below.

In fig 3, the CTD and NTD positions from above of –10/0 are used, here referred to as "relative positions", since they will be used as starting positions in calculating a current position. Initially, the CTD relative position is translated into the more traditional corresponding position of 0/10, said position referred to in the table as "CTD absolute". A position referred to as "NTD signed" is also calculated, as a total of the CTD positive and the NTD relative, which in this case results in a "NTD signed" value of –10/10. This is translated into an "NTD absolute" position of 0/20, which is then displayed to the user.

In order to facilitate the understanding of the invention, another example similar to that of fig 3 is given in fig 4: in this example, the CTD relative position is –5/10, and the NTD relative is 0/-20.

A "CTD absolute" position is calculated as 0/15, and the "NTD signed" position then becomes 0/-5, with the "NTD absolute" position being 5/0.

Additionally, it could be mentioned that one of the ideas behind the use of negative integers in the positions is that the system will always let a "close" trade decrease the appropriate value in the position, even if this will result in a negative value. Also, a further advantage afforded by the use of negative integers in conjunction with the present invention is that they will lead to a time-invariant calculation of the "absolute" positions, which, for example, are shown in figs 3 and 4.

This means that regardless of in which order trades are reported to the clearing system, the resulting absolute positions will be the same. This can be a major advantage in an application in which trades are not reported to the system in the order in which they are executed, for example a traditional so called "floor trade" system.

Since the variables CTD and NTD refer to "Current" and "Next" day, there must naturally be a "shift" at some point in time, i.e. at some point in time "Next Day " becomes "Current Day", and a new day is used as "Next Day", with the variables being updated accordingly. This will be illustrated with reference to fig 5.

The table in fig 5 shows how the variables from the preceding text and from figs 3 and 4 are calculated for the coming Clearing Cycles, with the example in fig 5 showing this process for the next Cycle, i.e. Clearing Cycle 4 (CC4).

The shift into variables for Clearing Cycle 4 will take place at a point in time after Trading Cycle 2 has closed, but preferably before Trading Cycle 4 and its corresponding Clearing Cycle 4 has opened.

The shift is carried out in the following way, which is also illustrated in fig 5:

- the CTD absolute position from CC2 becomes the O/N (overnight) position for CC3, i.e. the starting position that CC3 "inherits" from CC2,
- the NTD relative position for CC2 is used as the CTD relative position for CC3.
- the NTD absolute position of CC2 is used as the CTD absolute position for CC3.
- The NTD relative position for CC3 is the sum of trades that have been executed for clearing in CC4.
- The NTD signed position for CC3 is the sum of NTD relative (CC3) and CTD absolute (CC3) positions.
- The NTD absolute position for CC3 is the NTD signed for the same clearing cycle, converted into a positive value as explained above in connection with figs 3 and 4.

The invention is not limited to that which has been described by way of example above, but may freely be varied within the scope of the appended claims. For example, although the invention has been described above using events within two consecutive cycles (TC_2, CC_2, and TC_3, CC_3), it is entirely possible to apply the invention to events over an arbitrary number of cycles. The points in time involved may of course also be varied without departing from the spirit of the invention.

Finally, looking at the explanation of how a transition between cycles takes place according to the invention, as also illustrated in fig 5, it will become apparent that these calculations can take place without calculating the "NTD

signed" position, since this position is merely a sum of two other positions which are as such known. Thus, the "NTD signed" position can be seen as an auxiliary value used for facilitating the calculations.

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CLAIMS

1. A method for use in a clearing system, in which system positions are held which are affected by trades, said trades being executed during trading cycles in time, and in which system the positions are updated by said trades according to clearing cycles) in time, said method comprising the following steps:

-letting a first trade be executed;

-letting said first trade comprise information as to how the trade should affect the position;

according to which method the first trade can be received by the clearing system at a point in time when both the clearing cycle for the first trade and another clearing cycle for subsequent trades are open, said method additionally comprising the steps of

-letting a trade which belongs to a first clearing cycle update a first variable for a position for that clearing cycle;

-letting a trade, which belongs to a second clearing cycle, which is also open, update a second variable for the position for that clearing cycle.

2. The method of claim 1, additionally comprising the step of using the first variable from the first clearing cycle as a measurement of the starting value for the position in the second clearing cycle .

3. The method of claim 2, additionally comprising the step of using at least one further variable from the first clearing cycle as a starting value for a corresponding variable for the second clearing cycle when calculating the value of said further variable for said second clearing cycle.

4. The method of claim 3, additionally comprising the step of letting at least one of said first variable for said first clearing cycle and said second variable for said second clearing cycle comprise integers smaller than zero.

5. The method of claim 4, additionally comprising the step of converting any variables that comprise integers smaller than zero into corresponding variables comprising only integers larger than or equal to zero prior to displaying said variables to a user of the system.

6. A computer program product, which when executed on a computer, performs the steps in accordance with any of claims 1 – 5.

7. A clearing system in which system positions are held which are affected by trades, said trades being executed during trading cycles in time, and in which system the positions are updated by said trades according to clearing cycles in time, said system comprising:
- means for letting a first trade be executed,
- means for letting said first trade comprise information as to how the trade should affect the position; and
which clearing system has means for receiving the first trade at a point in time when both the clearing cycle for the first trade and another clearing cycle for subsequent trades are open, and said clearing system additionally comprise means for letting a trade which belongs to a first clearing cycle update a first variable for a position for that clearing cycle; and means for letting a trade which belongs to a second clearing cycle which is also open update a second variable for the position for that clearing cycle.

8. The system of claim 7, further having means for using the first variable from the first clearing cycle as a measurement of the starting value for the position in the second clearing cycle.

9. The system of claim 8, further having means for using at least one further variable from the first clearing cycle as a starting value for a corresponding variable for the second clearing cycle when calculating the value of said further variable for said second clearing cycle.

10. The system of claim 9, further having means for letting at least one of said first variable for said first clearing cycle and said second variable for said second clearing cycle comprise integers smaller than zero.

11. The system of claim 10, further having means to convert any variables that comprise integers smaller than zero into corresponding variables comprising only integers larger than or equal to zero prior to displaying said variables to a user of the system.