Cboe Europe
Risk Management Specification

Version 1.17

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Contents

1 Introduction

1.1 Overview

Cboe Risk Management tool provides Users (Participants or a third party authorised by the Participant, such as a General Clearing Member) with the ability to set various constraints on orders for pre-trade protection and the ability to receive a DROP COPY of the order and trade activity of users of their trading identifiers, whether they be Sponsored Participants, Service Bureaus, the Cboe Trade Reporting GUI or their own ports.

The users' orders and trade reports are validated in the order handler prior to entering the matching engine. Based on parameters set by the User, the order or trade report is immediately passed on to the matching engine or rejected back.

Cboe provides the following controls to Users:

- Block new orders and cancel all existing orders

- Block trade reports and cancel all pending trade reports

- Max notional per order per market

- Max number of shares per order

- Max number of orders per second per port

- Max number of orders per symbol per second per port

- Duplicative order protection

- Max notional per trade report per market

- Primary market restriction

- Restricted stock list

- Max daily notional (executed + exposure) per port

- Max daily number of trade reports per port

- Order price collar

- DROP port monitoring

- Trade report percentage of ADT warning threshold

The Cboe risk controls are applied at the 'Bank Code' level. The Bank Code is the trading identifier applied to a firm or a sub-group within a firm. It is possible to configure different ports to use different bank codes if your firm has more than one available. However, please note that only a single bank code is permitted in a Sponsored Access relationship. Should you have multiple bank codes, you are able to set different controls on the various bank codes used in the relationships.

2   Controls

2.1   Cut-off

This section sets out the types of cut-off controls that can be performed on Sponsored Participants and other users of a Participant's trading identifier. These two options can be used independently or in conjunction with each other. For example, a Participant could block users/Sponsored Participants from entering new orders without pulling existing orders from the market, or vice versa.

Block new orders

Participants have the ability to prevent order flow from users/Sponsored Participants in real-time.

Block trade reports

Participants have the ability to prevent trade report flow from users/Sponsored Participants in real-time.

Cancel all open orders

Participants have the ability to cancel users'/Sponsored Participants' orders in real-time.

Cancel all pending trade reports

Participants have the ability to cancel users'/Sponsored Participants' pending trade reports in real-time.

2.2   Size Limits

Maximum number of shares per order

When the specified number is exceeded the order is rejected.

Port order rate threshold

This controls the maximum number of orders per second that a user/Sponsored Participant is allowed to submit per order handler. New orders exceeding the threshold will be rejected, cancels will be queued up and processed while amends will be queued up and processed as cancels.

Symbol port order rate threshold

This controls the maximum number of orders per second that a user/Sponsored Participant is allowed to submit in a single symbol per order handler.

Order price collar percentage

This controls the maximum percentage away from the Cboe reference price (see Cboe Participant Manual) that an execution is allowed to occur for a user/Sponsored Participant.

Maximum number of shares per trade report

When the specified number is exceeded the trade report is rejected.

Trade Report Percentage of ADT Warning Threshold

Cboe will monitor trade reports and report back to the user/Sponsored Participant when trade reports exceed a certain size threshold with respect to the ESMA defined Average Daily Turnover (ADT). This control allows you to relax the threshold at which the surveillance warnings will be reported back to the user/Sponsored Participant.

2.3   Duplicate Order Protection

Duplicative Order Protection provides Users with the ability to prevent duplicative orders where orders clearing the same trading identifier that have the same Side, Price, Quantity and Symbol that have been entered during a configurable amount of time. Users set the Time Threshold (in seconds), Order Count Threshold and the Action When Encountered (Reject Orders or Disable Port). If the Order Count Threshold of duplicative orders is reached or exceeded within the Time Threshold, the Action When Encountered will be performed. If Disable Port is selected, ALL new orders received on the port for the trading identifier will

be rejected until an emailed request is submitted to the Trade Desk to reset the risk control on the port. Cancels will continue to be processed for orders accepted prior to tripping the Duplicative Order Protection check and Trade Reporting capabilities will be unaffected.

Example: If a User sets the number of orders to ten (10) and the number of seconds to three (3), the system will take the defined action (reject orders or disable the port) when 10 or more duplicative orders (i.e. 11 or more orders in total) have been received during a 3-second window.

Duplicative Order Protection checks are only performed at the individual session level.

2.4 Market Limits

Permitted Market

This controls which symbols users/Sponsored Participants can trade based on their primary listing venue.

Maximum notional value per order per market

When the specific notional value is exceeded, the order is rejected. This control is set per listing market and can be specified in any Cboe supported currency. On BXE, CXE and DXE there is a default limit of ten million euros applied.

Maximum notional value per trade report per market

When the specific notional value is exceeded, the trade report is rejected. This control is set per listing market and can be specified in any Cboe supported currency. On BXE, CXE and DXE there is a default limit of fifty million euros applied.

2.5 Daily Limits

Maximum Daily Number of Trade Reports

This optional control imposes a limit on the number of new trade reports that may come through on a single day.

Enable Notional Daily Limits

This controls whether a user/Sponsored Participant should be restricted to only taking a certain level of risk (defined as executed notional value plus unexecuted notional value currently in the market) per day per port. If enabled during an active trading session, limits will not be effective until the next trading session. If disabled, all current settings are removed.

It is also possible to configure and enable controls on a gross or net (absolute value of buys and sells) basis independently.

With trade reports, there is a slight peculiarity worth being aware of. If the trade report is two sided and both sides of the report are for the same Bank Code, then the gross notional value of the trade report is actually twice its nominal value (once for the buy leg and once for the sell leg) and there is no net impact (as the buy cancels the sell).

Additionally, while unsolicited cancel/amends sent to the originating port will contribute to the limits of the original report, solicited cancel/amends will contribute to the limits of the port (or Trade Reporting GUI) that originated the cancellation/amendment request.

Notional Value Cutoff

When the specified notional value is exceeded the order or trade report is rejected. This control can be specified in any currency.

Market Orders Notional Value Cutoff

If using the Notional Value Cutoff, then by default, market orders (or midpoint trade reports) are not permitted. Optionally, a User may set a notional value (in the same currency as the overall limit), which must be between zero and 100% of the Notional Value Cutoff, up to which market orders will be accepted. When picking a notional value for this setting, please be aware that the impact of the order on overall

exposure is not considered, as the order does not have a price at time of order entry.

Examples

Suppose $5M of limit buy orders have been executed; $2M of limit buy orders are in the market; $3M of limit sell orders have been executed; and $1M of limit sell orders are in the market. In this scenario:

```
GROSS risk = limit buy executed + limit buy exposed +
             limit sell executed + limit sell exposed
           = $5M + $2M + $3M + $1M
           = $11M
```

```
NET risk = ABS((limit buy executed + limit buy exposed) -
               (limit sell executed + limit sell exposed))
         = ABS(($5M + $2M) - ($3M + $1M))
         = $3M
```

Suppose market orders are allowed; $5M of limit buy orders have been executed; $2M of limit buy orders are in the market; $1M of market buy orders have been executed; several market buy orders are in the market; $3M of limit sell orders have been executed; $1M of limit sell orders are in the market; $2M of market sell orders have been executed; and a number of market sell orders are in the market. In this scenario:

```
GROSS risk = limit buy executed + limit buy exposed + market buy executed +
             limit sell executed + limit sell exposed + market sell executed
           = $5M + $2M + $1M + $3M + $1M + $2M
           = $14M
```

```
NET risk = ABS((limit buy executed + limit buy exposed + market buy executed) -
               (limit sell executed + limit sell exposed + market sell executed))
         = ABS(($5M + $2M + $1M) - ($3M + $1M + $2M))
         = $2M
```

Warnings

If desired, a User can specify a percentage point at which you can be notified by email if the user/Sponsored Participant exceeds that percentage of the Notional Value Cutoff, with a separate setting possible for exceeding a specified percentage of the Market Order Notional Value Cutoff. You can specify multiple email addresses to notify by inserting a comma between each address.

Warnings can be configured for delivery on any combination of the user/Sponsored Participant passing the Gross Notional Value Limit, the Gross Market Order Limit, the Net Notional Value Limit and the Net Market Order Limit. Only one email per day will be sent per port per threshold exceeded.

Please note that the email warning process is provided on a best endeavours basis and Cboe makes no guarantee as to email delivery.

2.6 Restricted List

Users have the ability to restrict a user/Sponsored Participant from entering orders or trade reports in a security that is restricted due to Compliance reasons or any other restrictions placed on the User by the relevant Regulator. Updates to the restricted list for a specific relationship are limited to one per minute.

2.7 DROP Port Monitoring

Participants have the ability to configure actions that may apply to ports using their trading identifiers (except for Service Bureau ports) in the event of them disconnecting from their DROP port.

Reject Orders on DROP Port Disconnect

This features restricts order and trade report entry capability based on the connection status of specified DROP ports. The Cboe Trade Desk should be provided with a list of DROP ports that the Participant would like to be monitored for their connection status. Once the association has been established, at least

one DROP port in the master data centre must be connected in order for orders or trade reports to be accepted by Cboe. Otherwise, any new orders or trade reports entered will be rejected until at least one of the DROP ports has reconnected.

Cancel Open Orders on DROP Port Disconnect

Similar to the rejection option above, Participants may request Cboe to cancel all open orders on an order entry port, should all associated DROP ports disconnect.

Reject/Cancel Orders on DROP Port Timeout

Participants may tune the amount of time that must pass between the last associated DROP port disconnection and the time when the reject/cancel actions take effect on the order entry session(s). This setting has a default of thirty (30) seconds and the minimum allowed is zero (0) seconds. Once any associated DROP port reconnects, the timer is reset and reject actions will cease.

3 Technical Details

3.1 Risk Minimisation

Ports operate with risk minimisation controls along up to three different control paths:

- Port Owner: The port owner is able to set global defaults for risk settings or can tune on a port by port basis through the Cboe Trade Desk.

- Bank Code Owner: The firm legally responsible for the trading activity is able to store settings for all possible places where their bank code is used, whether that be on Direct ports, Service Bureau ports or Sponsored Access ports.

- GCM: The firm responsible for clearing is able to store settings for all possible users of their clearing services (*).

Should only one control path have a setting in place, that setting will be honoured directly. Should multiple control paths have settings in place, the setting that is regarded as the most risk averse will be applied.

* Not yet implemented

3.2 FX Rates

Effective the 1st of January, 2016, exchange rates used for normalisation on a given date will be the reference price published by the European Central Bank at the close of the previous day, where available.

3.3 Settlement Prices

Some trade reporting services allow the use and specification of settlement prices, as compared to prices reported for transparency purposes. Risk controls that utilise a concept of notional value apply against the settlement price and not the reported price.

3.4 Limitations

This section outlines any specific limitations known to exist for these controls, which should be considered when choosing your limits.

- ETR Matching and Tolerances: When using the ETR Matching service, it is possible to set a tolerance for overall consideration of the trade. For the non-reporting party, it is possible that the final trade consideration may differ from the reported consideration by a maximum of the specified tolerance. At the time of writing (for v1.6 of the Specification), the maximum allowed tolerance is 5,000 traded currency units. Notional value based risk controls are only considered against the reported consideration.

4 Support

If you have any queries or would like to begin using the Risk Management tool, please contact your account manager directly. Other useful numbers are set out below.

Sales Team

SalesEurope@cboe.com

Phone: +44.207.012.8906

Participant Services

ParticipantServicesEurope@cboe.com

Phone: +44.207.012.8902

Trade Desk

TradeDeskEurope@cboe.com

Phone: +44.207.012.8901

5 Revision History

Protocol Version	Date	Description
1.16	22/08/2022	Updated default notional limit for trade reports.
1.15	21/10/2016	Updated information on DROP port timeout and GCM implementation status.
1.14	17/06/2016	Updated default notional limit for trade reports.
1.13	19/02/2016	Updated for new branding.
1.12	09/12/2015	Add detail about FX rates used.
1.11	13/06/2015	Add detail about settlement prices.
1.10	12/06/2015	Add detail about update frequency restriction for updating the restricted list.
1.9	21/05/2015	Add detail about support for authorised third parties to utilise the service.
1.8	24/03/2015	Add details about duplicative order protection.
1.7	13/03/2015	Add details about cancellation of pending trade reports and information on default notional value limits.
1.6	05/03/2015	Add limitations section to detail effect of tolerance utilisation within ETR Matching on risk controls.
1.5	12/02/2015	Add support for configurable warning threshold for large trades.
1.4	18/10/2013	Add support for maximum daily number of trade reports.
1.3	02/10/2013	Additional clarification around solicted cancellation/amendment requests and the Trade Reporting GUI.
1.2	19/02/2013	Additional Exchange Trade Report related controls
1.1	27/11/2012	Risk Minimisation explained. Language tweaks. Email address changes.
1.0	18/09/2012	Initial version

6 Disclaimers

6.1 No warranties

This Risk Management tool is provided 'AS IS', without warranties, express or implied (except as expressly stated herein) including, but not limited to, any implied conditions or warranties of merchantability, accuracy, timeliness, completeness, performance or fitness for any particular use or purpose of this Risk Management tool; any implied warranty arising from trade usage, course of dealing or course of performance, and of any other warranty or obligation with respect to the Cboe IT systems or other materials made available to the user of the Risk Management tool and all such other warranties are hereby disclaimed. Subject to the Limitation of liability clause below, no responsibility is accepted by or on behalf of Cboe for any errors, omissions or inaccuracies in the Risk Management tool. When notified of an inaccuracy or issue, Cboe will use reasonable endeavours to rectify those inaccuracies or issues within Cboe's control as soon as reasonably practical. Cboe accepts no liability for the results of any acts or omissions taken by you on the basis of the Risk Management tool.

This Risk Management tool is not intended to replace your risk management tools. It is your responsibility to ensure that you maintain your own risk management tools that are adequate for the business you conduct.

6.2 Limitation of liability

The provisions of the Participant Agreement or the Trade Reporting Services Agreement, as applicable, in place with Cboe shall apply with respect to Cboe's limitation of liability. You acknowledge and agree that the limitation of liability set out therein is reasonable.

It is your responsibility to ensure that you maintain adequate insurance to cover any damages, losses, costs or expenses you might suffer in the event of any failure or unavailability of this Risk Management tool.

6.3 Modification and discontinuation

Cboe reserves the right at any time and from time to time to modify, edit, delete, suspend or discontinue, temporarily or permanently this Risk Management tool (or any portion thereof). You agree that we shall not be liable to you or to any third party for any such modification, editing, deletion, suspension or discontinuance.

6.4 Governing Law

The provisions under this Risk Management specification document having legal nature, shall be interpreted in accordance with the laws of England and Wales. In case of disputes, the parties agree to submit to the exclusive jurisdiction of the Courts of England.