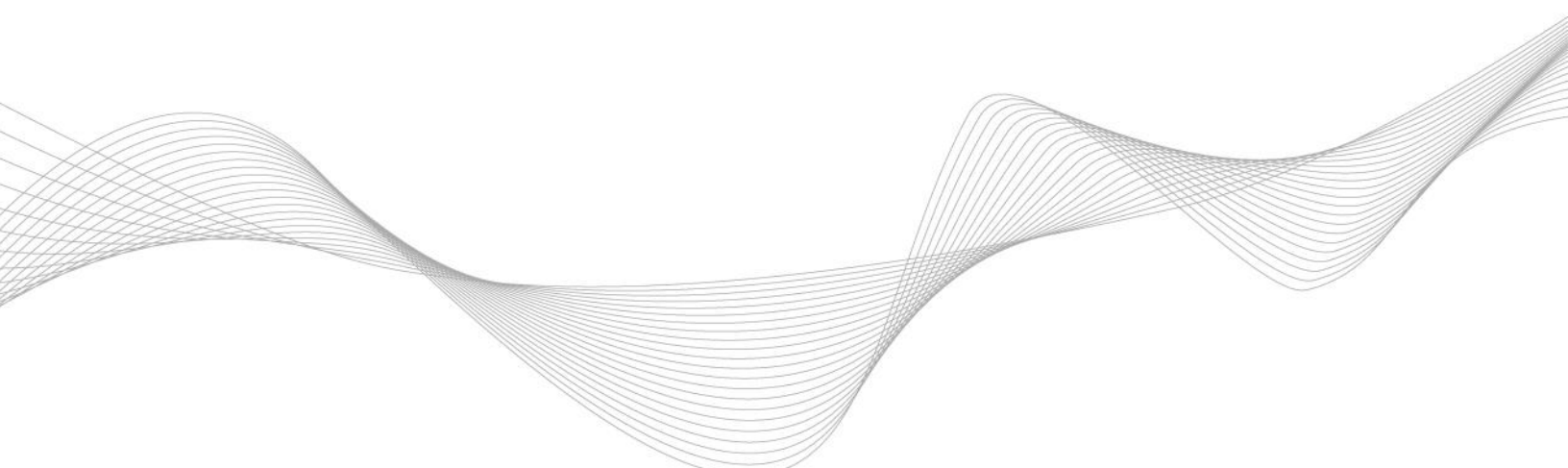




**Financial Market Reform Project
Discussion Paper
Position Limits and Liquidity Risk**

July 2019



1 Purpose

This paper examines the subject of limits on position size, other forms of concentration limit, and the related topic of liquidity risk.

2 Summary

There has been some confusion between the right to liquidate defaulting portfolios – which is an important and necessary feature of a well-organized derivatives market – versus the outcomes of the attempted GreenHat liquidation, which resulted from a failure to manage liquidity risk, by allowing Greenhat to acquire concentrated positions in illiquid back periods.

This paper recommends the use of ‘position accountability levels’ as a key tool for the management of liquidity risk. In keeping with the recommendations of the Independent Consultants’ report, it suggests accountability levels should be established for groups of expiries, with tighter limits towards back periods. It also suggests limits on overall position, across all expiries, but differentiated by the trader’s capitalization. As ‘soft limits’, accountability levels provide more flexibility in considering individual portfolios and trading patterns before ordering corrective action, usually in the form of holding or lightening positions.

Additionally, this paper recommends the application of liquidity margin, or a liquidity multiplier on initial margin, based on a position’s potential to distort market pricing in liquidation, or increase the liquidity period. Finally, it is recommended that the right – not obligation – to liquidate defaulting portfolios be restored in conjunction with these reforms.

3 Liquidation and Liquidity Risk

3.1 Why Liquidate?

To answer this question it is useful to examine Market Reform’s 2008 report¹ following the Tower Research default:

“It is standard practice in most forward markets to liquidate the outstanding positions of participants in default. This serves two purposes. Firstly, the residual value of the liquidated portfolio (if any) becomes available to satisfy outstanding obligations. Secondly, and more importantly from a risk management perspective, it serves to realize, and therefore limit, the defaulting participant’s losses.

“This does not imply that such an action will achieve the best possible value for the portfolio. It is possible that the value of the portfolio could improve if held, but equally possible that it could get worse. Realizing losses eliminates this uncertainty. Without liquidation, positions must be held until they naturally expire – through cash settlement or delivery – with the default guarantees of the clearing house continuing to absorb any ongoing losses. This is the unfortunate situation in PJM’s FTR market at present.

“Recommendation: *In the event of participant default, PJM should have the right to liquidate any forward contracts not yet in delivery.*”

This recommendation was subsequently implemented, though it was enshrined as an obligation rather than a right. There are arguments either way. Having a right gives the market operator greater discretion based

¹ Market Reform, [PJM Credit and Clearing Analysis Project: Findings and Recommendations](#), June 2008, section 4.2.1.

on individual circumstances. The counter-argument is that “it is generally undesirable to have the market operator making commercial judgments about the best time to trade a portfolio into the market, even if only for liquidation purposes.”²

The right to liquidate defaulting portfolios is an important and necessary feature of a well-organized derivatives market. So what went wrong with the attempted liquidation of the Greenhat portfolio?

3.2 Liquidity Risk

Liquidity is the ability to conveniently enter or exit a position in a defined product. Highly liquid markets make it easier to ‘get a fill’ and narrow the ‘bid/offer spread’, assisting the price discovery process. Illiquid markets expose participants to the risk that adverse price movements will occur before they can execute their trades, or that large portfolios will themselves move the market if liquidated abruptly. This is known as ‘liquidity risk’. This risk was also identified in the Market Reform report:

“Liquidation also poses a liquidity risk, that dumping a large position into the market will itself result in an adverse price move, or not get executed at all (this problem applies to any forward market, not just FTRs).”

In the case of GreenHat, the Independent Consultants’ report³ identifies that GreenHat was permitted to acquire concentrated positions in illiquid back periods (derivatives almost always tend to be more liquid the closer trading gets to the delivery period). The size of these positions was sufficiently large that attempts to liquidate them would move the market, amplifying the magnitude of the losses.

4 Why Initial Margin Isn’t Sufficient

In late April, PJM distributed a set of ‘framing questions’⁴ to gather stakeholders’ initial perspectives on a number of FTR credit risk topics. In response, a sizable minority of respondents expressed a conviction that the entire solution to better credit risk management was a better model for calculation of initial margin. While initial margin is an essential and important part of a credit risk solution, it is still only part of the solution.

It is important to protect against potential events outside the purpose or intended statistical range of the model⁵. There is also a potential for model errors, gaming of the model (as seen with GreenHat focusing on zero collateral trades), and events the model builders failed to consider – so-called ‘Black Swans’. Some options for additional protections will be addressed in a later paper on Trade Guarantee Structure.

Additionally, initial margining methodology is based on contract portfolio and does not make a distinction concerning the quality of the counter-party, nor the potential concentration of risk an individual counter-party may have against a small set of contract locations and/or expiries. Standard margin models also fail to consider the liquidity effects of liquidating an outside portfolio.

5 Position Limits and Position Accountability Levels

The Independent Consultants’ report makes specific recommendations to address this:

“D2) Establish position limits for FTRs:

² Market Reform, op.cit.

³ Anderson, Wolkoff, et.al., *Report of the Independent Consultants on the GreenHat Default*, March 26, 2019, Chart 6.

⁴ PJM, *Credit Reform Principles and Framing Questions*, April 2019

⁵ Even models performing as designed, and with perfect data, collateralize only to a given (high) statistical likelihood (e.g. 99%).

D2.1) Based upon company capitalization.

D2.2) Based upon position tenor (tighter limits towards the back).”

Before delving into specifics, it is worthwhile to briefly look back at history. ‘Position limits’ have their origin, in the Commodities Exchange Act (CEA) and various regulations promulgated by the Commodity Futures Trading Commission (CFTC), as a tool for addressing “excessive speculation”, and specifically “(i) to diminish, eliminate, or prevent excessive speculation as described under this section; (ii) to deter and prevent market manipulation, squeezes, and corners; (iii) to ensure sufficient market liquidity for bona fide hedgers; and (iv) to ensure that the price discovery function of the underlying market is not disrupted.”⁶ Former CFTC Chair Philip McBride Johnson testified that: “it seems clear from the silver crisis that the orderly imposition of speculative limits before a crisis develops is one of the more promising means of solving such difficulties in the future...”⁷

Position limits have been historically focused on prompt month positions in physically-delivered contracts (and ‘referenced’ financial contracts), but may also apply to other periods, or in aggregate across all periods. They typically limit any one party from holding more than 25% of the “estimated deliverable supply” of a commodity in the prompt month, with exemptions able to be claimed for “bona fide hedging”. Position limits are considered ‘hard limits’, which may not be exceeded without prior authorization.

In addition, more recent regulatory advents have allowed for ‘position accountability levels’ for non-prompt contracts. These ‘soft limits’ trigger a review of the position by the exchange, which may order actions such as preventing any increase in the position, or requiring a reduction. They may also start as soft constraints that can be made into hard constraints in the face of repeated violations. In considering the circumstances of the GreenHat default – where the issue was one of the trader being able to accumulate outsized positions in illiquid back months, rather than market manipulation in the prompt month – position accountability levels would seem a more useful tool for the FTR market.

Per recommendation D2.2, accountability levels should be established for groups of expiries, with tighter limits towards back periods, where liquidity is less. These could conceivably be set as a percentage of overall open interest in those expiries. Consideration should also be given to accountability levels on total open positions, across all expiries. Per recommendation D2.1, such limits on overall portfolio should take account of the capitalization of the participant. This ensures that the quality of the counter-party, and the concentration of their risk in this single asset class, can be properly considered.

Limits by location are worth examining, but given the nature of FTR trading, where locations trade and price interdependently, and there are legitimate physical reasons for concentration at individual generator nodes and load zones, it may be difficult to apply practically. It would certainly be a situation where different accountability levels should apply to hedgers versus speculators.

Further work is needed to investigate the specific methodology for setting position accountability levels, including potentially some modelling. Prior circumstances would indicate that PJM should have reasonable levels of flexibility in setting and enforcing these levels. Accountability levels could also be made subject to checks-and-balances, such as review by the IMM.

⁶ 7 U.S. Code § 6a.Excessive speculation

⁷ Futures Trading Act of 1982: Hearings on S. 2109 before the Senate Subcommittee on Agricultural Research, 97th Cong. 44 (1982).

6 Liquidity Margin

Liquidity margin is additional margin – or a multiplier on initial margin – that is levied to reflect the liquidity risk of a participant’s portfolio. For example, assume Participant A holds 100 contracts in a given commodity, in less liquid back periods, and has to post 100 units of collateral as initial margin, but Participant B holds 1,000 contracts. It is calculated that this would be more problematic to liquidate – either increasing the liquidity period (see Initial Margin Methodology Desktop Review⁸), or having a price distortive affect on the FTR auction if all liquidated at once. As a result, in addition to having to post 1,000 units of collateral as regular initial margin, Participant B would also need to post additional liquidity margin – which could be an additional 20%, 80%, 200%, as required.

The application of liquidity margin, or a liquidity multiplier, is common practice in commodity derivatives markets, and is recommended as part of the overall risk solution for FTRs. The methodology for calculation of this margin is discussed briefly in Section 6.4 of the Initial Margin Methodology Desktop Review, and will be examined as part of the development and testing of proof-of-concept models for initial margin.

7 Restoring the Option to Liquidate

In response to the results obtained when attempting to liquidate the GreenHat portfolio, PJM promulgated changes to its tariff which removed the right to liquidate and required all positions to go to final settlement. This, however, does not properly address the underlying problem – that a participant was able to amass a large position in illiquid contracts, that made it extremely problematic to liquidate. The ability to liquidate is an important tool in market operator’s arsenal – serving to reduce the ‘market period of risk (MPOR)’ – and should be restored, as an option rather than a requirement.

In the Greenhat situation, what would have been helpful was for PJM to have discretion in the way it exercised liquidation rights, potentially auctioning off digestible pieces of the portfolio over time. Having the ability to conduct special liquidation auctions, outside the regular FTR auction sequence, could also be useful – though should also be a discretionary authority; in certain circumstances it may be considered better to combine with a regular auction.

⁸ PJM, *Desktop Review of Methodologies for Initial Margin Calculation*, July 2019