

Comments of Hans R. Dutt, PhD on Position Limits on NASDAQ SPY-ETF Options

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My name is Hans R. Dutt. Previously, I worked as an economist with the US Securities and Exchange Commission ("Commission"). However, I am currently in private consulting and no longer associated with the Commission. Furthermore, the NASDAQ ("Exchange") is not one of my clients. Therefore, my comments are independent both of the Exchange and the Commission.

During my tenure with the Commission, I co-authored the paper with Professor Larry Harris that was referred to in the above noted Release ("Dutt-Harris paper"). My comments are based on the insights from this work in position limits as well as my knowledge of the economics of clearinghouse risk management obtained from working as an economist at the Commission and the US Commodity Futures Trading Commission.¹

The Dutt-Harris paper suggested that position limits may be applicable on derivative securities in the circumstance where (a) underlying security is illiquid and (b) the derivative is cash settled. Both of these conditions are necessary for the model to be informative. In the case of SPY-ETF options, ETF shares are delivered and thus the contract is not cash settled, but physically settled. Consequently, some of the connections that the Exchange makes are problematic. To understand why, I will sketch out the general framework of the Dutt-Harris model and then demonstrate why this model is not informative for physically settled contracts.

¹ See for example, Chapter 14, *Statistical Methods in Risk Management by Futures Clearinghouses* in Methods and Applications of Statistics in Business, Finance and Management Science (2010).

There is a tradeoff that has to be made in setting position limits between the benefits of curtailing manipulation and the costs of barring potential hedging transactions above a certain size that could be used for legitimate economic purposes. Besides the direct effect of inappropriately transferring funds from the manipulated to the manipulator, the secondary effect on the market would be to drive traders away from the market for fear of being taken advantage of by manipulators (i.e., a deadweight loss to society).

Cash settled security derivatives potentially carry incentives to manipulate. Essentially, a would-be manipulator would trade in large size in the underlying to move the market price from the fundamental value while simultaneously profiting on a large position of cash settled derivatives. However, the ability to do so depends upon the liquidity of the asset underlying the derivative: the greater the liquidity, the higher the cost necessary to move the underlying price a given amount.²

Consider a cash-settled forward contract on one unit of a single stock whose market is illiquid. The fundamental value of the stock is \$100 and does not change throughout the life of the contract. The contract is entered into on Day t and expires on a future Day T . On Day T , during the settlement time, the long executes buy trades in the illiquid underlying market causing the underlying price to jump to \$110. As the price in the underlying is used to determine the settlement value of the derivative, the buyer captures \$10 on the manipulation (less costs of trading). The profit was captured because the underlying market was illiquid and the contract was cash settled.

² To combat this type of manipulation, one can also adjust the interval over which prices of the underlying are used to determine the settlement value of the derivative. The longer the interval, the more costly it will be to manipulate the underlying over the extended period.

Now, consider the same example when the contract is physically settled and examine what would happen if a misguided manipulator attempted the same strategy. On Day T , during the settlement time, the long executes buy trades in the illiquid underlying causing the underlying price to jump to \$110. The seller simply hands the buyer over one unit of the stock whose value is worth the fundamental value of \$100. Not only has the misguided manipulator made no money in an attempt to take advantage of the illiquidity of the underlying stock, he has lost money trying to move the underlying market. Accordingly, the same incentive to manipulate the underlying market is not present in physical settlement vis-à-vis cash settlement.

This demonstrates the point that liquidity of the underlying, *per se*, does not play the same role in the incentive to manipulate a physically settled derivatives contract. This is why the Dutt-Harris paper is not directly informative with regard to setting position limits on physically settled contracts.

Physically settled manipulation does occur and position limits originally derive from the effort to curtail manipulation in the commodities market. A model based on the different incentives to manipulate physically settled contracts would be helpful to construct. This would most likely be built around the corner-squeeze framework.

If the SPY-ETF options were cash-settled, I would agree with the Exchange's analysis. But because the Exchange does not appear to fully appreciate the relevance of this distinction in their analytic framework, there are a few errors in the analysis. For example, the Exchange argues that derivatives with the same underlying should have comparable position limits to maintain a competitive balance. There is no reason for this to be the case. They are likely to

have different propensities to be manipulated and therefore may require different position limits. Similarly, on page 7 of the Release, they state:

"This suggests that whatever manipulation risk does exist in a cash-settled, broad-based product such as SPXPM, the corresponding manipulation risk in a physically-settled, but equally broad-based product such as SPY, is likely to be equally low, if not lower."

This statement implies a continuum between cash settled and physically settled derivatives with regard to position limits. However, it is better to recognize that they are two separate animals.

While I disagree with certain aspects of the Exchange's analysis, I do not necessarily disagree with the general result that these particular instruments do not require position limits. In fact, on the face of it, I would be surprised if they did. I would posit that cash settled instruments are more likely to be manipulated than physically settled instruments in the securities markets. In my view, the Exchange should be arguing (a) these are physically settled derivatives so the Dutt-Harris paper should not directly apply, and (b) why it would be unlikely to corner/squeeze the market (e.g., shares outstanding, surveillance, etc).

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