Implementation of New Risk Management Framework

May 2020

Design rationale

Retain and strengthen floor margins and coverage

- The current margin framework has stood the test of time. MPOR of 2 days has further strengthened its robustness.
- The minimum margin percentages as applicable today and MPOR 2 should be retained.
- Increase margin coverage with conservative margining requirement.

Achieve Portfolio margining

- In derivatives, portfolio margining can be achieved through SPAN.
- However there are large notional margins getting applied due to option minimum margin and ELM being applied notionally without regard to portfolio offsets.
- The minimum desired coverage can be achieved through SPAN, ensuring coverage of adequate price/volatility movements as well as restricting notional margins.
- Notional components of margins reduced significantly

Achieve conservative but stable margins

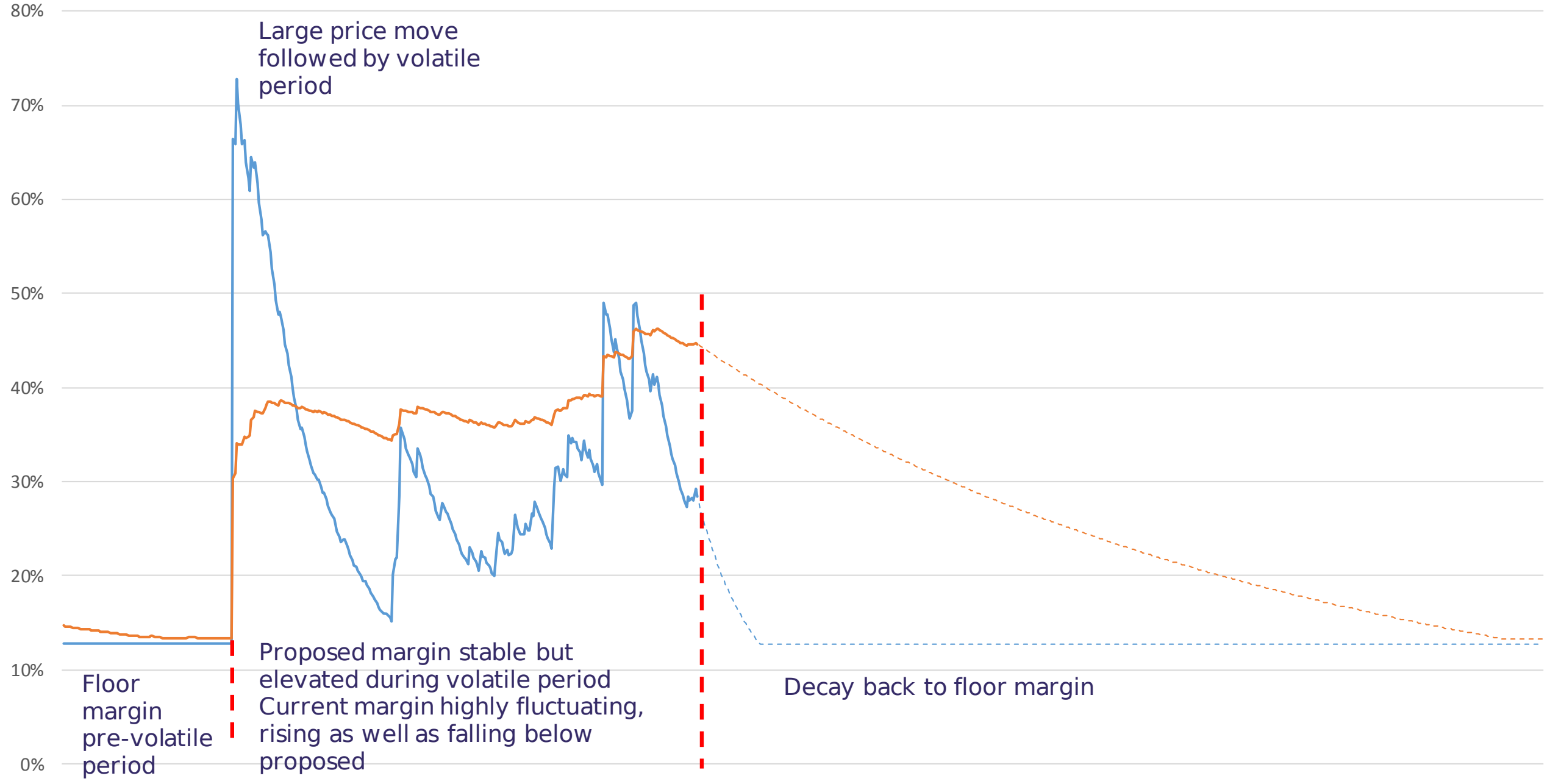
- The floor value of margins provides a base value below which the margin percentage cannot fall.
- Above the floor value, margin can be highly fluctuating during the high volatile period.
- It is desired to have a conservative but stable margin to avoid procyclical changes to the margin requirement to the extent possible.

Major changes and their implications

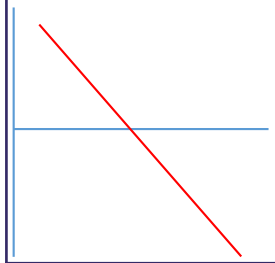
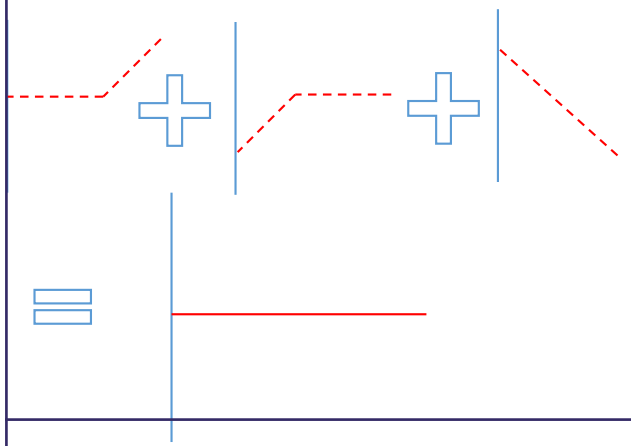
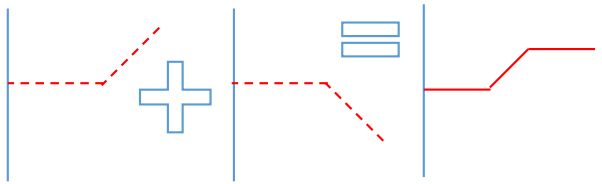
#	Particulars	Change	Implication
1	EWMA Volatility	λ parameter changed 0.995	• Volatility will have longer memory. • Margins will become more stable, will neither go
2	Volatility	Margins based on 6σ /3.5σ	• Margins become conservative • Risk-based component of margin enhanced
3	Extreme Loss Margin	Approximately halved	Reduce the notional component of margin
4	Short Option Minimum Charge	Discontinued	Reduce the notional component of margin
5	Margins for obligations	Net buy premium, settlement, replaced with COBG	• There was no margin earlier on end-of-day MTM gets introduced. • Single COBG means that offset between within same client permitted.

NCL has started downloading parallel VaR/SPAN files and margin reports for members to assess changes in the margin requirements. Refer to circulars dated May 15 for details.

Achieving Stable and Conservative Margin: Simulation



Portfolio margins (Old IM ~12.5, ELM =4.2) (New IM ~16.5, ELM =2)

Payoff	Portfolio Example	Current Margin	Portfolio Margin (as per recommendation)
	Portfolio 1: Naked short futures (E.g. Nifty future short) Unhedged portfolio with unlimited loss.	16.7% ~ Rs. 1,12,000 for 1 position (75 Nifty)	18.5% ~ Rs. 1,24,000 for 1 position (75 Nifty)
	Portfolio 2: Put call parity arbitrage (E.g. Nifty 9000 Call long, Nifty 9000 Put short, Nifty futures short) Zero profit/loss, perfectly hedged position	No portfolio risk Notional Margins: SOM: 5% on 1 short option ELM: 3% * √2 on future and short option ~ Rs. 90,500 for 1 position (75 Nifty)	No portfolio risk Notional Margins: ELM: 2% on future and short option ~ Rs. 27,000 for 1 position (75 Nifty)
	Portfolio 3: Call Spread (E.g. Nifty 11500 Call long Nifty 11600 Call short) Only profit (realization) on liquidation	No portfolio risk Notional Margins: SOM: 5% on 1 short option ELM: 3% * √2 on short option ~ Rs. 62,000 for 1 position (75 Nifty)	No portfolio risk Notional Margins: ELM: 2% on 1 short option ~ Rs. 13,500 for 1 position (75 Nifty)

<u>Note:</u> Nifty assumed at 9000 for calculations

Present measures for managing current exposure

#	Description	Measure	Calculation Frequency	Margin Levy	Margin Release	Calculation Level	Offsets	Net profit treatment
1	Futures Loss	ICMTM	Real-time	Real-time	Settlemen Completio	Client	Profit/Loss ICMTM	Ignored
2	Unsettled Premium	Net Buy Margin	Real-time	Real-time	Settlemen Completio	Client	Payable/Recei Within NBP	Ignored
3	Futures Non-MTM	-	-	-	-	-	-	-
4	Futures Final Settlement	FFS Margin (Only	After expiry	On	Settlemen Completio	Client	-	Ignored
5	Options	Assignment	After expiry	On	Settlemen Completio	Clearing Member	Within Assignment	Ignored

Current Exposure Margin

#	Description	Calculation Frequency	Margin Levy	Margin Release	Offsets	Net profit treatment
1	Futures	Real-time	Real-time	Settlement	Single net amount (For each segment: CD)	Ignored
2	Unsettled	Real-time	Real-time	Settlement		
3	Futures Non-Crystallized	End-of-day	On computation	Settlement		
4	Futures Final	After expiry	On computation	Settlement		
5	Options	After expiry	On computation	Settlement		

Margin Rules – Cash Market

	Particulars	Current	Proposed
Volatility Estimation	EWMA $\sigma_t^2 = \lambda\sigma_{t-1}^2 + (1-\lambda)r_t^2$	$\lambda = 0.94$	$\lambda = 0.995$
	Estimation	Multiple times intraday at approx. 90 minutes interval	No change.
VaR Margin	Group I	Max (7.5%, 3.5 σ_{sec})	Max (9%, 6 σ_{sec})
	Group II	$\sqrt{3}$ x Max (3.5 σ_{sec}, 9σ_{Index}, 15%)	Max (21.5%, 6 σ_{sec})
	Group III	$\sqrt{3}$ x Max (15σ_{Index}, 25%)	50% for if traded once/week in 75% otherwise
	Index (ETFs)	Max (5%, 3σ)	Max (6%, 6 σ)
ELM and MTM	Extreme Loss Margin	Max (5%, 1.5 x σ_{6M}) Where, σ_{6M} = rolling standard deviation for 3% for index products	2% for ETFs and 3.5% for stocks.
	Mark to Market Margin	Marking each transaction in security to the at the end of trading.	No change

Margin Rules – Index Derivatives

Particulars	Current	Proposed
Volatility	$\lambda = 0.94$	$\lambda = 0.995$
	Multiple times intraday at approx. 90 minutes interval	No change.
Price Scan Range	Max ($3 * \sigma * \sqrt{2}$; 7.1% of the underlying price) [Considering MPOR=2]	Max ($6 * \sigma * \sqrt{2}$; 9.3% of the underlying MPOR=2]
Volatility Scan	4% fixed	25% of volatility subject to minimum 4%
Calendar Spread	▪ 0.5% per month of spread on the far month contract ▪ Subject to a minimum of 1% and a maximum of 3% ▪ Calculated on the basis of delta of the portfolio in each ▪ Calendar spread granted till the expiry of the near	▪ 1.75% on the far month contract. ▪ Calculated on the basis of delta of the month. ▪ Calendar spread granted till the contract.
Short Option	5% of Notional Value (valued at previous day closing price of index futures	Discontinued.
Net Option Value	Difference between the long option values and short option	No Change
ELM	$3\% * \sqrt{2}$ on futures and short options notional value. $1/3^{rd}$ in case of calendar spreads.	2% on futures and short options notional applicable on far month contract in case In case of deep out of the money options the money by more than 10% from the underlying price) the applicable ELM will

Margin Rules – Single Stock Derivatives

Particulars	Current	Proposed
Volatility	$\lambda = 0.94$	$\lambda = 0.995$
	Multiple times intraday at approx. 90 minutes interval	No change.
Price Scan Range	Max ($3.5 * \sigma * \sqrt{2}$; 10.6% of the underlying price) [Considering MPOR=2] Scale-up by square root of 3 if impact cost > 1%	Max ($6 * \sigma * \sqrt{2}$; 14.2% of the underlying Scale-up by square root of 3 if impact cost >
Volatility Scan	10% fixed	25% of volatility subject to minimum 10%
Calendar Spread	▪ 0.5% per month of spread on the far month contract ▪ Subject to a minimum of 1% and a maximum of 3% ▪ Calculated on the basis of delta of the portfolio in each ▪ Calendar spread granted till the expiry of the near	▪ 2.2% on the far month contract. ▪ Calculated on the basis of delta of the ▪ Calendar spread granted till the expiry of
Short Option	7.5% of Notional Value *(valued at previous day underlying closing price)*	Discontinued
Net Option Value	Difference between the long option values and short option	No Change
ELM	Max (5%, 1.5 x σ_{6M}) * $\sqrt{2}$ on futures and short options far month contract in case of calendar spreads.	3.5% on futures and short options notional far month contract in case of calendar In case of deep out of the money options money by more than 30% from the previous the applicable ELM will be 5.25%.

Margin Rules – Currency and Interest Rate Derivatives

Particulars	Current	Proposed
Volatility	$\lambda = 0.94$	$\lambda = 0.995$
	Multiple times intraday at approx. 90 minutes	No change.
Price Scan Range	$3.5 * \sigma$; Subject to min. futures margin defined for each	$6 * \sigma$; Min futures margin to be revised based on current min. the currently applicable ELM.
Volatility Scan	3% fixed	25% of volatility subject to minimum 3%
Calendar Spread	Defined separately for each currency/IRF	Current calendar spread charge will be increased to the calendar spread positions as specified under.
Short Option	0 (except 2% SOMC for Cross-Currency	To be discontinued.
Net Option Value	Difference between the long option values and	No Change
ELM	Defined separately for each currency/IRF	To be halved.

Thank You

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