Response to "PJM Perspectives on Main Motion and Initial Margin"

PJM Special RMC 10/14/2021

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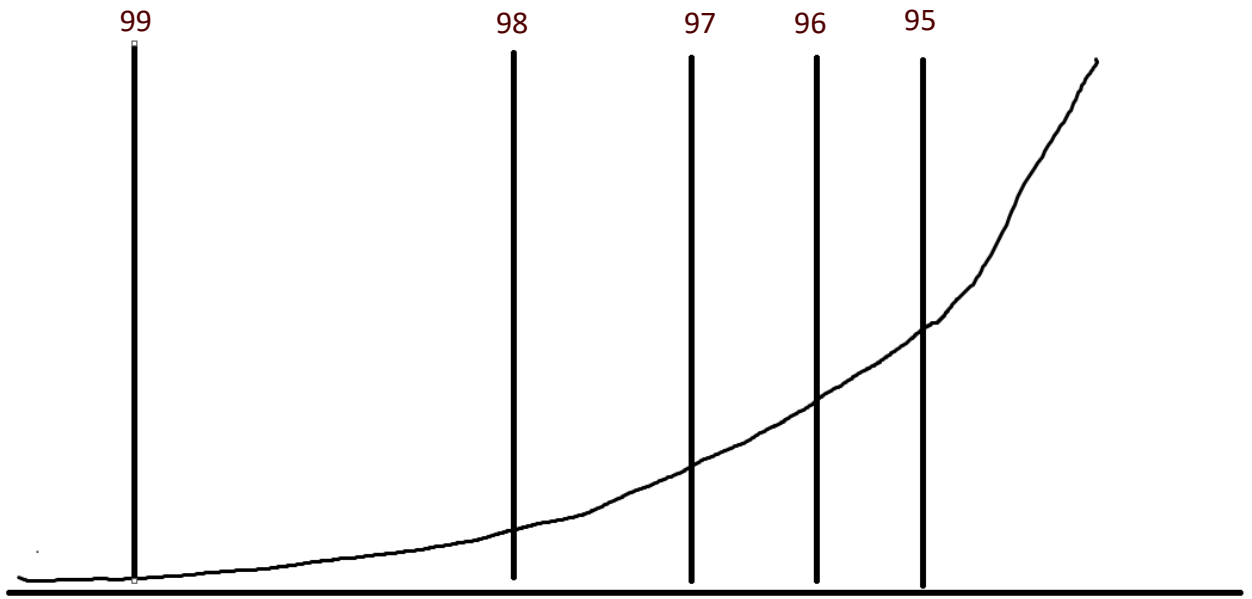
Cost Comparison between Status Quo and HSIM

- PJM's presentation puts a lot of emphasis on the fact that the 95% CI percentile approach will result in 30% less initial margin in aggregate compared with the status quo while others are increasing collateral requirements (PJM slides 6, 11-12)
- Do not fear: this argument has no bearing in the context of completely switching models
  - We are going from status quo (historical price-based model) to HSIM (historical volatility-based model)
  - Whether the cost goes up or down from status quo is mostly irrelevant because collateral in the HSIM model is significantly reallocating collateral among portfolios
    - Presumably, the "risky" portfolios will require more collateral than status quo
    - Perhaps "less risky" portfolios require less collateral (but still sufficient collateral for their level of risk according to the model)
    - Why do we care if the sum total of everyone's collateral goes up or down from status quo?
- We should compare apples to apples (same model, different CIs) rather than apples to oranges (status quo vs. new model)

Conservatism is not a Replacement for Analysis

- FTRs are indeed unique, have “less” liquidity, and are similar to basis swaps (PJM slide 7)
- The lower liquidity would presumably lead to a longer tail in a distribution of price moves
- We believe this necessitates a cost-benefit analysis rather than just throwing more conservatism at the problem
- Below is a zoomed-in left tail of a price move distribution with 95-99% CIs labeled (similar to PJM slide 8)
  - You can see that the further down the tail you go, the more you must move to the left to cover an additional percentage point under the curve
  - This means more and more collateral is required to cover additional percentage points of price moves
- At *some point*, the additional collateral required is no longer worth covering the additional price moves
- This tradeoff depends on
  - Coverage:
    - Not just the *percentage* of price moves covered (the C.I.)
    - Also the distributions of the shortfalls beyond each point
  - Cost:
    - Collateral required



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Price Move Distribution – cost/benefit necessity

- At some point in the tail, there is a collateral requirement that does not make sense. The further down the tail you go, the more collateral per percentage point required because the tail gets skinnier towards its tip. This phenomenon is apparent in the collateral required at the 95, 97, and 99 CIs that PJM gave (PJM slides 9, 13):
  - The increase from 95 to 97 is $177M, or $88.5M per percentage point
  - The increase from 97 to 99 is $578M, or $289M per percentage point
  - Why not go to 99.5%? Because the collateral would be something like $3 billion, and clearly that makes no sense.
- But *why* does it so clearly not make sense? The cost is too high. We need to consider the cost.
- The reduced "potential"[1] shortfall (PJM slide 9) from 95 to 97 is $29M. That's for $177M more collateral. But the next $28M reduction in shortfall costs $578M more collateral.

1. We are not sure what exactly "potential" shortfall indicates—probably not the average.

CFTC Requirements for FTRs

- Contrary to PJM's many assertions that FTR collateral requirements should use 99% confidence interval (slides 7, 14-17), we believe that there is no such requirement—explicitly or implicitly
- There's a reason RTOs are not under CFTC—because there are material differences in the markets
  - PJM rightly asserts that DCOs regulated by CFTC are required to use 99% CI (PJM slide 14)
  - PJM uses the "we're like DCOs and exchanges" card when convenient, but then does many things differently
  - If FTRs "should be risk managed by PJM and market participants in the same way as another other financial transaction cleared by a CPP" as PJM claims (PJM slide 17), then why are we picking and choosing which features of the risk management we are applying vs. not applying?
    - For example, why are we using the straight sum and root sum of squares weights we are using?
    - Why use the same weights for everyone instead of a more participant-specific approach used in other markets/exchanges that considers the makeup of each portfolio?
- The statement that the RTO exemption from CFTC regulation anticipates that the RTOs' credit and risk management policies align with CFTC Core Principles *including initial margin requirements* (PJM slide 16) is misleading—implying that it assumes RTOs will use 99%
  - CFTC already said status quo aligns with the Core Principles

CFTC Requirements for FTRs (cont.)

- The 2nd quote on PJM slide 16 has a changed word from the document we inspected[1]: “and also has credit requirements that are designed to achieve risk management goals aligned [should be *congruent*] with the regulatory objectives of the Commission's DCO and SEF Core Principles". Congruence is not equivalence, and CFTC makes no claims that ISOs are or should be subject to the exact same regulations.
- FERC regulation 35.47 does not specify how initial margin should be calculated. In fact, the CFTC exemption order explicitly says that the "Commission is not holding the Requesting Parties [i.e., the ISOs requesting exemption] to the same standards as DCOs, and is not concluding that the Requesting Parties would meet the standards ... of the Commission's regulations.”[2]
- The CFTC believes the FERC reg 35.47 is similar to its Core Principles (but not the same): The FERC standards "appear to achieve goals similar to the regulatory objectives of the Commission’s DCO Core Principles."
- The CFTC stated that "the Commission determines that the Requesting Parties’ policies and procedures appear to be consistent with, and to accomplish sufficiently for purposes of this Final Order, the regulatory objectives of the DCO Core Principles in the context of the Covered Transactions [i.e., FTRs in this case].”[3]
- BOTTOM LINE: Neither FERC regs nor the CFTC exemption order specify how ISOs should calculation initial margin. In fact, CFTC believed the status quo was aligned with its Core Principles. We should not solely rely upon every detail of CFTC principles when the CFTC explicitly states that ISOs are not being held to the same standard.

1. https://www.govinfo.gov/content/pkg/FR-2013-04-02/pdf/FR-2013-04-02.pdf, page 19911 (pdf page 333)
2. Ibid., page 19901 (pdf page 323)
3. Ibid.

CFTC Requirements for FTRs (cont.)

- PJM has "a arguably riskier profile than DCOs which supports the adoption of the 99% confidence interval" (PJM slide 17)
- FTRs are not regulated by the CFTC
- We agree that all members will bear the default costs (PJM slide 17) *if* and *when* that happens (surely it will, but the frequency and magnitude is uncertain). What we would like to have considered is some measure of the costs to market participants that *will* be incurred *every year with certainty*. At some point, the certain costs incurred have to outweigh the risk of uncertain costs.

Cost/Benefit Analysis

- The data provided now on PJM slide 18 is helpful (albeit unfortunately a bit late in the stakeholder process). The main motion was made when the data showed a 1.2% failure rate.
- We are not opposed to making informed decisions based on new data. We are missing average shortfall for each CI in the new percentile regime in order to make an informed decision.
- We are glad PJM has now decided to address our cost-benefit analysis (PJM slide 19)
- The analysis we performed was based upon assumptions to reflect reality, not the worst-case scenario. Using expectations is necessary to perform the analysis. Whether a safety margin is used is another matter.
    - If we use worst case scenarios (no additional collateral posted at PJM, no available cash elsewhere to post), that does not result in realistic expectations upon which we should make decisions. Just because a small percentage of younger people get cancer does not mean a young family should make financial decisions as if they will get cancer. That is like an insurance carrier saying "If you get cancer and your spouse is hospitalized for 45 days, look how much it will cost you--so you should spend whatever it costs in premiums to reduce your out of pocket maximum." It is true in that case that the additional premium cost warrants the benefit of greater coverage, but everyone should not buy the most expensive plan expecting that to happen. Similarly, every shortfall will not result in default, and every default will not be uncured.

COST/BENEFIT ANALYSIS (CONT.)

- Even so, if we use the entire shortfall amounts (assuming the participant had exactly their IM posted at PJM, and would not post any additional cash from outside PJM) for the distribution approach (not percentile approach, which is still missing average shortfall data needed):
  - It still costs the membership an additional $9M in cost of capital to save $5M in default loss to go from 95% CI to 97% CI
  - It costs an additional $20M in cost of capital to save $7M in default loss to go from 97% to 99%
  - Going to 97% could possibly be justified using these numbers since it is much closer, but 99% is still a very poor tradeoff
- Similarly, if we can see the average shortfall numbers for the percentile approach, it may be justifiable to go from 95% to 97%, but the huge jump in collateral to go to 99% is unlikely to pay off

Appendix A:
Cost-Benefit Analysis

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Appendix A: Quantifying Losses due to Default

- Total shortfall = # of failures x average shortfall
  - Assume these occurred over 62 months (a figure used in previous IM backtesting by PJM)
- *Shortfall does not equal default*
  - What is average participant credit available divided by FTR credit requirement? Assume 20% (conservative).
    - E.g., $.5M FTR credit requirement; $.6M in PJM collateral account → availability ratio = 20% above requirement
    - This 20% is higher for price-sensitive bidders, and would be much higher under some proposed bid collaterals
    - Average shortfalls as ratio of IM were 13-54%
      - Any shortfalls <20% would be covered without a collateral call
      - A shortfall of 52% of IM would have only 32% (52-20) of IM as a collateral call
      - % of shortfall uncovered (by existing posted collateral) = 32/52 = 62%
- *Default does not equal stakeholder losses*
  - According to PJM[1], "vast majority" of all defaults have been cured in the past 10 years. Assume 90% (conservative).
- Example calculation (first line of next slide):

$0.88M shortfall per year x 62% uncovered shortfall ratio x (1 – 90%) uncured default rate **= $54k losses/yr**

1. Slide 6 from https://pjm.com/-/media/committees-groups/task-forces/frmstf/2020/20201015/20201015-item-06a-minimum-capitalization.ashx

APPENDIX A: QUANTIFYING LOSSES

	A	B	C	A x B x C

99

IM Range (million USD)	Shortfall (% of IM)	Average Shortfall ($ in MM)	Max Shortfall ($ in MM)	Failure Rate (%)	Count of Observations	Total Shortfall	Shortfall per yr	% Shortfall uncovered	Uncured rate	Default per yr
0-1	52	0.06	0.79	0.48%	76	$4.56M	$0.88M	62%	10%	$54k
1-3	43	0.76	2.32	0.06%	10	$7.60M	$1.47M	53%	10%	$78k
3-10	13	0.63	1.48	0.06%	9	$5.67M	$1.10M	0%	10%	$0
10 and above	37	7.19	22.29	0.04%	7	$50.33M	$9.74M	46%	10%	$448k

97

IM Range (million USD)	Shortfall (% of IM)	Average Shortfall ($ in MM)	Max Shortfall ($ in MM)	Failure Rate (%)	Count of Observations	Total Shortfall	Shortfall per yr	% Shortfall uncovered	Uncured rate	Default per yr
0-1	53	0.08	0.87	0.64%	109	$8.72M	$1.69M	62%	10%	$105k
1-3	49	0.80	2.62	0.08%	13	$10.40M	$2.01M	59%	10%	$119k
3-10	18	1.07	7.37	0.12%	20	$21.40M	$4.14M	0%	10%	$0
10 and above	32	5.63	25.41	0.06%	11	$61.93M	$11.99M	38%	10%	$449k

95

IM Range (million USD)	Shortfall (% of IM)	Average Shortfall ($ in MM)	Max Shortfall ($ in MM)	Failure Rate (%)	Count of Observations	Total Shortfall	Shortfall per yr	% Shortfall uncovered	Uncured rate	Default per yr
0-1	54	0.08	0.89	0.81%	138	$11.04M	$2.14M	63%	10%	$134k
1-3	32	0.55	2.74	0.17%	29	$15.95M	$3.09M	38%	10%	$116k
3-10	19	1.07	8.10	0.15%	26	$27.82M	$5.38M	0%	10%	$0
10 and above	37	5.98	26.71	0.08%	13	$77.74M	$15.05M	46%	10%	$691k

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Appendix A: Weigh the Cost / Benefit

	99% Conf. Int.	97% Conf. Int.	95% Conf. Int.	Status Quo
Expected default loss per year	$581,000	$674,000	$942,000	?
Expected annual default per member	$581	$674	$942	?
Collateral required	(Z) $1,698,000,000	(Y) $1,295,000,000	(X) $1,113,000,000	(A) $1,334,000,000
Total cost to members (5% CoC)	Cost of capital (CoC) * Z = $84,900,000	CoC * Y = $64,750,000	CoC * X = $55,650,000	CoC * A = $66,700,000
Marginal benefit to cost ratio	$93,000 / [(Z-Y)*CoC] = 0.5%	$268,000 / [(Y-X)*CoC] = 3.0%	? / [(X-A)*CoC] = ?	

$674k - $581k

$942k - $674k

Going from 97% to 99%, every $1 extra spent posting collateral (or every $20 posted) prevents only $0.005 in loss

Going from 95% to 97%, every $1 extra spent posting collateral (or every $20 posted) prevents only $0.03 in loss. Or, every $679 posted prevents $1 in loss.

- The membership posting an extra $182M going from 95% C.I. to 97% C.I. (which costs an additional $9.1M based on 5% cost of capital) saves only $268,000
- Spending $9.1M to save $268k does not make sense

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