2019 – Enhancements to Nasdaq Clearing Risk Management Framework

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Changes to the Risk Management Framework

During 2019 Nasdaq Clearing will implement changes to the risk management framework to ensure a more robust and resilient market infrastructure.

As a result, a program has been established to ensure progress across identified key areas such as;

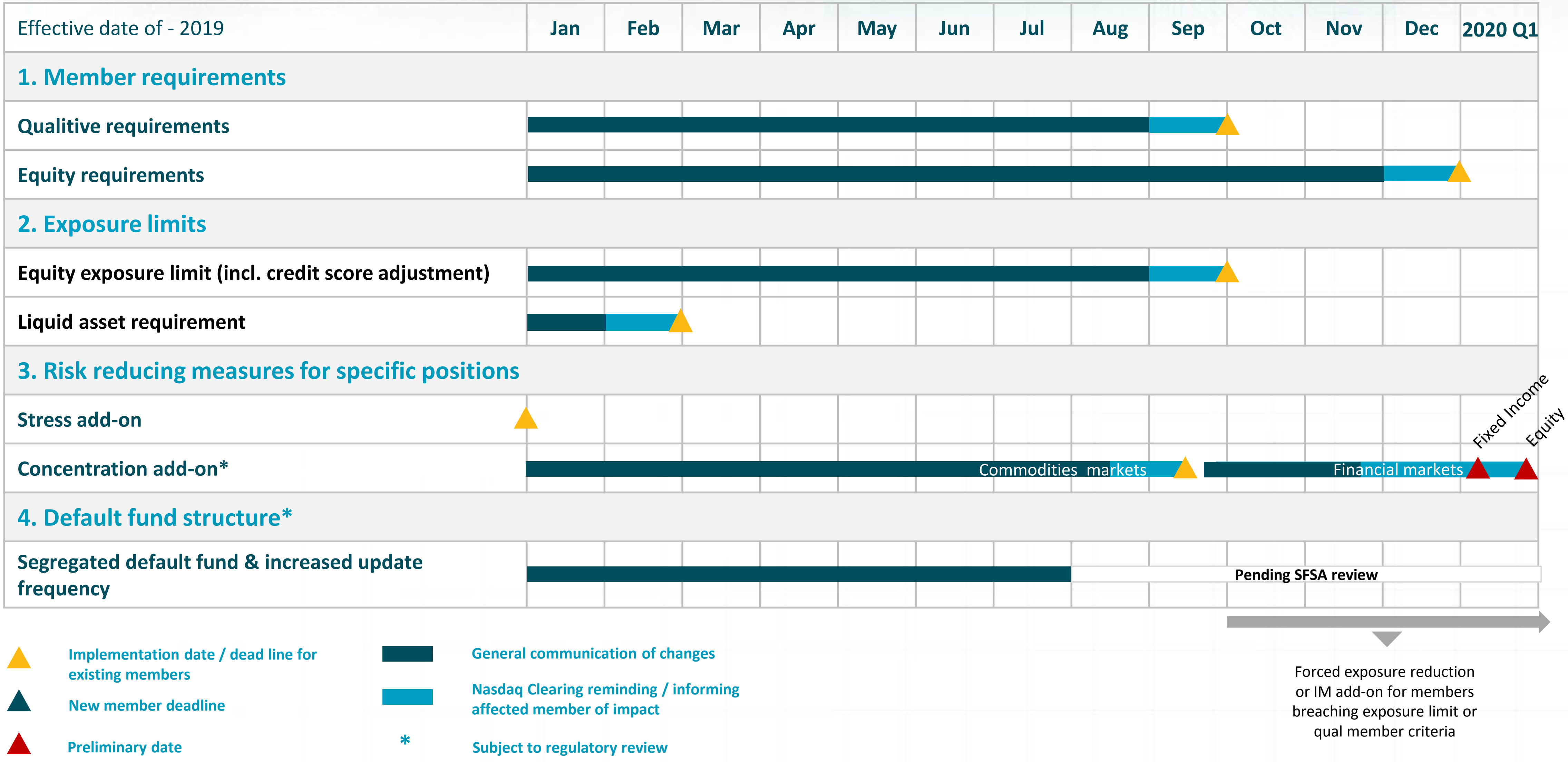
- Member requirements
- Exposure limits
- Risk reducing measures for specific positions
- Default fund structure

Guiding principles for the program are;

- Providing a holistic approach to risk management
- Coherent and proportional risk measures spanning minimum member requirements
- Raise margins for specific portfolios identified to pose additional risk to the CCP and its members
- Enhanced processes for monitoring and controls

Nasdaq Clearing´s members have played a key role throughout the development of the deliverables through participation in Risk Councils/roundtables, bilateral discussions and the Member Risk Committee. Any members that will be impacted of these changes will be informed in due course.

Implementation Plan



1. Qualitative Membership Requirements

Description of change	• The qualitative criteria updates cover four dimensions
	1. General
	2. Organisational / operational aspects
	3. Risk management
	4. Regulatory & legal
	• The criteria updates aim to clarify and increase the minimum requirements with regards to non-financial aspects, specifically to ensure that members
	  • Are sufficiently equipped for clearing participation
	  • Have suitable organizational structure, e.g. segregation of responsibilities
	  • Have processes and controls in place to manage and control risk
	  • Have sufficiently robust operational set-up, including IT systems

Rationale	• The purpose of updating the qualitative member criteria is to limit and control the risks for the clearing house and the wider member community
Risks covered	• Nasdaq Clearing will with enhanced model be able to in a more detailed way act upon any criteria breaches or increased risk profiles
Members impacted	• All members

Please see link for detailed information https://new.nasdaq.com/docs/Operational-requirements-guidelines.pdf

1. Equity Requirements

Description of change	• Nasdaq Clearing increase capital requirement to €5 mm across non-GCMs
	  • GCM — No change
	  • **DCM/CM** — **€ 5** (all markets excl IRS) €50 (for IRS)
	  • **DCC** — **€ 5** (all markets excl IRS) €50 (for IRS)
	  • Investment fund — No change
	  • Foundation — No change
	  • Governmental entities and municipalities are exempted from the financial requirements – No change
	• Direct Access model maintained for DCCs, aligning with peers which is looking to build this out

Rationale	• Introduce an enhanced robust framework to limit and control member riskiness
Risks covered	• CM, DCM and DCC capital requirements increased to peer range, but recognising the smaller Nordic market
Members impacted	• Increased capital requirement to €5 mm across non-GCMs

Please see link for detailed information https://new.nasdaq.com/docs/Capital-Requirement-Guideline.pdf

1. Liquid Assets Requirement

Description of change	• Individual exposure limit for each member, defined as minimum of Liquid assets.
	Formula; Initial Margin < 50% x Liquid Assets
	• The liquid capacity should be sufficient to serve positions over an extended stress period
	• Daily assessment of the adequacy of liquid assets for all members against current exposure
	• Based on daily updated exposure (IM) values, and based on at least quarterly updated liquid assets information/ financial reports
	• To further align with leading practice and banks, monthly liquid assets information will be requested using a materiality and risk based approach, for:
	    • Members who have in the past year breached early warning or hard thresholds
	    • Members with low credit score according to Nasdaq Clearing's internal model
	    • Top 5 members by materiality (measured by IM), excluding government owned entities and banks

Rationale	• The purpose of additional member requirements is to enhance the broader credit risk framework
Risks covered	• The objective of the liquid asset assessment in particular is to ensure that members at all times have sufficient liquid financial capacity
Members impacted	• All members • Extra attention paid to members with high materiality and risk

Please see link for detailed information https://business.nasdaq.com/media/Liquid-Asset-Assessment-Framework-Guidlines-2019-04-23_tcm5044-68425.pdf

2. Equity Exposure Limit (incl. credit score adjustment)

Description of change	• Nasdaq Clearing will assign members exposure limits based on their:
	  • Equity
	  • Credit score
	• To introduce equity based exposure limit by credit score ranging from 10% of equity for lowest scores to 40% of total equity to members with highest creditworthiness

Rationale	• To use a equity based exposure limits as it gives a more conservative level for the highest risk clients and allows for larger exposures for the more credit worthy clients
Risks covered	• The Current credit score models enhanced to include wider range of financial, behavioral and qualitative risk factors based on statistical analysis and introduce robust framework to limit and control member riskiness
Members impacted	• All members • Individual exposure limit for each member • Member specific details, credit score and actual exposure limit will be provided on request

Please see link for detailed information https://new.nasdaq.com/docs/Exposure-Limit-and-Liquid-Asset-Guidline.pdf

3. Stress Add-on

Description of change	• Nasdaq Clearing has introduced an add-on for accounts with large stress losses in relation to IM • Threshold calibrated to impact members with significantly large tail risk compared to other members within a market, through assessment of CCaR* / IM ratio distribution across all accounts • Add-on will be applied as extraordinary margin • Add-on sized so that IM incl. add-on is at least 50% of worst-case stress-loss.
Rationale	• Reduce mutualisation of losses due to tail risks • Provide additional monitoring tool for the evolvement of Nasdaq Clearing members' risks
Risks covered	• Positions subject to large stress loss / tail-risk • Tail risk from correlation uncoupling (between product groups)
Members impacted	• All members • Members running correlation spread positions, regardless of size (subject to materiality threshold), or otherwise subject to margin spread credit • Members active in markets/products where stress loss is estimated to be significantly higher than loss in baseline margin scenario

*Clearing Capital at Risk, stress test model used by Nasdaq Clearing

Please see link for detailed information: https://business.nasdaq.com/media/Guidelines-on-Stress-Margin-Add-on_tcm5044-68373.pdf

3. Concentration Add-on

Description of change	Nasdaq clearing will enhance current concentration add-on to more granularly target concentrated positions in the commodities market (a similar measure will be rolled out for Financial markets in a future release)
	• To calculate a concentration add-on per product and maturity "bucket", depending on level of concentration
	    • Calculate share of total IM attributable to each product and maturity bucket
	    • Scale IM in each bucket based on level of concentration
	    • Calculate exposure weighted total IM multiplier
	    • Liquidity in other cleared market will be taken into account when estimating the overall concentration of a positon
	• An expert (typically external traders and/or clearing members) based liquidity haircut will override a pure ADTV-based scaling for very concentrated positions
	• The add-on will impact members with concentrated positions through margin increases of up to ~10-40%

Rationale	• Concentrated positions are more difficult to close-out and will be targeted more granularly with the new methodology
Risks covered	• More coverage for excess close-out costs in the event of closing out a concentrated portfolio
Members impacted	• Commodities members in phase one and Financial market in phase two • Members with large positions in relation to market capacity (measured in open interest and/or average daily volume) • Will impact all members with concentrated positions regardless of e.g. total IM size • Will impact members active in niche markets or isolated parts of the forward curve

Please see link for detailed information: https://business.nasdaq.com/media/Guidelines%20on%20Concentration%20Margin%20add-on%202019-06-14_tcm5044-70708.pdf

4. Segregated Default Fund

Description of change	• Nasdaq Clearing will segregate its waterfall structure by markets, Financials, Commodity and Seafood • This requires splitting the senior capital layer of Nasdaq Clearing as well as the mutualised default fund of its members across its markets • Nasdaq Clearing will permantly increase its junior capital for all clearing services (Fin, COM and SF) significantly above the regulatory minimum.
Rationale	• Simplify the default fund structure and segregate funds fully across markets • Increase transparency
Risks Covered	• Default spill-over risk between clearing services
Members impacted	• All members • Some capital dis-synergy for members due to removed mutualized default fund is expected for members on the Financial Market and Seafood Market (but none on the Commodity Market). The dis-synergy is small relative to Nasdaq Clearing's additional capital.

4. Default Fund Update Frequency

Description of change	• Nasdaq Clearing will increase Default fund update frequency from quarterly to monthly

Rationale	• Members have highlighted that the default fund contribution does not adequately capture "lead-time". Contribution has a long "lead time" for portfolio changes to impact default fund contribution
	• Contributions are dependent on update frequency.
	  • Apart from the stress testing methodology (which sizes the default fund), contributions are dependent on
	    – Look-back period for sizing the default fund contributions (no change)
	    – Update frequency of default fund
	    – Methodology to allocate the default fund contributions across members (no change)

Risks covered	• Suggested change will reduce total lead-time (from 6 to 4 months) of changes in members' riskiness
Members impacted	• All members