Market Maker Protection Model
NASDAQ OMX Derivatives Markets
Equity Derivatives
Version 1.1
May 21, 2010
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### Revision History

<table>
<thead>
<tr>
<th>Date</th>
<th>Revision</th>
<th>Change Description</th>
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<tr>
<td>April 26, 2010</td>
<td>1.0</td>
<td>Initial version for NASDAQ OMX Derivatives Markets</td>
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<tr>
<td>May 21, 2010</td>
<td>1.1</td>
<td>Minor modifications of examples (section 5)</td>
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Definitions

The official definitions are in the Rules and Regulations of NASDAQ Derivatives Markets.

MM          Market Maker
MMP         Market Maker Protection
1 Introduction

This document describes the Market Maker Protection functionality for trading of Nordic equity derivatives on NASDAQ OMX Derivatives Markets. The functionality is available in all markets operated by NASDAQ OMX Derivatives markets.

Chapter 2 is a short summary of the functionality, while chapter 3 presents an overview of the parameters that are configurable by the Market Maker. Chapter 4 describes the triggering calculations and consequences. Chapter 5 shows examples.

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While the Rules and Regulations of NASDAQ OMX Derivatives Markets is a legally binding document between Members and the respective exchanges, the purpose of this Market Maker protection Model document is to provide additional guiding information for trading members.
2 Solution summary

The idea behind Market Maker Protection functionality is to prevent too many simultaneous trade executions on quotes provided by a MM. The MMP functionality allows the Market Maker to automatically pull all quotes in a certain underlying if more than a configurable number of contracts have been traded off during a configurable amount of time. MM will have the possibility to use the MMP functionality for all underlyings where the functionality is available. (i.e., not only in underlyings where the market maker has obligations)

3 Parameters

The MMP parameters are configurable by the MM and are set on member level. The MM can update (change or disable) the parameters intra-day.

The parameters possible for a MM to set for an underlying are:
- Exposure Limit Time Interval
- Quotation frozen time
- Quantity Protection
- Delta Protection
- Include Futures

After an update of the parameters, the new parameters will be broadcasted to the MM. To prevent that the “Quantity Protection” and “Delta Protection” parameters are set too low by the market maker (the market maker protection is triggered too often), there will be a predefined minimum quantity parameter. The minimum quantity will be specified per underlying and the value will apply for both the “Quantity Protection” and “Delta Protection” parameters.

3.1 Exposure Limit Time Interval

This timer defines the length of the rolling time interval for MMP re-calculation and shall be set in number of seconds.

The rolling time interval is used to determine if the quantity limit has been reached. The length of the time interval is never less than the Parameter “Exposure Limit Time Interval” and never more than 10% more than that parameter.

If the time interval is set to 0 (zero) the MMP functionality is turned off.

3.2 Quotation Frozen Time

When the MMP is activated, the MM cannot enter quotes for a period of time defined by this parameter. The parameter shall be specified in number of seconds.

If this time is 0 (zero) the quotes are considered frozen the rest of the day and the quotation ability has to be activated by updating the parameter.
3.3 Quantity Protection
The MM sets a threshold value, i.e. a value that if equal or exceeded will trigger the system to delete quotes. The value expresses the maximum number of traded contracts that the MM wants to trade, on quotes, in an underlying within the given time interval (Exposure Limit Time Interval).

If the Quantity Protection is set to 0 (zero) the Quantity Protection functionality is turned off.

3.4 Delta Protection
The MM sets a threshold value, i.e. a value that if equal or exceeded will trigger the system to delete quotes. The value expresses the maximum number of traded contracts in the same direction, long minus short, that the MM wants to trade, on quotes, in an underlying within the given time interval (Exposure Limit Time Interval).

If the Delta Protection is set to 0 (zero) the Delta Protection functionality is turned off.

There are two different ways to calculate the Delta Protection (3.4.1 and 3.4.2). Including futures or not. Please note that the future refers to both future and forward.

3.4.1 Delta Protection including futures
Absolute value of the sum of 
\[(\text{bought future contracts} + \text{bought call option contracts} + \text{sold put option contracts}) - (\text{sold future contracts} + \text{sold call option contracts} + \text{bought put option contracts})\].

3.4.2 Delta Protection not including futures
Absolute value of the sum of 
\[(\text{bought call option contracts} + \text{sold put option contracts}) - (\text{sold call option contracts} + \text{bought put option contracts})\].
4 Triggering calculations and consequences

4.1 Trades included in the calculation

Only trades that are matched in the electronic order book on quotes provided by the MM are counted. Binary options are excluded from the market maker protection calculations. Note that quotes entered in these instruments will still be removed when a MM protection is triggered.

Trades on single orders and combination orders/quotes provided by the MM are not counted. Trade reports including the MM are not counted. Quotes entered on-behalf of a MM are handled as if entered directly from the market maker.

4.2 Calculating the Quantity Protection and the Delta protection

4.2.1 Quantity Protection

The Quantity Protection sums the quantity for all trades against the MM quotes in a certain Underlying.

4.2.2 Delta Protection

The Delta Protection for a certain underlying can be calculated in two different ways depending on whether the MM wants futures to be included in the calculation or not.

Delta Protection including futures

Absolute value of the sum of \[((\text{bought future contracts} + \text{bought call option contracts} + \text{sold put option contracts}) - (\text{sold future contracts} + \text{sold call option contracts} + \text{bought put option contracts}))\].

Delta Protection excluding futures

Absolute value of the sum of \[((\text{bought call option contracts} + \text{sold put option contracts}) - (\text{sold call option contracts} + \text{bought put option contracts}))\].

4.3 Threshold breach action

When the threshold is reached, all quotations in the Underlyings Instrument Series will automatically be deleted. Note that quotations in futures contracts will be deleted regardless whether the Delta protection calculation is set to include or exclude futures. Single Orders, Combination Orders/Quotes placed by the MM will not be deleted. The MM will be informed via a broadcast. There will be one broadcast sent for each quote deleted. The MM will also be informed that the limits have been breached via a broadcast.

In the case where the MM has many quotations in the order book in the same Instrument Series, all quotations will be deleted.
4.4 Reset of the Market Maker Protection Parameters
After a MMP has taken place and the quotes are deleted, the counted quantities will be set to zero. This prevents the action to be triggered again (as soon as the MM trades) immediately after the initial action was first triggered.

4.5 Quoting after a Market Maker Protection event
In the case of a MMP taking place and the broadcast is on its way, a new quotation might be sent in during that time. In this case the trader is not aware of that the previous quotes have been deleted when sending the quote. In this case the transaction will be rejected with the reason code “Market Maker Protection”. After the specified Quotation frozen time, the MM can start sending in quotes again. If the MM wants to continue sending in new quotes earlier, the MM can overrule the Quotation frozen time by updating the parameters. When the parameters are updated, the calculated Quantity Protection and Delta Protection values shall be reset for that particular Underlying. This is regardless of whether parameters have been changed or not.

4.6 MMP as a consequence of block transaction or mass order quotation
If a mass quotation transaction is sent to the market which immediately result in trades, the mass quotation or block order transaction shall be processed as multiple single transactions (instead of one transaction). This implies that immediately if the threshold is breached, the threshold breach action is triggered, and the rest of the quote items in the transaction in the same underlying will be rejected with reason code Market Maker Protection.
If a mass quotation or block order transaction is sent to the market by MM (A) which would result in hitting several quotes provided by another MM (B), the mass quotation or block order transaction shall be processed as multiple single transactions (instead of one transaction). This implies that immediately if the threshold of Market Maker (B) is breached the threshold breach action is triggered, and the rest of the items in the transaction will be handled after the MM (B) has had the quotes removed.

4.7 Passive and Aggressive Quotes

4.7.1 Aggressive quotes
If an aggressive quote is entered by the MM that matches with orders in the order book, the MMP is checked for each individual quote item. See example 1.

4.7.2 Passive quotes
If an aggressive single order is entered that matches with passive quotes from the MM in the order book, the MMP shall be checked when the aggressive order have been fully matched. See example 2.
4.8 In-house trading
Quotes trading against quotes within the same Participant will not affect the MMP calculation.
Single orders trading against quotes within the same Participant will affect the MMP calculation.

4.9 Combinations
MM Quotes in Combination series is excluded in the MMP functionality.
MM are still allowed to use the quote transactions to enter prices in a combination series, trades resulting from these quotes are however excluded in the MMP calculations, and the combination quotes shall not be deleted when the MMP protection is triggered.

4.9.1 Aggressive quote matched with a combination
If an aggressive quote by the protected MM is matched with a bait generated from a combination the MMP will first (1) be checked for each individual quote item, and then (2) also consider the other legs of the combination which shall be traded before the MMP is triggered, even if a threshold is reached after the first leg is traded. See example 3.

4.9.2 Passive quote matched with a combination
If a passive quote by the protected MM is matched with a bait generated from a combination the MMP will first (1) be checked for each individual quote item, and then (2) also consider the other legs of the combination which shall be traded before the MMP is triggered, even if a threshold is reached after the first leg is traded.

4.10 Stop Orders
MMP has priority against not triggered Stop orders, thus if a trade triggers MMP and the new last price also triggers a stop order which can trade against another MM quote, the stop order shall not be triggered before the quotes have been deleted.

4.11 Auctions
The MMP will only be enabled during sessions with continuous matching.
During session states without continuous matching, for example an auction, the MM shall still be able to set the MMP parameters, but the calculation will be disabled.
5 Examples

5.1 Example 1: Aggressive quotes (section 4.7.1)

If an aggressive quote is entered by the MM that matches with orders in the order book, the MMP shall be checked for each individual quote item.

Example 1:

Assume that the MM has defined the Quantity Protection to 9.

Assume that three individual orders and one quote are stored in the order book:

<table>
<thead>
<tr>
<th>Bid</th>
<th>Ask</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order No</td>
<td>Quantity</td>
</tr>
<tr>
<td>1. order</td>
<td>10</td>
</tr>
<tr>
<td>2. order</td>
<td>10</td>
</tr>
<tr>
<td>3. order</td>
<td>10</td>
</tr>
<tr>
<td>4. order</td>
<td>7</td>
</tr>
<tr>
<td>5. quote MM</td>
<td>5</td>
</tr>
</tbody>
</table>

Assume that the market maker MM enter one quote sell 30@99.0. This quote is fully matched against all orders and quotes in the order book before the Quantity Protection is checked. The calculated Quantity Protection value is then 30, which exceeds the Quantity Protection of 9. The market maker protection is triggered. Any quotes belonging to the market maker MM in the affected order books are removed (thus removing the remaining of quote number 5 in the order book). The order book after the order has been matched therefore looks like:

<table>
<thead>
<tr>
<th>Bid</th>
<th>Ask</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order No</td>
<td>Quantity</td>
</tr>
<tr>
<td>1.</td>
<td>7</td>
</tr>
</tbody>
</table>

End Example 1.
5.2 Example 2: Passive quotes (section 4.7.2)

If an aggressive single order is entered that matches with passive quotes from the Market Maker in the order book, the market maker protection shall be checked when the aggressive order have been fully matched.

Example 2:

Assume that the market maker MM has defined the Quantity Protection to 9.

Assume that two individual quotes and two orders are stored in the order book:

<table>
<thead>
<tr>
<th>Bid</th>
<th>Ask</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order No</td>
<td>Quant</td>
</tr>
<tr>
<td>1. quote MM</td>
<td>10</td>
</tr>
<tr>
<td>2. order</td>
<td>10</td>
</tr>
<tr>
<td>3. order</td>
<td>5</td>
</tr>
<tr>
<td>4. quote MM</td>
<td>10</td>
</tr>
<tr>
<td>5. order</td>
<td>10</td>
</tr>
</tbody>
</table>

Assume that a trader enters one order sell 30@99.0.
This order is matched against all orders and quotes in the order book, leaving 5 in the quote number 4. Then the Quantity Protection is checked. The calculated Quantity Protection value is then 15 (10 from quote number 1. + 5 from quote number 4.), which exceeds the Quantity Protection of 9. Note that the calculated Quantity Protection value does not contain any quantity contribution from order number 2 or order number 3.

The market maker protection is triggered.

Any quotes belonging to the market maker MM in the affected order books are removed (thus removing the remaining of quote number 4 in the order book).

The order book after the order has been matched therefore looks like:

<table>
<thead>
<tr>
<th>Bid</th>
<th>Ask</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Order No</td>
<td>Quantity</td>
</tr>
<tr>
<td>5.</td>
<td>10</td>
</tr>
</tbody>
</table>

End Example 2.
5.3 Example 3 and 4: Combinations (section 4.9)

If an aggressive quote by the protected Market Maker is matched with a bait generated from a combination the market maker protection shall first (1) be checked for each individual quote item, and then (2) also consider the other legs of the combination which shall be traded before the market maker protection is triggered, even if a threshold is reached after the first leg is traded.

Example 3: Aggressive quote matched with combination.

Combination AB: buy A and sell B (A and B has the same underlying)

Step 1:

Market maker A (MMA) has a one-sided quote in series A. (10@10)

The Quantity Protection parameter is set to 9 for MMA.

Participant B (PB) enters an order in series A. (5@10)

Participant A (PA) wants to buy the combination AB at the price 2.

When PA enters the combination order, a “bait-order” is generated in the series B order book.

<table>
<thead>
<tr>
<th>Combo AB</th>
</tr>
</thead>
<tbody>
<tr>
<td>(PA) 10@2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Series A</th>
<th>Series B</th>
</tr>
</thead>
<tbody>
<tr>
<td>10@10 (MMA)</td>
<td>10@8 (bait)</td>
</tr>
<tr>
<td>5@10 (PB)</td>
<td></td>
</tr>
</tbody>
</table>
Step 2:

MMA enters a quote in series B: buy 10@8.

Result:

The whole orders will be traded before the market maker protection is triggered, and the remaining quotes (in the underlying) are deleted.

The calculated quantity protection will be 20.

<table>
<thead>
<tr>
<th>Combo AB</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Series A</th>
<th>Series B</th>
</tr>
</thead>
<tbody>
<tr>
<td>5@10 (PB)</td>
<td></td>
</tr>
</tbody>
</table>
Example 4: Passive quote matched with combination.

Step 1 is the same as in example 3.

Step 2:

Participant B (PB) enters an order in series B: 10@8.

The whole orders will be traded before the market maker protection is triggered, and the remaining quotes (in the underlying) are deleted.