Initial Margin and FTR Credit Requirements

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- Previously we reviewed initial backtesting results
- Today we will be covering
  - Additional Backtesting Results
  - Initial Margin Proposal
  - Considerations for FTR Credit Requirements

Additional Backtesting Results

Demonstrate that the IM methodology historically behaves as expected.

- Fix FTR portfolios at a particular time in the past, called the **measurement date**

- Calculate IM using historical data prior to the measurement date

- Calculate the actual move of the fixed portfolio over the time period equal to the liquidation period (i.e. 1 Auction Period, 2 Auction Periods, or to Settlement)

- Compare the actual move during the liquidation period with the computed IM

- Repeat this test for various measurement dates

- Compute the **failure rate** which is the percentage of times IM was less than an actual loss

Verify that the failure rate is consistent with target risk percentile fixed in IM calculation methodology.

- Assuming a targeted 99% Confidence Interval, results expected to fall within a 1% failure rate.

- Expected results:
  - Failure rates will fall between 0.5% and 1.5%, whereby
    - ~ 0.5% implies more conservative IM estimations, and
    - ~1.5% implies less conservative estimations

Previously, two approaches to aggregate the Monthly IM values into the BOPP IM were discussed.

Liquidation Period	Failure Rate Sum of monthly IM	Failure Rate Square root sum of squares
To Settlement	0.37%	2.79%
1	0.31%	1.78%
2	0.28%	1.86%

The summation approach is a more conservative approach to the calculation in that the value is less than the expected 1% and the square root sum of squares is the less conservative approach since it is greater than the expected 1%. Both aggregation methods result in failure rates outside of the failure rate boundaries of 0.5% and 1.5%.

Utilize a blended approach to aggregate the Monthly IM values into the BOPP IM

$$IM_{Balance\ of\ PP} = .1 \cdot \sum IM_{Monthly} + .9 \cdot \sqrt{\sum IM^2_{Monthly}}$$

- This "blending" formula is designed to bring the backtesting results into the desired range.
- The choice of coefficients is driven by the goal to have as small a perturbation of square root sum of squares formula (case of non-correlated moves) as possible, but not smaller.

Liquidation Period	Failure Rate
To Settlement	1.24%
1	0.74%
2	0.65%

In case of a failure, what is the average loss above the IM

- The **expected shortfall** indicates the percentage difference between the IM and the loss above the IM when there was a failure

IM Range (million USD)	Liquidation Period = "to settle" Shortfall (% of IM)	Liquidation Period = 1 Shortfall (% of IM)	Liquidation Period = 2 Shortfall (% of IM)
0-1	150	49	52
1-3	23	26	43
3-10	22	49	13
10 and above	36	40	37

Distribution of failures among participants

- There is no concentration of failures within a particular subset of participants
- When failures occur, no single participant stands out and failures are evenly distributed
  - Participants with 1-2 "fails" are the biggest subset of the total number of failing participants.
- The failures are not clustered within a small group of participants

- The historical back testing has demonstrated that the methodology proposed for computing IM has been performing as expected and is in agreement with the underlying assumptions.

- The methodology passes the back test for every choice of the liquidation period.

- Backtesting showed that the methodology does not underestimate the IM.

- It also showed that it does not overestimate the IM. Lowering the IM by 10% increases the failure rate by ~50%, bringing it out of targeted range.

Proposal for Initial Margin

- Our proposal is to choose **liquidation period = 2** as the input into the IM calculation procedure.
  - We need one period to detect a default and at least one period to take the liquidation measures.
  - Back testing for liquidation period = 2 showed good results for the failure rate, expected shortfall and failure distribution by participants.
  - A liquidation period of 2 aligns with the liquidation process to unwind a portfolio in a prudent manner

Considerations for FTR Credit Requirements

Calculate Monthly Path-Specific Requirement

Add Individual FTR Credit Requirement

Add Un-Diversified Adder, if applicable

Apply 10¢ per-MWh Minimum

Subtract ARR Credits in Account

Sum All Positive Monthly Subtotals

Add MTA, if applicable

- Path Specific Requirement
  - Replace with Initial Margin Methodology, using a Liquidation Period=2
  - Captures exposure of portfolio using best practices
- Undiversified Adder
  - Remove from the calculation
  - Not correlated to risk
- Per-MWh
  - Continue to consider as part of calculation, if works with summation methodology
  - Can serve to maintain a minimum requirement

- ARR Credits
  - Used as an offset to FTR Credit Requirements
  - Assumed to be guaranteed revenue

Period	Monthly Requirement	ARR Credits	Net of ARR Credits and Monthly Requirement	Final Monthly Requirement
SEP 2020	$464,200	$637,106	-$172,906	$0
OCT 2020	$639,571	$657,232	-$17,661	$0
….	…	…	…	…
APR 2020	$409,637	$636,859	-$227,222	$0
MAY 2020	$711,428	$658,397	$53,031	$53,031

– Final settlement of ARRs are reassigned on a daily basis

  • Based on a proportional basis within a zone, as load shifts from one LSE to another within a transmission zone (PJM Manual 6, Section 4.6)

– At the time of default, load served by the defaulting party is shifted to the EDC pursuant to the provisions of the Tariff, section 7.3 and OA, section 15.1.5.

- Given this load shift, the ARRs are also reassigned

- After the default, these ARR revenues will no longer be available in the defaulting party's invoice to offset the potential charges of unwinding the portfolio

- Considering ARR credits to be available at the time of default is counter to the settlement process following a default

Should ARR credits be considered as part of an offset to the collateral requirements

- Realized Gains and Losses
  - The gains or losses are a result of selling FTR(s) in an auction
    - Does not include bilateral transactions
  - At time of settlement, the gains will be considered a payment and the losses will be a charge to the participant
  - Recognizing these in the collateral requirements is in line with the actual settlement of these types of FTR transactions

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- Mark to Auction
  - The calculation will remain as the difference between the original cleared price and most recent auction price multiplied by the MW quantity
  - However, it will be updated to determine MTA based on remaining open positions (i.e. will no longer include realized gains and losses)
  - Today, the MTA is only utilized if the most recent auction prices are indicating a portfolio experiencing a loss, the amount of which is added to the base margin

Net MTA appropriately on both sides, in line with best practices

- Finalize approach to calculating a Total Credit Requirement for FTR positions

- Quantify impacts to Member Portfolios