Proposed Rules 15*l*-2 and 211(h)-1 Regarding Sales Practices for Certain Leveraged/Inverse Investment Vehicles[1]

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I. Executive Summary

1. The SEC has proposed new sales practices rules that would require broker-dealers and investment advisers to exercise due diligence before approving individual investor accounts to trade in leveraged/inverse vehicles ("leveraged funds").[3] The proposed sales practices rules were said to be modeled after FINRA rule 2360(b)(16), which requires due diligence and account approval by broker-dealers before allowing their customers to trade options, but the proposed rules would place a higher bar for account approval than does the FINRA rule, and would be applied more broadly, including to clients of investment advisers.

2. The proposing release states that the SEC "modeled the proposed rules after the FINRA options account framework in part because leveraged/inverse investment vehicles, when held over longer periods of time, may have certain similarities to options."[4] This is not a sound economic justification for treating leveraged funds like options for purposes of regulating sales practices because, as explained in Section III below, the risks of trading leveraged funds do not include the primary risks and complex aspects of options trading that, from an economic perspective, might justify the current account approval regime for options. For example, unlike leveraged funds, option trading involves a high likelihood of total (100%) losses for purchased positions; and for written positions, there is a potential for investors to go "under water" and owe large amounts of money. Options can also have significantly higher implied leverage than leveraged funds. Further, the value of option positions and their sensitivity to changes in market conditions can fluctuate dramatically even in short periods of time, such as within a single day, requiring investors to continuously monitor their positions and employ complex mathematical models to assess their risks. The proposing release therefore fails to provide economic support for imposing the sales practices requirements used for options on leveraged funds, much less for adopting an even stricter standard.

3. Moreover, it appears that the primary concern originally motivating the options regime was the potential for conflicted recommendations by advisers or brokers, including concerns related to aggressive sales tactics, excessive trading/churning and unauthorized

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[3] "Use of Derivatives by Registered Investment Companies and Business Development Companies; Required Due Diligence by Broker-Dealers and Investment Advisers Regarding Retail Customers' Transaction in Certain Leveraged/Inverse Investment Vehicles," Release No. 34-87607 ("Proposing release"). Throughout this paper, I use the term "leveraged fund" to refer to leveraged and inverse funds.

[4] Proposing release, p. 183.

trading, in an environment where the advisers or brokers could earn larger commissions from implementing option strategies with high turnover. For example, the "Special Study of the Options Markets" (1978) identified concerns that brokers might recommend option strategies which would not make sense for an investor because the high commissions would eliminate the entire potential profit of following the strategy. It is not clear how leveraged funds could trigger these concerns, given that brokers charge the same commissions for leveraged funds as common stocks, and many retail brokers today charge zero commissions. At any rate, the SEC has not articulated any such concerns in the proposing release.

4. In support of the decision to model the proposed sales practices rules after the FINRA options regime, the proposing release cites a study authored by the SEC's Division of Economic and Risk Analysis ("DERA Study"). The DERA Study contains a series of figures showing the probability distribution of simple returns on leveraged funds for various holding periods and for different leverage multiples, and one figure showing the distribution of holding period returns for options with different strike prices. These figures are presented in such a way as if to imply that the risks of investing in leveraged funds are similar to the risks of investing in options.

5. The SEC's reliance on the DERA Study as a justification for the proposed sales practices rules is unfounded. First, while the figures in the DERA Study create the impression that the risk characteristics of leveraged funds are qualitatively similar to those of options, this is inaccurate. As discussed in Sections III and IV below, options are significantly riskier and more complex than leveraged funds. Evidence in the DERA Study itself (Figure 6), as well as additional evidence discussed below, shows that option trading involves far greater risk of catastrophic loss, far greater leverage, and more complexity than 2X or 3X leveraged funds.

6. Moreover, the DERA Study makes the specific claim that leveraged funds are similar to options because, when held over longer holding periods, leveraged funds are characterized by "positive skewness."[5] However, the DERA Study presents no data or calculations to support this conclusion and instead relies on misleading visuals. The charts in the DERA Study create an impression that options are similar to leveraged funds in part by including deep-in-the-money options that have a risk profile similar to the index, and by including 4X

[5] Skewness is a measure of asymmetry in a distribution. Compared to an asset with a symmetric returns distribution, a distribution with positive skewness has a higher likelihood of extreme positive returns and a lower likelihood of extreme negative returns.

leveraged funds, which do not exist in the U.S. As demonstrated below, however, the amount of skewness depicted in the figures in the DERA Study is miniscule compared to the amount of skewness in certain option strategies, and is comparable to the amount of skewness in the simple returns of longer-term buy-and-hold positions in an ordinary, unleveraged index fund.

7. In sum, while the proposing release cites to the DERA Study as evidence for the proposition that there are "certain similarities" between leveraged funds and options, a careful review of the DERA Study and its methodology shows that the purported similarity between options and leveraged funds is superficial, and could equally well describe a similarity between options and ordinary index funds, or between options and common stocks. Thus, the DERA Study provides no justification for the SEC to regulate leveraged funds as if they were options.

8. I understand that the SEC staff (and FINRA) have expressed concerns about the possibility that investors in leveraged funds might have incorrect expectations about how these funds perform over longer holding periods, if they mistakenly believe the holding period returns of the fund should closely match the daily target multiple of the underlying index return. It is not clear how, if at all, this concern relates to the purported "similarities" between leveraged funds and options, which was the justification the SEC provided for adopting a framework modeled after the options regime. The proposing release does not provide any discussion or evidence addressing why adopting a regime modeled after FINRA's option rules would be an effective means of addressing concerns about possible investor confusion. It appears that the proposing release is using the DERA Study to seek to rationalize the Commission's proposal of an options-like regime, by arguing that there are "certain similarities" between leveraged funds and options.

9. Finally, the proposed sales practices rules arbitrarily single out leveraged funds. There are a number of other products available to retail investors with option-like payoffs or other non-linear risk exposures that are not subject to similar requirements contained in the proposed sales practices rules. These include warrants, which have similar payoffs to call options, and structured notes, which have non-linear payoffs with embedded options. If the SEC believes that having option-like risk characteristics is sufficient reason to adopt requirements modeled after FINRA Rule 2360, it does not make sense to impose such requirements on leveraged funds, which have dramatically different risk profiles than options, and not for warrants, structured notes with embedded options, and other instruments with non-linear risk profiles. Moreover, the proposal arbitrarily singles out leveraged funds by

proposing to impose new sales practices requirements on leveraged instruments structured as investment companies, but not on leveraged exchange-traded notes ("ETNs") that promise a payoff based on a daily-rebalanced leveraged return. Leveraged ETNs have a nearly identical risk/return profile to leveraged funds, and have other risks such as issuer default risk. It does not make sense to single out leveraged funds for disparate treatment.

II. Background: The Proposed Sales Practices Rules and FINRA's Option Account Approval Requirements

10. The proposed sales practices rules would place new requirements on broker-dealers and investment advisers relating to investments in "leveraged/inverse investment vehicles" by individual investors (a natural person or legal representative of a natural person). Specifically, proposed Exchange Act rule 15*l*-2 would prohibit broker-dealers from accepting or submitting orders for "leveraged/inverse investment vehicles" on behalf of any customer who is an individual investor, unless they go through a prescribed process for approving the investor's account for such trading.[6] Proposed Advisers Act rule 211(h)-1 creates a similar prohibition for investment advisers with respect to their individual advisory clients.[7]

11. For purposes of these rules, the term "leveraged/inverse investment vehicle" is defined to mean "a registered investment company (including any separate series thereof), or commodity- or currency-based trust or fund, that seeks, directly or indirectly, to provide investment returns that correspond to the performance of a market index by a specified multiple, or to provide investment returns that have an inverse relationship to the performance of a market index, over a predetermined period of time."[8] This language would include leveraged funds structured as traditional mutual funds or exchange-traded funds ("ETFs"), but would not include ETNs.

12. The approval process is essentially the same under both proposed rules.[9] The required process would involve conducting due diligence such that the broker (adviser) "has a reasonable basis for believing" that the customer (client) "has such knowledge and

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[6] Proposing release, pp. 416-419.
[7] Proposing release, pp. 443-445.
[8] Proposing release, pp. 418, 445.
[9] Proposing release, p. 182 (which describes the proposal as establishing a "single, uniform set of enhanced due diligence and approval requirements for broker-dealers and investment advisers with respect to retail investors that engage in leveraged/inverse investment vehicle transactions, including transactions where no recommendation or investment advice is provided by a firm.")

experience in financial matters that he or she may reasonably be expected to be capable of evaluating the risks of buying and selling leveraged/inverse investment vehicles."[10]

13. Although the proposing release says that this regulatory approach is modeled after FINRA Rule 2360(b)(16), which requires brokers to approve accounts for options trading, it is actually more stringent than the current regulatory regime under FINRA 2360. Critically, while FINRA Rule 2360(b)(16) does require that the account approval process be based on a "due diligence" process that includes collection of specified information about the investor, account approval under Rule 2360(b)(16) does not require the broker to have a belief that the customer is capable of evaluating the risks of buying and selling options.

14. Notably, the language employed in proposed rules 15*l*-2 and 211(h)-1 requiring a basis for belief that the customer is capable of evaluating the risks is taken verbatim from FINRA Rule 2360(b)(19), which is FINRA's option suitability rule, not the account-opening rule. Specifically, FINRA Rule 2360(b)(19) states that FINRA members must have a basis to believe the customer is capable of evaluating the risks of options before *recommending* an option transaction to the customer. It would not apply in a situation where the customer is a self-directed investor or more generally where the broker is not making a recommendation (e.g., the customer is perhaps relying upon third-party advice). Thus, the due diligence process for approving a customer for options trading does not appear to require any broker to make an affirmative determination that the customer is capable of understanding the risks of options, whereas this is exactly what the proposed sales practices rules would require. Hence, the proposed sales practices rules are more stringent and provide a greater barrier than for trading options.

15. Second, the proposal would apply a new sales practices rule not only to customers of broker-dealers (proposed rule 15*l*-2), but also to any client of a registered investment adviser who is a natural person, or a representative of a natural person (proposed rule 211(h)-1). This would also include situations where the adviser is managing a client's assets in a fully discretionary account.[11] By scoping in investment advisers managing discretionary accounts, the proposed rule appears to be imposing a requirement that advisers ascertain whether their advisory customers are capable of evaluating the risks of these products, even in situations

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[10] Proposing release, pp. 416–417, 443. The proposed sales practices rules would require the broker-dealer or investment adviser to seek to obtain information regarding the individual's investment objectives, employment status, estimated annual income, estimated net worth, and investment experience and knowledge regarding leveraged funds and other instruments, among other things. See Proposing release, pp. 187–188.

[11] Proposing release, p. 443.

where the customer is explicitly relying on the adviser to understand and manage these risks on their behalf. In such situations, the advisory client would not be allowed to use the leveraged funds, even if the client's desire is to affirmatively delegate that responsibility to the adviser.

III. Risks of Options Trading and Economic Rationale for the Options Regime

16. The SEC is explicit about its justification for modeling the proposed sales practices rules on the options regime, stating on page 183 of the proposing release, "[w]e have generally modeled the proposed rules after the FINRA options account framework in part because leveraged/inverse investment vehicles, when held over longer periods of time, may have certain similarities to options."[12] The SEC is incorrect in this assessment. Compared to leveraged funds, option trading involves risks that are significantly harder to understand and, depending on how they are used, subject traders to risks of much larger losses over shorter time periods. Moreover, a review of a special study predating the current options regime suggests that the current options regime was motivated by concerns that are not applicable to leveraged funds.

A. Options Have Many Risks That Are Beyond Those of Leveraged Funds in Both Magnitude and Complexity

17. From an economic perspective, there are various risks and complex aspects of options trading that do not pertain to leveraged funds. For example, option trading involves the possibility of losing 100% of the initial investment and the potential for investors to go "underwater" and owe large amounts. In addition, mathematical modeling and active monitoring may be necessary to understand and manage many other complexities of options, unlike for leveraged funds.

1. Unlike leveraged funds, certain purchased option positions are likely to incur losses of 100% over very short investment horizons

18. When a call (put) option reaches its expiration, if the underlying asset price is below (above) the option's strike price, the option is said to expire "out of the money." When an option expires out of the money, its value is then zero, and purchasers of the option will have

[12] Proposing release, p. 183.

lost 100% of their investment. Every time an option series expires out-of-the-money, all purchasers of those options lose 100% of the value of that position. This is a common occurrence. For example, as shown in Table 1 below, based on my examination of the open interest data for monthly S&P 500 index options from 2004 through 2019, I estimate that roughly 76% of all S&P 500 index option contracts expire out of the money.

Table 1
Percentage of S&P 500 Index Options Expiring Out of the Money[1]
2004–2019

Year	Open Interest[2]	Open Interest of Out-of-the-Money Options	% Out-of-the-Money Options[3]
2004	14,179,741	10,786,955	76%
2005	23,344,095	19,138,446	82%
2006	37,175,323	31,184,555	84%
2007	48,203,368	37,003,359	77%
2008	53,112,314	35,431,510	67%
2009	48,763,064	34,698,801	71%
2010	51,194,241	38,782,025	76%
2011	51,902,872	38,861,519	75%
2012	44,490,357	34,233,551	77%
2013	44,894,867	33,421,207	74%
2014	43,825,641	34,357,476	78%
2015	40,346,920	32,937,559	82%
2016	39,037,038	30,394,742	78%
2017	36,742,080	28,015,913	76%
2018	39,813,292	29,540,947	74%
2019	40,257,542	30,517,610	76%
Total	**657,282,755**	**499,306,175**	**76%**

Source: CBOE DataShop; Refinitiv

Note:
[1] From 1/1/04 to 5/17/10, the root symbols for the S&P 500 options included in the analysis are "SPB, SPQ, SPT, SPV, SPX, SPZ, SVP, SXB, SXM, SXY, SXZ, SYG, SYU, SYV, SZP, SZU, and SYF". After 5/17/10, the root symbol is "SPX".
[2] Open Interest is recorded on the last trading day before expiration.
[3] The S&P 500 index settlement value (SET) is utilized to determine if the option was out of the money at expiration.

19. Exchange-traded options are available for trading with a wide range of strike prices ranging from far below to far above the current underlying asset price, and options can be freely traded until they expire. Therefore, an investor who has full access to trade options can choose to purchase an option with one day (or less) to expiration that is out of the money. The payoffs of this trading strategy are analogous to buying a lottery ticket, especially if the

option is deep out of the money—there is a large likelihood that the position will lose 100% of its value, and a small chance of a potentially large payoff.

20. The same is not true for leveraged funds. In order for a 3X fund to lose 100% in a single day, its benchmark index would have to move by more than 33 1/3% in that day. To gain a further understanding of the frequency and magnitude of losses in these products, I examined the historical returns of the top 20 Direxion leveraged and inverse ETFs and their underlying indices.[13] Based on my review, none of the underlying indices lost more than 33% in a single day, and the ETFs lost more than 20% in a single day less than 0.4% of the time. See Appendix 1 for more detail. Further, some leveraged funds have additional features in place to help avoid a 100% loss even in the event of a catastrophic market movement.[14]

2. Unlike leveraged funds, unhedged written option positions have limited upside potential, but subject the writer to the risk of catastrophic losses

21. As described above, the maximum loss on a purchased option position is 100% of the premium paid for the option. In contrast, the writer of an option receives the initial premium, then takes on a liability that, depending on the movements of the underlying asset, could result in a loss for the investor many times larger than the initial premium, and which may result in the investor owing money. If the movements in the underlying asset price are significant, this can result in dramatic losses for the investor over short time periods. In contrast, with leveraged funds, all of the leverage is taken inside the fund so in the case of an extreme event where the market movement is so large that the fund goes underwater, that liability does not transfer to the investors. In other words, a fully paid long position in a leveraged fund cannot generate future liabilities for the investor.

22. Consider the example of S&P 500 put options on August 17, 2011, with strike price 1,150 and settlement date of August 19, 2011. An investor who wrote 1,000 contracts at the close of the trading day, when the series was out of the money and trading at $0.85, would have received $85,000. ($0.85 X 100 units per contract X 1,000 contracts). Had the S&P

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[13] Leveraged and inverse ETFs were selected based on net assets as of January 21, 2020.

[14] For example, according to Direxion's prospectus: "The Funds' investment adviser, Rafferty Asset Management, LLC, will attempt to position each Fund's portfolio to ensure that a Fund does not gain or lose more than 90% of its net asset value on a given trading day. As a consequence, a Fund's portfolio should not be responsive to underlying index movements beyond 30% on a given trading day, whether that movement is favorable or adverse to the Fund. See Direxion Shares ETF Trust Prospectus, February 28, 2020.

500 index remained above 1,150 at the market open on August 19, 2011, the put options would have expired out of the money and the writer would have kept the $85,000 as a profit on the position. However, on August 18, 2011, the S&P 500 index declined by 4.5% to close at 1,140.65, bringing the put options in the money. At that point, the option premium had increased to $11.00, so the investor's liability on the written put positon had increased from $85,000 to $1.10 million in a single day. Had the investor held on to the written position overnight through option expiration the next morning, the position would have expired with a liability of approximately $2.3 million,[15] for a net loss of approximately $2.2 million.[16]

3. Option positions can have implied leverage that is well above the leverage of any existing leveraged funds

23. Unlike leveraged funds, some option positions, especially out-of-the-money short-term options, can have extremely high implicit leverage. In other words, the value of an options position can change significantly in a single day even if the value of the underlying asset moves by a small percentage amount. For example, Chart 1 below depicts the value after one trading day of an initial $10,000 investment in a 3X leveraged fund on the S&P 500, compared to an investment of $10,000 in at-the-money call options with 30 days to maturity. Movements of 1% in the S&P 500 index translate to changes of around 30% in the value of the at-the-money call option, while the value of the investment in the leveraged ETF would change by only 3%. Similarly, movements up or down of 6% in the S&P 500 cause the option value to increase by more than 200% or decrease by more than 90%, while the value of the leveraged fund investment would increase or decrease by 18%.

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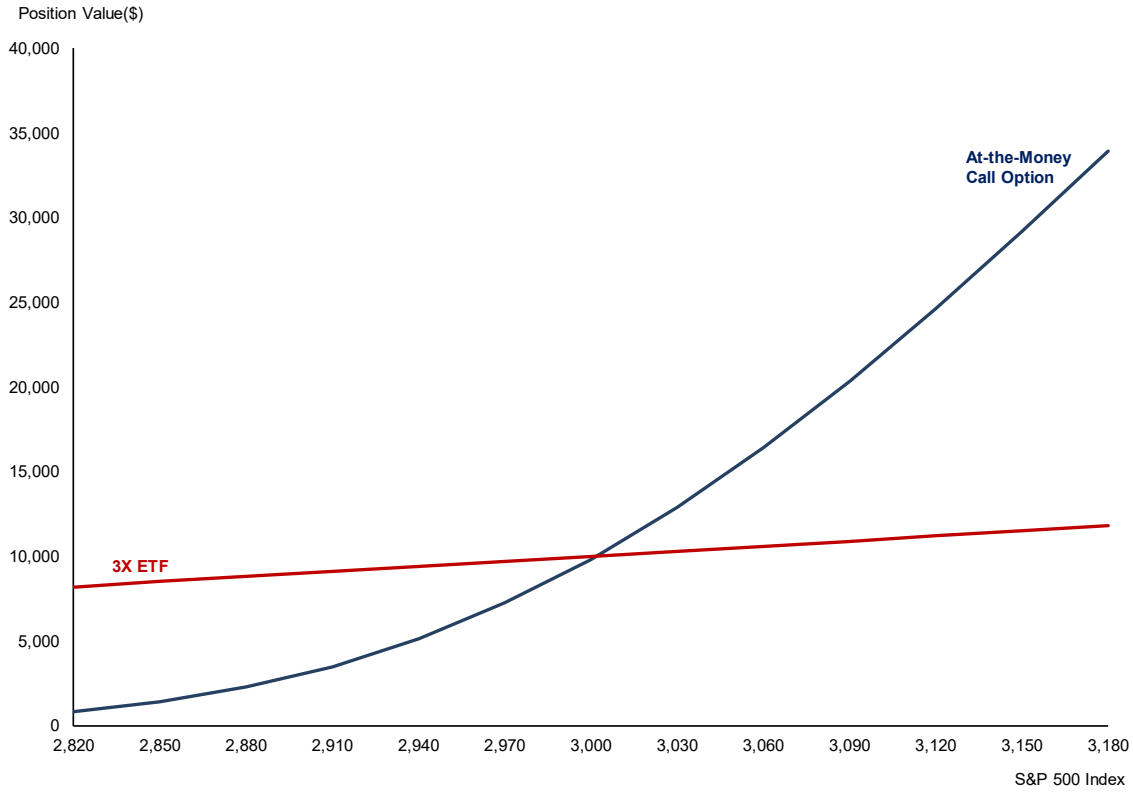
[15] The settlement value of S&P 500 index options on August 19, 2011 was 1,126.95. To settle their position, the put option writer would have had to pay $2,305 per contract, calculated as $100 X (1,150.00 – 1,126.95), or a total of $2,305,000 for 1,000 contracts.

[16] The risk of a loss this large is likely quite small and represents an extreme rare event. This example is meant to illustrate the unlimited nature of the risk exposure.

Chart 1
Value of $10,000 Investment in At-the-Money S&P 500 Call Options and S&P 500 3X ETF After One Day as a Function of Underlying Value[1]



Note:
[1] S&P 500 Index value is assumed to be equal to 3,000 at inception. The option premium is calculated using Black-Scholes and assuming that the annual volatility is 15%, the risk-free interest rate is 5%, and the time to maturity is 30 days. For a 3X Leveraged ETF, leverage is equal to three. The values used for volatility and interest rate are consistent with the ones used by the DERA Study (DERA Study, p. 8).

24. The leverage of option positions, also called "elasticity,"[17] depends primarily on the time to maturity, the volatility of the underlying asset, and the moneyness of the option (i.e., the degree to which the option is in- or out-of-the-money), and can be even higher than the values suggested by the above example. Table 2 below shows that the amount of leverage implicit in many option positions far exceeds the amount achievable through leveraged funds. For example, the implied leverage of a 125% out-of-the-money call option is approximately 25 for a six-month maturity and over 125 for a one-month maturity.[18] Even at-the-money or

[17] Cox, John C. and Mark Rubinstein, *Options Markets* (Englewood Cliffs, NJ: Prentice Hall, 1985), pp. 224, 228–229.
[18] Implied Leverage is calculated as (Price of Underlying) X (Option Delta) / (Option Premium). For all examples in this paragraph, the option delta and premium are calculated using Black-Scholes and assuming that the annual volatility is 15% and the risk-free interest rate is 5%. The values used for volatility and interest rate are consistent

slightly in-the-money options can have implied leverage significantly larger than the leverage of a leveraged fund. For example, an at-the-money call option with six months to maturity would have an implied leverage of approximately 11, more than three times the leverage of a 3X leveraged fund.

Table 2
Comparison of Leverage for Leveraged ETFs and Options[1][2]

	Strike Price %				
	75%	**90%**	**100%**	**110%**	**125%**
3X ETF	3.0	3.0	3.0	3.0	3.0
-3X ETF	-3.0	-3.0	-3.0	-3.0	-3.0
Six-Month Maturity Call Option	3.7	7.1	11.1	16.2	24.7
One-Month Maturity Call Option	4.0	9.6	28.2	64.4	125.6
Six-Month Maturity Put Option	-32.4	-19.0	-12.6	-8.1	-4.4
One-Month Maturity Put Option	-161.6	-71.6	-29.7	-10.3	-4.1

Note:
[1] For options, leverage is calculated as (Price of Underlying) X (Option Delta) / (Option Premium). The option delta and premium are calculated using Black-Scholes and assuming that the annual volatility is 15% and the risk-free interest rate is 5%. For a 3X (-3X) Leveraged ETF, leverage is equal to three (minus three).
[2] Strike Price % represents the strike price as a percentage of the current underlying price.

4. Options have additional complexities that are not found in leveraged funds

25. In addition to the risk characteristics described above, options have numerous other complexities beyond those found in leveraged funds. These additional complexities are well-documented but require mathematical modeling to understand and active monitoring to manage. For example:

- **The directional risk exposure of option positions can change radically over time as the underlying price moves up or down.** An investor who takes on an option position seeking to achieve a certain target amount of directional risk exposure must constantly monitor and adjust the position. Estimating the amount of directional risk exposure (also known as "delta"[19]) in the position requires specialized modeling likely to be beyond the capabilities of many investors (and since the models are based on assumptions, even sophisticated investors are subject to modeling error in estimating risk). In contrast, an investor in leveraged funds that are rebalanced daily

with the ones used by the DERA Study (DERA Study, p. 8). For an overview of the Black-Scholes model, see Hull, John C., *Options, Futures, and Other Derivatives*, 5th Edition, (Upper Saddle River, NJ: Prentice Hall, 2003) ("Hull (2003)"), Chapter 12.
[19] Hull (2003), pp. 302–309.

to meet a target leverage ratio can easily know the total risk exposure in their position each day without performing complex calculations.

- **Options are sensitive to market expectations regarding future volatility.** This additional source of risk, known as "vega risk,"[20] also varies as the underlying stock price changes and as the time to expiration changes. Estimating the current amount of volatility risk in an option position also requires sophisticated mathematical modeling and actively monitoring the position.

- **American-style options may require active monitoring to preserve value.** For American-style options, it is well known that under certain conditions it may be optimal for any investor to exercise the option early. Deciding whether and when to exercise early may require mathematical analysis that is likely beyond the capabilities of many investors.[21]

- **Writing options requires ongoing monitoring to meet margin calls.** Option writers may be subject to margin calls when their potential exposure increases above a certain threshold. An investor who gets a margin call must make a rapid decision whether to meet the call or close the position. An investor who is not paying attention and fails to respond may get forced out of the position even if it they would have wanted to meet the margin call.[22]

26. In sum, understanding and managing the risks of option positions requires a substantially higher level of training and sophistication than investing in a leveraged fund. Active monitoring and mathematical calculations may be required for an option investor to understand and manage the complex risks of their positions and to avoid losing value (such as by failing to exercise or to meet a margin call). In contrast, the same is not generally true for leveraged funds. While there may be reasons leveraged fund investors might wish to actively monitor the performance of their position, investors in leveraged funds with daily rebalancing do not need to perform calculations to know the total risk exposure in their position each day, and mathematical modeling is generally not required for investors to assess whether they are comfortable remaining in a leveraged fund position. The SEC is therefore incorrect in its presumption that leveraged funds are similar to options or as complex as options.

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[20] Hull (2003), pp. 316–318.

[21] In particular, the decision to exercise the call option prior to maturity depends upon the comparison between the amount of the current dividend vs. the time value of the option, and the latter typically cannot be computed without the use of a sophisticated model such as the binomial model. Indeed, empirical evidence indicates that a significant percentage of option investors fail to exercise their options early in situations where they should. See, for example, Pool, Veronika K., Hans R. Stoll and Robert E. Whaley, "Failure to exercise call options: An anomaly and a trading game," *Journal of Financial Markets*, 11(1), 2008, pp. 1–35 and Hao, Jia, Avner Kalay and Stewart Mayhew, "Ex-dividend Arbitrage in Option Markets", *The Review of Financial Studies*, 23(1), 2010, pp. 271–303.

[22] See e.g., The Options Clearing Corporation, "The Characteristics and Risks of Standardized Options," pp. 55–56, 65, https://www.theocc.com/components/docs/riskstoc.pdf.

B. The Options Regime was Motivated by Factors that Do Not Apply to the Current Leveraged Fund Industry

27. I understand that the current options regime was developed following recommendations published in 1978 in the "Special Study of the Options Markets" ("Special Options Study").[23] A review of the Special Options Study shows that the authors were concerned that the possibility of high commissions was motivating brokers and advisors to make unsuitable option trade recommendations to their customers and to engage in excessive trading of options in their customers' accounts. For example, the Special Options Study noted that "because brokerage commissions alone provide a strong incentive for registered representatives to recommend listed options, […] customers had been switched from conservative long-term investment positions into active short-term trading in listed options with little or no regard to the suitability of this new type of trading for the customer."[24] The study further noted that "[a] desire to increase their earnings can tempt registered representatives to effect excessive options trades in customer accounts with the primary purpose of generating commissions."[25]

28. In a section discussing suitability, the Special Options Study provided several examples of unsuitable option recommendations made by a certain broker-dealer firm, and found that one of the factors that contributed to this failure was an overemphasis on commission revenue production.[26] The Special Options Study also highlighted cases where brokers recommended transactions with a maximum profit potential that was less than the amount of commissions charged.[27]

29. It is not clear how leveraged funds, for which brokers typically charge the same (or no) commissions as common stocks, present any of these concerns. If the SEC is concerned that leveraged funds are susceptible to conflicts of the type identified in the Special Options Study, it has not articulated such concerns or presented evidence for such concerns in the proposing release. Further, if the SEC has such concerns, it should consider carefully

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[23] Report of the Special Study of the Options Markets to the Securities and Exchange Commission, December 22, 1978 ("Special Options Study").

[24] Special Options Study, p. 292. See also, Special Options Study, pp. 302, 305 ("Coupled with the short-term nature of options, the industry's commission rate structure makes options a particularly attractive sales item to a registered representative whose livelihood depends upon commissions. . . . This incentive is greatly magnified by the opportunity for repeated trades of options which is a result of their limited life span.").

[25] Special Options Study, p. 441.

[26] See Special Options Study, pp. 336–338. The other factors listed are "untrained, unscrupulous and unsupervised" registered representatives and that "the local and home office supervisors were either unwilling or unable to supervise properly registered representatives selling options."

[27] Special Options Study, pp. 292, 461–462.

whether the existing protections under FINRA rules and the new protections that will be in place when Regulation Best Interest is implemented on June 30, 2020 are sufficient to address these concerns.

30. The Special Options Study also raised concerns about customers receiving documentation from brokers that did not fully explain the risks of trading options.[28] However, leveraged funds provide customers prospectuses as well as other educational material explaining the different sources of risk inherent in investing in their products.[29]

IV. The DERA Study and the Risk Profile of Leveraged Funds

31. As explained above, the SEC's decision to propose a regulatory framework modeled after FINRA's framework for options was premised on the presumption that "leveraged/inverse investment vehicles, when held over longer periods of time, may have certain similarities to options."[30] According to the proposing release, the main alleged "similarities to options" are (1) that leveraged funds are supposed to have a returns distribution characterized by positive skewness,[31] and (2) that both options and leveraged funds can be replicated using a dynamically rebalanced portfolio of the underlying index and borrowing or lending.[32]

32. I address the first point at length below. With respect to the second issue, merely noting that an instrument can be replicated by a dynamically rebalanced portfolio says nothing about the risk profile of the instrument over longer holding periods. Dynamic replication can be used to create positions that look very close to holding stock or cash. Yet the proposed sales practices rules would apply only to leveraged funds. The proposing release provides no explanation of why this is appropriate, nor does it provide any discussion or evidence as to whether the magnitude of rebalancing done for leveraged funds makes them

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[28] Special Options Study, p. 293 ("Customers generally are not provided adequate, usable information to enable them to appreciate fully the risks or results of trading listed options. … Options customers, on the other hand, often do receive from brokerage firms detailed selling documents, such as worksheets and performance reports. These documents may be misleading because they sometimes provide little or no explanation of the risks of the options transactions being recommended, or because they contain unrealistic projections of high rates of return.").

[29] For example, Direxion's website has a prominent "Education" section. Direxion, "Education Overview," https://www.direxion.com/education, accessed March 5, 2020.

[30] Proposing release, p. 183.

[31] Proposing release, p. 258, note 470.

[32] Proposing release, pp. 258–259.

at all similar to options. Hence, this purported similarity cannot be a justification for the proposed rules.

A. Overview of the DERA Study

33. Regarding the purported similarities in the distribution of returns over longer holding periods, the proposing release cites the DERA Study,[33] which appears to have been posted contemporaneously. The DERA Study presents numerous graphs showing the distribution of simple returns for leveraged and inverse funds over different holding periods and for different leverage multiples. It purports to show that leveraged ETFs are characterized by positive skewness over longer holding periods, and that the skewness of the return distribution is positively related to the leverage and the holding period.[34] The DERA Study claims that leveraged funds are similar to options in this respect, as the skewness of the return distribution for options increases with the extent to which an option is out of the money,[35] and then concludes by observing that "[w]hile a broker-dealer accepting a customer's order for options is subject to FINRA account approval and due diligence requirements, similar requirements for transactions in [leveraged ETFs] currently do not exist."[36] This language appears to be designed to support the SEC's choice to model the proposed sales practices rules after the options regime.

34. However, the actual analysis in the DERA Study does not support the conclusion that leveraged funds are similar to options, and the SEC is not justified in relying on the DERA Study for the proposition that leveraged funds have returns distributions or risk profiles that are similar to options. In the sections below, I explain how the DERA Study masks the drastic differences between the risk profile of leveraged funds and options by presenting misleading graphs, and I show that evidence in the DERA Study itself as well as additional analysis of more commonly traded options confirm what I explained in Section III – that the risk profiles of leveraged funds and options are drastically different.

35. It is also worth noting that the DERA Study limits its focus to the narrow question of whether leveraged funds have risk characteristics similar to options. It does not attempt to address any of the other assumptions in the proposing release that speak to the larger question

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[33] Division of Economic and Risk Analysis, "Economics Note: The Distribution of Leveraged ETF Returns," November 2019, https://www.sec.gov/files/DERA_LETF_Economics_Note_Nov2019.pdf ("DERA Study").
[34] DERA Study, pp. 4–5, 8.
[35] DERA Study, p. 8.
[36] DERA Study, p. 8.

of whether additional sales practices rules are needed. The DERA Study provides no evidence that holding leveraged funds for longer holding periods is an unsuitable strategy for individual investors, or that investors misunderstand the risks of leveraged funds. Nor does it provide evidence that investors actually hold leveraged funds for periods of six months. The SEC could have requested data on investor holding periods from brokers but the proposing release does not mention any such effort.

B. The Graphs in the DERA Study Are Misleading

36. Figures 1–5 in the DERA Study depict the distribution of what the study calls the "gross return" for leveraged funds for various holding periods and target multiples.[37] "Gross return" is defined as the ending value corresponding to an initial investment of $1.00. Mathematically, this amounts to the same thing as one plus the percentage return on the investment over the holding period (i.e., one plus the simple return). By definition, the return metric used in these figures is bounded below at zero, which would correspond to a return of -100%.[38]

37. Figure 6 in the DERA Study shows payoff distributions for options with different strike prices. Visually, Figure 6 looks qualitatively similar in some ways to Figures 1–5, as both graphs show some distributions that are nearly symmetric and others that appear to have more weight to the left and a longer tail to the right. A casual reader of the DERA Study might compare Figure 6 with Figures 1–5 and have the impression that the risks of leveraged funds are similar in magnitude to the risks of trading options. Such a conclusion would be incorrect.

38. As a preliminary matter, the options chosen for inclusion in the DERA Study are not representative of the types of options most commonly traded. Most trading activity in listed options occurs in option series where the strike price is relatively close to the current index

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[37] It is not clear whether the Figures in the DERA Study accurately portray the results of the methodology they used. Specifically, Figure 3 and Figure 5 appear to report inconsistent results. The red line in Figure 3 and the green line in Figure 5 both claim to report the simulated empirical distribution of returns for a hypothetical 4X leveraged fund for a holding period of six months, and both figures are supposedly based on the same methodology. But the two lines do not appear to match each other—the red line in Figure 3 peaks at a value less than one, while the green line in Figure 5 peaks at a value greater than one.

[38] Figures 1 and 2 in the DERA Study are based on a theoretical return distribution described on page 3 of the study, which by assumption, is a normal distribution for logarithmic returns, corresponding to a lognormal distribution for the terminal value. Thus, Figures 1 and 2 are, by construction, based on a returns distribution that is symmetric when measured in logarithmic returns. Figures 3, 4, and 5 show simulated distributions of holding period returns based on random sampling from the historical record of daily returns on the S&P 500 index.

value ("near the money"). Yet Figure 6 of the DERA Study focuses on deep-in-the-money options. Specifically, Figure 6 in the DERA Study depicts the distribution of six-month holding period returns for the index and for call options with strike prices equal to 25%, 75%, 90%, and 100% of the index value. Call options with strike prices equal to 25% and 75% of the index are so deep in the money that trading them is similar to trading the index, and therefore they do not have as significant exposures to the type of risks that are unique to options. Options in this range have essentially no trading volume. Even in-the-money options with strike prices equal to 90% of the current index value are not very representative of actively traded options. For example, based on my review of recent trading activity in monthly S&P 500 call options from 2015 to 2019, on average call options with strike prices of up to 90% of the current index value account for less than 3% of the daily trading volume. Thus, three of the four option series depicted in Figure 6 of the DERA Study represent infrequently traded options.

39. In contrast, on average, 78% of daily call option trading volume is in option series with a strike price within 5% of the current index value, and 92% is in option series with a strike price within 10% of the current index value. Many of the most important risks associated with options relate to options that are near the money or "out of the money."[39] Out of the money options have the greatest risk of total (100%) loss and the highest implicit leverage. Options that are at the money have the most non-linearity in the payoff structure and the greatest volatility exposure. By focusing on deep-in-the-money options and ignoring out-of-the-money options, Figure 6 of the DERA Study is not very informative about the range of risks associated with options trading.

40. In addition, Figures 1–5 of the DERA Study inexplicably depict return distributions of hypothetical ETFs with target multiples of 4X and -4X even though, to my knowledge, there are currently no 4X or -4X ETFs in the U.S. market. The DERA Study provides no explanation for its choice to include leveraged ETFs that have a different risk profile than those of leveraged funds actually available to investors. As with Figure 6 of the DERA Study, Figure 1–5 are also misleading with respect to the range of risks associated with trading in leveraged funds.

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[39] Call (put) options that have strike prices higher (lower) than the current index level are said to be "out of the money." If the difference is relatively large, the option is said to be "deep out of the money." Call (put) options with strike prices lower (higher) than the index level are said to be "in the money" or "deep in the money."

C. Leveraged Funds and Options Have Drastically Different Risk Profiles

41. The graphs in the DERA Study, when properly interpreted, actually confirm that leveraged funds are not similar to options, which are associated with far greater risks. For example, the graphs in Figure 3 of the DERA Study show that even if held over a 6-month period, the likelihood of a loss larger than 50% is very small for leveraged funds—this can be seen by noting that only a small tail of the curve lies to the left of 0.5 on the horizontal axis for 2X funds (blue curve), 3X funds (green curve), and even for the hypothetical 4X funds (red curve). Figure 3 also shows that a loss of 100% over a six-month period is virtually impossible for leveraged funds—the blue, green, and red curves drop down to zero before the graph reaches total loss (zero on the horizontal axis). Figure 4 shows the same thing for inverse funds. In contrast, DERA's Figure 6 shows that call options held for six months have a very substantial risk of loss of 100% or near 100% if they are at the money (red line) or even if they are 10% in the money (purple line). This can be seen by noting that the red and purple lines in Figure 6 are high and increasing as they get to zero (total loss) on the horizontal axis.[40] An alternate version of the DERA Study Figure 6 is presented in Appendix 2. This chart shows a range of strike prices that more accurately reflects the options that actually trade, including out-of-money strike prices.

42. Figure 6 in the DERA Study is also misleading regarding the probability of 100% loss for the options, as it does not show that the true distribution of returns is discontinuous with a large spike of probability at zero on the horizontal axis (representing 100% loss). For the at-the-money option, the probability of a 100% loss is nearly 40%, which could have been depicted in the figure with a tall spike representing a mass of probability at zero (see Appendix 3). For out-of-the-money options, this risk is even greater. For example, for a six month out-of-the-money call option with strike price of 110% of the index value, the likelihood of a 100% loss is approximately 71%.

43. With respect to the high-level conclusion from the DERA Study that leveraged funds and options have similar risk profiles, a careful comparison shows that there is almost no similarity. Table 3 below provides a more apt comparison of the risks of leveraged funds compared to options with various strike prices. To generate these results, I replicated the

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[40] The only curves in Figure 6 that do not show some chance of total loss over a six-month period are the black line, which is not even an option but the underlying index, and the blue line, which is an option with a strike price equal to 25% of the current index value and is so far in the money that trading it is essentially equivalent to trading the index.

sampling methodology of the DERA Study, using all of the same assumptions and inputs. Specifically, I generated 100,000 hypothetical sample price paths for the S&P 500 index by randomly sampling daily returns from the historical record of returns between January 1, 1964 and July 31, 2017.[41]

44. Table 3 reports statistics on the likelihood of extreme losses—losses larger than 20%, larger than 50%, or equal to 100% of the initial investment—for leveraged funds and for various purchased option positions. As the table demonstrates, DERA's own methodology shows that for leveraged funds held for a period of one month, losses of 20% are uncommon, losses over 50% are extremely rare, and losses of 100% are non-existent. For example, the methodology shows that the probability of losses larger than 50% are less than 0.2% for 3X funds and approximately 0.01% percent for 2X funds. In contrast, for an at-the-money option held for a similar one-month period, the likelihood of a 100% loss is approximately 45%. For options that are ten percent out of the money, the probability of 100% loss exceeds 97%, and for the most deep-out-of-the-money options, total loss is a near certainty. Qualitatively similar results hold for longer holding periods—Appendix 4 shows similar results for a six-month holding period.

[41] DERA Study, p. 5. Consistent with the DERA Study, I used these sample price paths to calculate the cumulative holding period returns of a leveraged or inverse fund that perfectly matches its daily return target each day. To calculate the holding period returns for options, I used the Black-Scholes formula assuming a risk-free interest rate of 5% and annual volatility of 15%, as described on p. 8 of the DERA Study.

Table 3
Comparison of Loss Probabilities for ETF and Purchased Call Option Empirical Return Distributions[1] [2]
1-Month Investment Horizon

	PR(loss >= 20%)	PR(loss >= 50%)	PR(loss = 100%)
S&P 500	0.09%	0.00%	0.00%
Leveraged ETFs			
2X S&P 500	1.02%	0.01%	0.00%
3X S&P 500	5.00%	0.16%	0.00%
Inverse ETFs			
-1X S&P 500	0.01%	0.00%	0.00%
-2X S&P 500	1.67%	0.00%	0.00%
-3X S&P 500	7.88%	0.02%	0.00%
Purchased Options			
Call, strike=75% S&P 500	11.63%	0.44%	0.01%
Call, strike=90% S&P 500	30.19%	11.40%	1.20%
Call, strike=100% S&P 500	58.57%	53.47%	44.72%
Call, strike=110% S&P 500	97.43%	97.42%	97.41%
Call, strike=125% S&P 500	99.99%	99.99%	99.99%

Note:
[1] Empirical summary statistics based on 100,000 daily index return (arithmetic return) price paths over a 1-month investment horizon randomly sampled from the daily S&P 500 returns from 1/1/1964 – 7/31/2017.
[2] For purchased call options, the loss probabilities represent the probability of losing greater than the specified percentage of the initial investment.

45. The DERA Study only considers purchased options, which can lose at most 100% of the original investment value. In contrast, as I explained in Section III.A, writers of options can lose an amount far greater than the initial premium received. Table 4 below reports the probability of extreme loses for written option positions. As the table shows, call option writers can incur losses that are greater than the initial premium, and in some cases can even lose as much as five times the initial premium. For options that are at the money, the probability of a loss greater than 100% of the initial premium received is more than 20%, and there is a greater than 1% probability of losing more than five times the initial premium. As previously mentioned, losses for leveraged funds are bounded by the amount originally invested and can never exceed 100%.

Table 4
Loss Probabilities for Written Call Option Empirical Return Distributions[1] [2]
1-Month Investment Horizon

	PR(loss >= 20%)	PR(loss >= 50%)	PR(loss > 100%)	PR(loss >= 500%)
Call, strike=75% S&P 500	14.66%	0.78%	0.01%	0.00%
Call, strike=90% S&P 500	33.66%	13.73%	1.92%	0.00%
Call, strike=100% S&P 500	34.74%	30.15%	23.14%	1.38%
Call, strike=110% S&P 500	2.55%	2.54%	2.53%	2.40%
Call, strike=125% S&P 500	0.01%	0.01%	0.01%	0.01%

Note:
[1] Empirical summary statistics based on 100,000 daily index return (arithmetic return) price paths over a 1-month investment horizon randomly sampled from the daily S&P 500 returns from 1/1/1964 – 7/31/2017.
[2] For written call options, returns are calculated as the gain or loss at expiration as a percentage of the initial premium received, and do not account for margin requirements. The loss probability therefore represents the probability of losing greater than the specified percentage of the initial premium received.

46. The DERA Study specifically claims that leveraged funds are similar to options due to positive skewness in the return distribution.[42] However, the DERA Study does not actually report what the estimated skewness is for either type of instrument, and does not show that they are similar in magnitude. In fact, the amount of skewness in leveraged fund returns is nowhere near the amount of skewness in certain option strategies, such as strategies involving out-of-the-money options.

47. Table 5 below reports estimates of skewness of simple returns for leveraged funds and for various types of options for 1-month and 6-month holding periods. I calculated these values by applying the same methodology used in the DERA Study to generate sample paths from the empirical distribution, and also using the same assumptions as the DERA Study for computing returns on options. But in addition to the options depicted in Figure 6 of the DERA Study, I also computed skewness for out-of-the-money options (which, as explained above, are far more common than the deep-in-the-money options modeled by DERA), and for written option positions.

[42] As I explained above, skewness is a measure of asymmetry in a distribution. Compared to an asset with a symmetric returns distribution, a distribution with positive skewness has a higher likelihood of extreme positive returns and a lower likelihood of extreme negative returns.

Table 5
Comparison of Skewness for Leveraged Fund and Option Return Distributions[1][2]
One- and Six-Month Investment Horizons

	1 Month	6 Month
S&P 500	0.01	0.28
Leveraged ETFs		
2X S&P 500	0.15	0.63
3X S&P 500	0.29	1.00
Inverse ETFs		
-1X S&P 500	0.26	0.41
-2X S&P 500	0.41	0.77
-3X S&P 500	0.55	1.17
Purchased Options		
Call, strike=75% S&P 500	0.02	0.31
Call, strike=90% S&P 500	0.22	0.67
Call, strike=100% S&P 500	1.74	1.43
Call, strike=110% S&P 500	13.25	2.90
Call, strike=125% S&P 500	181.67	8.87
Written Options		
Call, strike=75% S&P 500	-0.02	-0.31
Call, strike=90% S&P 500	-0.22	-0.67
Call, strike=100% S&P 500	-1.74	-1.43
Call, strike=110% S&P 500	-13.25	-2.90
Call, strike=125% S&P 500	-181.67	-8.87

Note:
[1] Empirical summary statistics based on 100,000 daily index return (arithmetic return) price paths over a 1-month and 6-month investment horizon randomly sampled from the daily S&P 500 returns from 1/1/1964 – 7/31/2017.
[2] The Skewness Measure is calculated using the third central moment divided by the second central moment raised to the power of 3/2. Skewness is calculated using the holding period returns.

48. As this table shows, the amount of skewness in leveraged funds returns is trivial compared to the amount of skewness in option returns. While the returns of leveraged funds display moderate positive skewness (typically well below 1.0), the more common option positions, particularly out-of-the-money options, are characterized by much higher levels of skewness. For example, for purchased (written) out-of-the-money call options with a strike

price of 110% of the index value and one month to maturity, skewness is 13.25 (-13.25), and the magnitude of skewness can exceed 180 for the deepest out of the money options.

49. The DERA Study makes much of the purported skewness in returns of leveraged funds, but does not evaluate whether skewness in leveraged fund returns is significantly different from what the investor might face by investing in other instruments that are not subject to special sales practices rules. The type of positive skewness depicted in Figures 1–5 of the DERA Study is not driven by the economics of leveraged funds, but is an artifact of DERA's choice to graph the distribution of simple returns.[43] Because the simple return distribution for any asset whose value cannot go negative (such as a leveraged fund) is bounded below by -100% but not bounded above, one would expect there to be some degree of skewness in the simple holding period return—this is true for common stocks and unleveraged index returns as well as leveraged fund returns.

50. For example, skewness in simple returns comparable to that of leveraged fund returns would result just from holding an unleveraged index fund for a longer period. Table 6 below compares the skewness of simple returns for leveraged funds with that of unleveraged funds for various holding periods. As the table shows, the skewness of returns for a 2X S&P 500 leveraged fund held for six months is similar to that of an unleveraged index fund tracking the S&P 500 held for two years, and the skewness of returns for a 3X leveraged fund held for six months is comparable to that of an unleveraged index fund held for about four years.

[43] The DERA Study does not establish that the skewness of its empirical return distributions for leveraged ETFs is greater than the amount of skewness that would be expected due to the use of simple returns rather than log returns. Based on my calculations, had the DERA Study used logarithmic returns instead of simple returns, which arguably would have been a more appropriate choice for studying the distribution of returns over longer holding periods, the distributions of leveraged ETF returns would not have shown any evidence of positive skewness. Moreover, Figures 1 and 2 of the DERA Study are based on a theoretical return distribution described on page 3 of the study, which by assumption is a normal distribution. By definition, the normal distribution has zero skewness, so Figures 1 and 2 of the DERA Study provide no evidence of positive skewness in log returns.

Table 6
Comparison of Skewness for Select ETF Empirical Return Distributions[1]

	Skewness	
	Index Fund	Leveraged ETF
1X S&P 500, 1-year	0.46	
2X S&P 500, 6-month		**0.63**
1X S&P 500, 2-year	0.67	
1X S&P 500, 3-year	0.85	
3X S&P 500, 6-month		**1.00**
1X S&P 500, 4-year	1.03	
1X S&P 500, 5-year	1.16	

Note:
[1] Empirical summary statistics based on 100,000 daily index return (arithmetic return) price paths over a 6-month investment horizon randomly sampled from the daily S&P 500 returns from 1/1/1964 – 7/31/2017.

51. In summary, contrary to what is implied by the DERA Study, the risk profile of options is vastly different from that of leveraged funds, in terms of the risk of catastrophic losses, the amount of skewness in the returns distribution, and the degree of leverage. The DERA Study therefore fails to provide support for the SEC's decision to model the proposed sales practices rules after the options regime, much less its decision to impose even more stringent requirements than the options regime.

V. The SEC's Proposal to Single Out Leveraged Funds for Special Treatment is Arbitrary

52. The proposing release explains that the SEC "modeled the proposed rules after the FINRA options account framework in part because leveraged/inverse investment vehicles, when held over longer periods of time, may have certain similarities to options."[44] Yet there are a number of other products available to retail investors with option-like payoffs or other nonlinear risk exposures that are not subject to similar requirements contained in the proposed sales practices rules. For example, a warrant is similar to a call option, but it is written by a company on its own stock and can trade on stock exchanges.[45] As with regular

[44] Proposing release, p. 183.
[45] Examples of warrants currently traded on exchanges include: " American International Group, Inc. Warrant expiring January 19, 2021" (listed on NYSE, https://www.nasdaq.com/market-activity/stocks/aig.ws, accessed March 17, 2020), "Broadmark Realty Capital Inc. Warrants, each exercisable for one fourth (1/4th) share of Common Stock at an exercise price of $2.875 per quarter share" (listed on NYSE American, https://www.nasdaq.com/market-activity/stocks/brmk.ws, accessed March 17, 2020), and "Immunovant, Inc. Warrants expiring 12/18/2024" (listed on Nasdaq, https://www.nasdaq.com/market-activity/stocks/imvtw, accessed March 17, 2020).

call options, investors in warrants face the risk of potentially losing their entire investment, as well as other risks and complexities that I described in Section III.A.

53. Similarly, structured notes can have non-linear payoffs with embedded options. For example, reverse convertible securities have a payoff structure that is equivalent to the combination of a written put option and a long position in a bond with above-market coupon payments. The SEC previously issued an investor bulletin to inform investors of the potential risks of structured notes. Among other features, the bulletin emphasized that structured notes may have complex payoff structures that "can make it difficult for an investor to accurately assess their value, risk and potential for growth through the term of the structured note."[46] FINRA previously issued an investor alert focused on reverse convertible securities which highlighted the risks of these products, including the possibility of losing the entire principal amount.[47] If the SEC believes that having option-like risk characteristics is sufficient reason to adopt requirements modeled after FINRA Rule 2360, it does not make sense to impose such requirements on leveraged funds, which have vastly different risk profiles than options, and not for warrants and structured notes with embedded options.

54. Moreover, the proposal to impose new sales practices requirements on leveraged instruments structured as investment companies but not on ETNs[48] that promise a payoff based on a daily-rebalanced leveraged return is arbitrary. Leveraged ETNs have a nearly identical risk profile to leveraged funds, including divergence from the constant-multiple of the reference index over longer holding periods, but do not enjoy the additional protections of the Investment Company Act, such as disclosure requirements and board oversight, and also are subject to issuer default risk. It does not make sense to single out leveraged funds for disparate treatment.

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[46] SEC Investor Bulletin, "Structured Notes," January 12, 2015, available at https://www.sec.gov/oiea/investor-alerts-bulletins/ib_structurednotes.html, accessed March 5, 2020.

[47] FINRA Investor Alert, "Reverse Convertibles: Complex Investment Vehicles," July 29, 2011, https://www.finra.org/investors/alerts/reverse-convertibles-complex-investment-vehicles, accessed March 5, 2020.

[48] There are currently dozens of ETNs investors can purchase, including ETNs that track equity and commodity indices. These ETNs have various rebalancing periods, including daily. For example, the VelocityShares 3x Long Natural Gas and 3x Inverse Natural Gas ETNs (listed on the NYSE Arca exchange) are designed to provide exposure to three times and negative three times the S&P GSCI® Natural Gas Index. Similarly, the Velocity Shares 3x Long and Inverse Gold ETNs (listed on the Nasdaq Stock Market) are designed to provide exposure to three times and negative three times the S&P GSCI® Gold Index. See Credit Suisse AG, "PRICING SUPPLEMENT No. VLS ETN-3/A51," December 23, 2019 and Credit Suisse AG, "PRICING SUPPLEMENT No. VLS ETN-2/A24," November 13, 2019.

VI. Conclusion

55. In summary, the SEC has not adequately justified its decision to model the proposed sales practices rules after FINRA's options account framework. Options are far riskier and more complex than leveraged funds. The DERA Study presents misleading graphs, thereby creating the false impression that leveraged funds and options have similar risk profiles. A more careful review confirms that the risk profiles are drastically different and that options trading involves much greater risk of extreme loss. Furthermore, it does not make sense to adopt requirements modeled after FINRA's options regime for leveraged funds, but not for other instruments that are arguably more similar to options, or for ETNs, which have a similar risk profile to leveraged funds.

Percentage of Days with Losses Greater Than 20%

Top 20 Direxion Leveraged and Inverse ETFs by Current Net Assets[1]

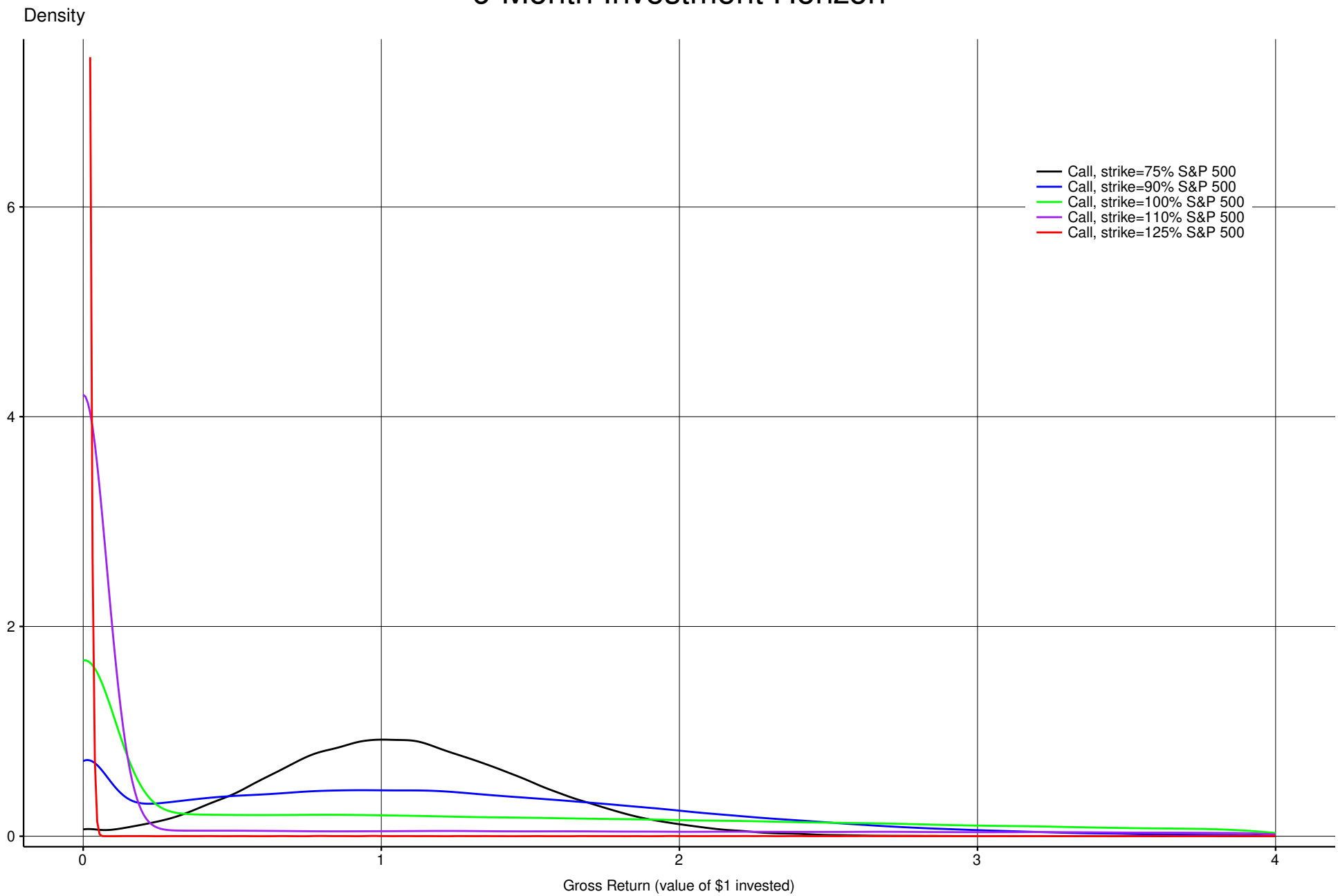
Fund Name	Inception Date	Number of Daily Returns	Number of Daily Returns Less Than -20%	Percentage of Daily Returns Less Than -20%
3X Financial Bull ETF ("FAS")	2008-11-06	2,857	15	0.5%
3X Gold Miners Index Bull ETF ("NUGT")	2010-12-08	2,332	19	0.8%
3X Technology Bull ETF ("TECL")	2008-12-17	2,829	3	0.1%
3X Junior Gold Miners Index Bull ETF ("JNUG")	2013-10-03	1,623	30	1.8%
3X S&P 500 Bull ETF ("SPXL")	2008-11-05	2,858	4	0.1%
3X Semiconductor Bull ETF ("SOXL")	2010-03-11	2,521	4	0.2%
3X Russell 2000 Small Cap Bull ETF ("TNA")	2008-11-05	2,858	8	0.3%
3X S&P 500 Bear ETF ("SPXS")	2008-11-05	2,858	2	0.1%
3X S&P Biotech Bull ETF ("LABU")	2015-05-28	1,209	8	0.7%
3X MSCI Brazil Bull ETF ("BRZU")	2013-04-10	1,725	6	0.3%
3X FTSE China Bull ETF ("YINN")	2009-12-03	2,587	4	0.2%
3X Russell 2000 Small Cap Bear ETF ("TZA")	2008-11-05	2,858	7	0.2%
3X Gold Miners Index Bear ETF ("DUST")	2010-12-08	2,332	18	0.8%
3X 20+ Year Treasury Bull ETF ("TMF")	2009-04-16	2,748	0	0.0%
3X Energy Bull ETF ("ERX")	2008-11-06	2,857	8	0.3%
3X Semiconductor Bear ETF ("SOXS")	2010-03-11	2,521	2	0.1%
3X MSCI Emerging Markets Bull ETF ("EDC")	2008-12-17	2,829	6	0.2%
3X S&P Oil & Gas Exp. & Prod. Bull ETF ("GUSH")	2015-05-29	1,204	9	0.7%
3X Healthcare Bull ETF ("CURE")	2011-06-15	2,148	2	0.1%
3X FTSE China Bear ETF ("YANG")	2009-12-03	2,587	1	0.0%
Total		**48,341**	**156**	**0.3%**

Source: Daily closing prices and current net assets provided by Direxion

Note:
[1] Leveraged and Inverse ETFs were selected based on net assets as of January 21, 2020. This analysis considers daily returns from inception through March 17, 2020 for each fund.

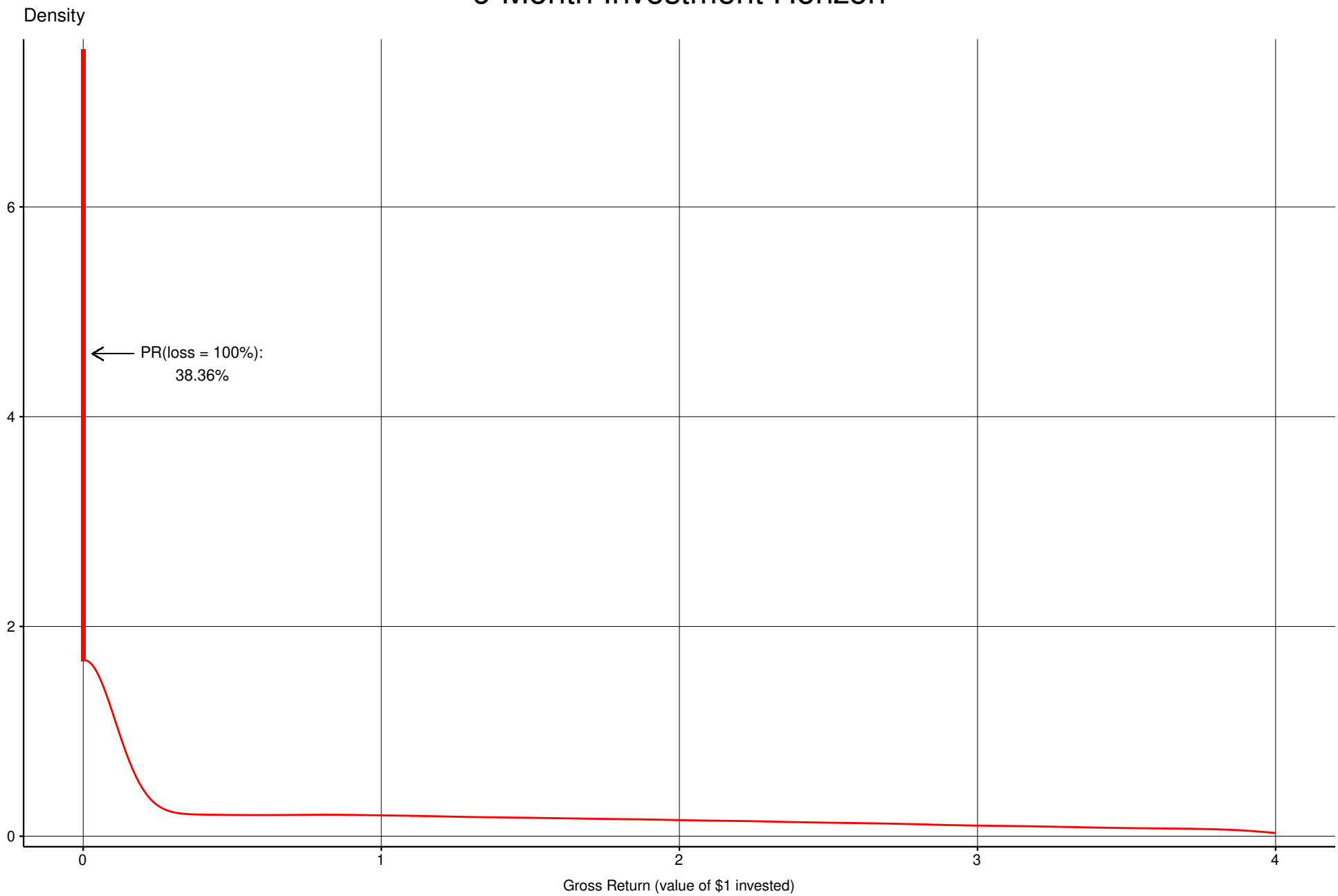
Modified DERA Study Figure 6

6-Month Investment Horizon



Call, strike=100% S&P 500

6-Month Investment Horizon



Comparison of Loss Probabilities for ETF and Purchased Call Option Empirical Return Distributions[1][2]

6-Month Investment Horizon

	PR(loss >= 20%)	PR(loss >= 50%)	PR(loss = 100%)
S&P 500	1.58%	0.00%	0.00%
Leveraged ETFs			
2X S&P 500	11.41%	0.22%	0.00%
3X S&P 500	20.25%	2.09%	0.00%
Inverse ETFs			
-1X S&P 500	5.89%	0.00%	0.00%
-2X S&P 500	29.96%	0.54%	0.00%
-3X S&P 500	44.20%	6.61%	0.00%
Purchased Options			
Call, strike=75% S&P 500	27.12%	8.74%	0.46%
Call, strike=90% S&P 500	39.01%	26.79%	11.28%
Call, strike=100% S&P 500	53.43%	47.84%	38.36%
Call, strike=110% S&P 500	74.32%	73.04%	70.74%
Call, strike=125% S&P 500	95.44%	95.42%	95.37%

Note:
[1] Empirical summary statistics based on 100,000 daily index return (arithmetic return) price paths over a 6-month investment horizon randomly sampled from the daily S&P 500 returns from 1/1/1964 – 7/31/2017.
[2] For purchased call options, the loss probabilities represent the probability of losing greater than the specified percentage of the initial investment.

Loss Probabilities for Written Call Option Empirical Return Distributions[1][2]

6-Month Investment Horizon

	PR(loss >= 20%)	PR(loss >= 50%)	PR(loss > 100%)	PR(loss >= 500%)
Call, strike=75% S&P 500	37.28%	16.78%	2.63%	0.00%
Call, strike=90% S&P 500	43.51%	31.69%	16.36%	0.00%
Call, strike=100% S&P 500	39.11%	34.05%	26.39%	1.27%
Call, strike=110% S&P 500	24.05%	22.80%	20.87%	9.40%
Call, strike=125% S&P 500	4.51%	4.49%	4.45%	4.09%

Note:
[1] Empirical summary statistics based on 100,000 daily index return (arithmetic return) price paths over a 6-month investment horizon randomly sampled from the daily S&P 500 returns from 1/1/1964 – 7/31/2017.
[2] For written call options, returns are calculated as the gain or loss at expiration as a percentage of the initial premium received, and do not account for margin requirements. The loss probability therefore represents the probability of losing greater than the specified percentage of the initial premium received.