Default Strategy

Equity

Nasdaq Clearing

Revision History

Version	Comment	Date
1.0	Internal version	2011
1.1	Updated version for external and internal distribution	2013
1.2	Re-arranged document structure, added Close-Out Volume Providers and Trading and Clearing Broker Client Agreement to Execution section	2015-12-23
1.3	Annual review, only minor revisions	2016-09-05
1.4	Annual review, no changes	2017-09-20
1.5	3 LoD review, Head of Risk Operations added to DC	2018-03-16 (as of 2018-04-01)

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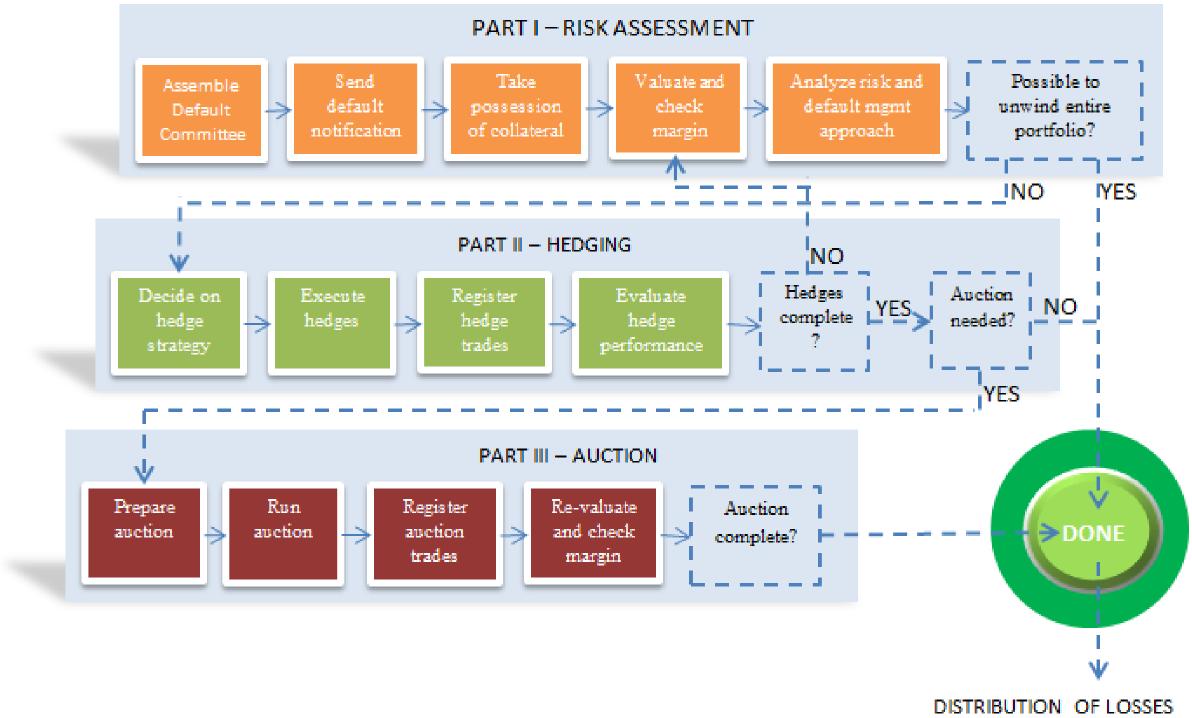
Introduction

The Default Strategy for Equity Derivatives contains detailed instructions issued by Nasdaq Clearing's Clearing Risk Committee ("CRC") to be used in case of a default of a Member or Client with cleared positions in Equity Derivatives.

The Default Policy states that the Default Strategy for respective asset class shall contain instructions for how to **risk assess the portfolio** and a description of **hedging methods**. Moreover close out arrangements and the available **means of execution** shall be described and the strategy shall contain an updated **market maker contact list**.

Overview of default management process

The Default Management Process has three distinct parts: Risk Assessment, Hedging and, when needed, Auctioning. All of these three phases contain a number of specific steps, as outlined in the picture below.



Directly after a default, the first phase of Risk Assessment strives toward giving the Clearinghouse a clarified picture of the market risk it is now exposed to. The themes of this phase will initially be communication and damage control; default notifications will be sent to external counterparties, the Clearinghouse will take control of the collateral pledged by the defaulted counterparty and the external users will be barred from the defaulter's accounts.

Subsequently the Clearinghouse will refresh its market data if needed and re-value the portfolio. A risk assessment will be made of the portfolio, the result of which will point to possible approaches to default management. Before continuing to the Hedging phase, the Default Committee will consider if it would be possible to unwind the entire portfolio.

The first part of the Hedging phase aims to devise a hedging strategy. If suitable, the Clearinghouse may seek the input from external counterparties. The hedges will then be executed and registered in the clearing system. All through this phase the portfolio's risk and P/L will be tracked in order to determine when the portfolio can be deemed to be completely closed out or fully hedged.

In the unlikely event that the Hedging phase does not equate to the closing down of the portfolio, the last phase of the Default Management Process will be the Auctioning phase. Nasdaq Clearing mostly provides clearing in standardized Equity derivatives instruments, of which most are traded in the orderbook and highly liquid, so all positions in the portfolio have most likely been closed down in the Hedging phase and no auction is necessary.

PART 1 - Risk assessment of the portfolio

Nasdaq Clearing, in its role as a clearinghouse, performs regular risk calculations and valuations of all its positions. In a default situation the clearing system will be used for valuation of trades, and for monitoring how much of the pledged collateral has been used by the costs and P/L of the portfolio. The first steps that will be taken after a confirmed default is the communication of the event to external stakeholders and a number of pre-emptive measures.

Assemble the Default Committee

The very first step in any Default Management Process is the assembly of the Default Committee.

The Default Committee is the sole decision making entity in the Clearinghouse's default management process. It will delegate and mandate its tasks to individuals and departments within the organization, but ultimately any step taken in the process as well as the final outcome is the responsibility of the Default Committee. In this document, the points in time where Committee decisions are made, delegated or not, will be highlighted throughout the text.

The Default Committee includes the following ordinary members:

- The President of Nasdaq Clearing
- Chief Risk Officer
- Head of Risk Operations
- Chief Technology Officer
- Representative from Legal
- Representative from Treasury
- Representative from Group Risk Management (observer – no quorum)
- Representative from Communications (observer – no quorum)
- Any other person(s) deemed appropriate by the DC during a default situation.

Other Clearinghouse personnel can be invited as seen fit.

The President of Nasdaq Clearing acts as Chairman of the Default Committee, and together with the CRO makes the decisions in the Committee. If the Chairman and the CRO disagree on which action to take, the Chairman should address the issue to the Board of Directors of Nasdaq Clearing.

Send Default Notification

One of the main responsibilities of the Default Committee throughout the default process is communication. Specifically, default notifications will promptly be sent to the following recipients:

- The market, through the distribution of an "Exchange Notice"
- The defaulted counterparty
- The Regulators and the Central Bank
- The participants in any relevant Default Management Commitments or Market Maker Agreements.

The Default Committee will clarify who is responsible for the communication.

Take Possession of Collateral

Upon the notification of the Default Committee, the Clearinghouse will take possession of the collateral provided by the defaulted counterparty. Treasury non-US is responsible for using the collateral for meeting the liquidity needs of the Clearinghouse in relation to the default.

Collect and Update Market Prices

The clearing system is continuously updated with new market data for orderbook traded products during the day. In a default situation it may be of interest to update prices for non orderbook traded products with a higher frequency in order to continuously monitor the portfolio's P/L and risk. Typically, if a considerable amount of time has passed since the last scheduled update and the market is open, the Clearinghouse will update the market data before initializing the quantitative risk assessment. During the default process, the Clearinghouse will strive to update the market data each time it has executed and registered a hedge strategy.

Valuate and Check Margin

Several "margin runs" – batches of logic within the clearing system which result in updated margin requirements – are scheduled hourly throughout the course of a normal business day. The Clearing house also has the possibility to manually trigger additional margin runs in case it is deemed necessary. The clearing system's ordinary calculations of market values and margins will be used to monitor the progress of the default process.

Assess Risks and Default Management Approach

The risk assessment is focused on the four following aspects of the defaulted portfolio:

1. Overall magnitude, measured by total Market Value and Initial Margin
2. Large open directional risks, measured by change in portfolio Market Value by 1 percent change in underlying price
3. Complexity, estimated from number of factors such as number of contract series/ underlying instruments/currencies, market concentration, option specific risks etc.
4. Liquidity risk, measured by the estimated near-term liquidity outflow for Nasdaq Clearing under a range of potential adverse market scenarios

With the risk assessment, Risk Management proposes a Default Management approach, including a close-out mandate, to the Default Committee. The close-out mandate can be formulated as a maximum close-out cost for the entire portfolio or as a per contract series spread. The Default Committee will seek the expert advice of the in-house Equity derivatives Exchange Broker desk, EB, before approving the Default Management approach and close-out mandate.

Attempt to Unwind the Entire Portfolio

At this stage, having formed a clear view of the risk in the defaulted portfolio, the Clearinghouse will always consider the possibility of a sell-off of the entire portfolio.

Potential counterparties in a complete unwinding of the portfolio might for example be the bankruptcy administrator, the house-bank of a defaulted client, fund administrators with certain interests, etc.

If a bid for the entire portfolio would be presented, the Clearinghouse must weigh the advantage of guaranteed contained losses against the possibility that it could reach a better outcome through the normal Hedging process.

PART 2 – Hedging

The hedging of the defaulted portfolio is critical for the Clearinghouse's chances to close down the portfolio within the initial margin that was posted by the defaulted counterparty.

Decide on Hedge Strategy

The clear goal of the Hedging process for Equity derivatives is to achieve a *contract-by-contract close-out*, i.e. to completely eliminate the open portfolio risk. In cases where this approach is deemed possible in the Risk Assessment (in part I of the Default Process), i.e. in the vast majority of cases for the Equity market, the main remaining decision is the priority of close-out trades. Due to the nature of the Equity derivatives market, the first priority will always be by open delta risk. If needed, depending on size and complexity of the defaulted portfolio, other risk measures such as vega will be considered.

If a contract-by-contract close-out is not deemed possible (e.g. for part of a defaulted portfolio), the strategy is to *minimize the risk measures*, primarily delta (and for options possibly also vega), so that one or several fairly risk-neutral bundles can be passed on to the Auction phase. In most cases will derivatives on the same underlying be available for hedging, but hedges in underlying instruments may also be needed.

The advice of the EB desk will be solicited when deciding on Hedge strategy, including advice close-out trade priorities and on when a portfolio is considered sufficiently hedged to be fit for auctioning (in cases where contract-by-contract close-out is not possible).

While not necessarily directly involved in the work of developing a hedge strategy, the Default Committee will need to approve the proposed strategy before it can be executed. As a basis for their decision, the Default Committee will need information about the approximate hedging cost.

Execute hedges

The EB desk has the primary responsibility for executing close-out or hedge trades. EB may trade directly in the orderbook or reach out to Market Makers or to Close-out Volume Providers. In cases where hedges with instruments not cleared by Nasdaq Clearing are required, EB may trade those instruments as client to a Trading and Clearing Broker.

Means of execution	Description
Orderbook	The Nasdaq Clearing Derivatives electronic orderbook
Market maker	An entity that has signed a Market Maker Agreement with Nasdaq Clearing
Close-out Volume Provider	An entity that has signed a Close-out Volume Provider Agreement with Nasdaq Clearing
Trading and Clearing Broker	A Trading and Clearing Broker with which Nasdaq Clearing has signed a Client Agreement

Register Hedge Trades

The executed hedges will be registered between Nasdaq Clearing and the corresponding bank, and mirroring trades will be registered between Nasdaq Clearing and the defaulted account.
In case hedge trades in instruments not cleared by Nasdaq Clearing have been performed, such trades are not registered in the Clearing system. Such trades will be kept in the records of the Trading and Clearing Broker until closed-out (as part of the Auction process) or expired.

Evaluate Hedge Performance

Risk Management will monitor the Hedging process closely. Issues may arise that require escalation to the Default Committee, such as market movements that significantly changes the risk profile of the portfolio (or the remainder of the portfolio) or failure to execute trades within the close-out mandate.

Part 3 – Auction

As mentioned above it is highly unlikely that a default in the Equity market would require an auction, due to the fact that the majority of the contracts are orderbook traded and highly liquid. Should however the need for an auction arise, Nasdaq Clearing would go through the following steps.

Prepare Auction

Once the DC decides that the portfolio has been sufficiently hedged, the planning for the auction can start. The following decisions will be taken:

- Timing
- Type of auction
- "Bucketing", i.e. if the positions should be sub-divided or auctioned as one portfolio

An exchange notice with all required details will be sent out to the market. Identified parties that are likely to be able to provide bids will also be directly contacted at the discretion of Nasdaq Clearing.

Run Auction

The auction will start with the Clearinghouse distributing files describing the defaulted portfolio to all participants in the auction. The Clearing house will communicate two specific points in time:

- A dead-line for the participants for providing bids in the auction.
- A dead-line before which the Clearinghouse must decide on which bid(s) to sell the portfolio (sub-portfolio).

The bids shall be provided by email and/or by telephone.

The Default Committee will convene at the time of the expiration of the dead-line for providing bids, and promptly decide on which bid(s) to sell the portfolio. Specifically, the DC will consider whether any combinations of bids for sub-portfolios would result in a more beneficial bid for the total portfolio than what have been received. The winning bidder(s) will be informed by telephone and the trade(s) confirmed by email.

Auction registration

The Clearing Department will arrange the registration of all auction trades in the Clearing System. The sold portfolio will be registered between Nasdaq Clearing and the corresponding bank, and mirroring trades will be registered between Nasdaq Clearing and the defaulted account. At the end of a successful auction the account of the defaulted counterparty will therefore be empty.

Re-valuate and check margin

As a last step, the market value and margin requirement on the defaulted counterparty's account will be recalculated. If the auction was unsuccessful, there will remain positions on the account, and the Default Committee will decide on further steps. A new auction can be initiated after possibly executing additional hedges.

In the case that there are no longer any positions on the defaulted account, the Auction phase is now completed.

Distribution of Losses

In the unlikely event that the default process results in losses on the part of the Clearinghouse which are greater than the defaulter's pledged collateral, the overshooting losses will be covered by the waterfall. The proceedings for distributing such losses are described in the documentation covering the Default Fund.

Appendix 1 – Market Maker Contact List

Not for public disclosure