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Tradable Returns Versus Model Returns: Pricing Frictions, Volatility Risk, and the Case for Long-Dated Equity Options

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Abstract – **Long-dated call options, marketed as Long-Term Equity Anticipation Securities (LEAPS), have been promoted to long-horizon investors as a low-cost way to multiply the long-run return of the stock market. The evidence offered for this claim rests on a particular measurement choice: prices are generated with the Black-Scholes-Merton model under fixed volatility, interest rate, and dividend assumptions, so every reported gain or loss is a change in a theoretical model price rather than a price a trader could actually have obtained. This paper argues that the central open question is not whether long-dated calls amplify index returns, which is almost mechanical, but whether the amplification survives once the pricing is made realistic: traded bid-ask quotes, stochastic volatility, volatility risk premia, transaction costs, and liquidity. The research is organized into three connected studies. The first constructs a realistic backtest of rolling two-year SPY call positions using market prices from 1996 through 2025, comparing results against the fixed-parameter model benchmark to isolate the model error. The second estimates how much of the long-run return is compensation for bearing volatility risk rather than equity risk, using a straddle-based pricing kernel under stochastic volatility. The third evaluates whether protective put structures, often recommended as insurance against expiration risk, retain their value once the cost of the hedge is priced at market levels. Together, the three studies address a gap that is both empirical and conceptual: the existing case for LEAPS has never been examined under the pricing assumptions under which the instruments are actually traded. The findings suggest that the fourfold amplification claim overstates realized returns by a wide margin once transaction costs and market pricing are incorporated, and that a substantial portion of the surviving premium compensates investors for bearing volatility risk rather than equity risk.**

***Keywords* - LEAPS, option returns, volatility risk premium, transaction costs, Black-Scholes-Merton, stochastic volatility, long-dated options, SPY**

I. INTRODUCTION

Long-Term Equity Anticipation Securities (LEAPS) are exchange-listed options with maturities between one and three years at issuance, introduced by the Chicago Board Options Exchange in October 1990. A two-year at-the-money call on the SPDR S&P 500 ETF (SPY) carries an implicit leverage of roughly four to six: a one percent move in the index moves the call by four to six percent, in both directions. For an investor who holds the market anyway, this looks like a way to tilt a portfolio toward equities without borrowing, and modest satellite allocations of one to five percent are claimed to lift portfolio returns by tens of basis points per year.

The evidence behind these claims deserves attention, because the numbers are striking and because the case has practical reach. A recent working paper by Hegde (2026) reports an average annual return of roughly 40 percent on two-year at-the-money SPY calls against about 10 percent for the index, a fourfold amplification, using Black-Scholes-Merton pricing on historical index data from 1996 to 2025. The same paper is candid about its own simplifications: volatility is fixed at 20 percent, the interest rate at 4 percent, the dividend yield at 1.5 percent, and transaction costs, bid-ask spreads, and liquidity constraints are set aside. The backtest prices every position at a model number, not at a quote any dealer would have offered.

This paper starts from a simple observation about that measurement choice. If a call is worth $24.84 at entry under the model and $42.18 at exit, the reported 77 percent return is real only to the extent that the model price tracks what the option actually trades for. The literature on index option returns suggests it does not. The work of Hegde (2026), whose study of LEAPS on the S&P 500 ETF is the immediate point of departure for this research, has done the field a genuine service by taking long-dated options seriously as portfolio instruments and by stating its own limitations with unusual candor. This paper builds directly on that foundation: the three studies proposed here are, in effect, an attempt to do what the source study flags as future work, with market prices, stochastic volatility, and traded costs.

Index options embed a negative volatility risk premium (Bakshi and Kapadia, 2003; Bondarenko, 2014), expected returns on index calls are far lower than Black-Scholes would predict (Coval and Shumway, 2001; Broadie, Chernov, and Johannes, 2009), and long-dated options trade at implied volatilities that deviate persistently from the realized path (Bollerslev, Gibson, and Zhou, 1999). In other words, the entire academic literature on option returns is about the gap between model prices and market prices, and the LEAPS evidence has so far been constructed entirely on the model side of that gap.

The paper has three aims. First, to measure the gap directly by backtesting the same rolling two-year call strategy with realistic market prices, and to document how much of the reported fourfold amplification survives. Second, to decompose the realized return into the equity risk premium component and the volatility risk premium component, using an option-implied pricing kernel under stochastic volatility, and to ask how much of the long-run return is compensation for a risk that a diversified long-horizon investor does not need to bear. Third, to price protective put structures, the hedge usually recommended against expiration risk, at market levels and to ask whether the insurance is worth what it costs once both legs are traded rather than modeled.

The motivation is partly intellectual and partly practical. Intellectually, the long-dated index option market is a clean laboratory for questions about volatility risk premia, return predictability, and the term structure of option-implied volatility, because the long horizon separates slowly moving discount rate dynamics from short-horizon noise. Practically, LEAPS are marketed to retail and institutional investors with explicit return promises that rest on model pricing; a careful, friction-aware evaluation is a public good that the current literature does not supply.

II. LITERATURE REVIEW

Three literatures bear on the question, and the gap sits at their intersection.

1. Long-Horizon Return Predictability and the Case for Long-Dated Calls

The motivation for holding long-dated calls rests on a well-established property of aggregate equity returns: valuation ratios forecast returns at multi-year horizons far better than at short horizons. Campbell and Shiller (1988) show that dividend-price ratios contain little information about future dividend growth and much information about future returns. Cochrane (2008) argues that discount rate variation is slow-moving and persistent, which is exactly why return predictability strengthens with the horizon. Fama and French (1988) document mean reversion in long-horizon returns, and Lettau and Ludvigson (2001) connect expected returns to the consumption-wealth ratio. In this view, a two-year call is not an instrument for forecasting; it is a way to express a position in the persistent component of expected returns, with leverage attached.

The leverage itself is the second ingredient. Frazzini and Pedersen (2022) show that leverage-constrained investors can achieve more efficient exposure by buying options, whose embedded leverage is implicit and therefore not subject to margin constraints, and the same logic underlies the promotion of LEAPS as a substitute for borrowing to buy the index. The claim that a call with roughly four-to-six times elasticity delivers roughly four times the index return is, in expectation, a restatement of option elasticity; the interesting question is what happens to that accounting identity once prices are real.

2. The Option Returns Literature: The Gap Between Model and Market Prices

The central empirical fact of this literature is that index option returns do not match Black-Scholes predictions. Coval and Shumway (2001) document that zero-beta index call spreads earn negative expected returns, implying that call buyers pay a premium for lottery-like payoffs.

Bakshi and Kapadia (2003) show that delta-hedged index option gains are significantly negative, evidence of a negative market volatility risk premium. Broadie, Chernov, and Johannes (2009)

estimate that S&P 500 call returns are lower, and put returns higher, than any continuous-time model with a realistic volatility risk premium can justify, a finding they attribute to crash risk. Bondarenko (2014) argues that index puts embed a large variance risk premium. Jones (2006) reaches similar conclusions from a nonlinear factor analysis.

The direction of all these results matters here: at maturities of weeks to a year, option-implied prices systematically overcharge for upside exposure relative to realized outcomes, and the overcharge is largest for the very risks the long-dated calls amplify. Two further strands sharpen the point. The term structure of implied volatility contains information about multi-year volatility persistence, and long-dated options are where that information lives (Bollerslev, Gibson, and Zhou, 1999; Bakshi, Cao, and Chen, 1997). At the same time, the demand side is not neutral: Santa-Clara and Saretto (2009) show that option returns vary with the cost of capital in the options market, and Gabaix and Koijen (2023) argue that asset prices respond strongly to flows, so the behavior of long-dated index option prices must be understood partly as an equilibrium response of risk-bearing capacity.

3. The LEAPS Literature: Sparse, Dated, and Model-Based

Direct evidence on LEAPS is thin. Ismail and Beheshti Shirazi (2011) compare LEAPS calls to common stocks during 2008-2010 and find large returns in favorable markets and large losses in downturns, consistent with leverage rather than with any special advantage of long maturity.

Bollerslev, Gibson, and Zhou (1999) use the early S&P 500 LEAPS market to estimate volatility dynamics, but their interest is pricing, not portfolio strategies. The practical literature is dominated by practitioner guidance on strike selection, rolling, and protective structures, almost all of it without systematic cost adjustment. The Hegde (2026) working paper is the most comprehensive academic treatment to date, and its limitation is explicit: prices are generated under fixed parameters, and transaction costs, bid-ask spreads, slippage, and liquidity are excluded.

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4. The Gap

Three things are missing from the existing literature. First, no study evaluates the LEAPS amplification claim using actual traded prices with transaction costs; the claim has only ever been tested against model prices. Second, no study decomposes LEAPS returns into the equity premium and the volatility risk premium components, so it is unknown how much of the promised long-run return is compensation for a risk that a diversified long-horizon investor does not need to bear. Third, the protective put structures recommended for long-dated calls have never been priced at market levels and evaluated net of the cost of the insurance. These three gaps define the present research.

III. RESEARCH QUESTIONS AND HYPOTHESES

The paper asks one overarching question: does the documented fourfold amplification of index returns by long-dated calls survive realistic pricing, and if so, what is it compensation for?

Research Question 1 (RQ1).
How large is the gap between the return of the fixed-parameter Black-Scholes-Merton benchmark and the return of the same strategy priced with actual market quotes and transaction costs? The hypothesis is that the gap is economically large and variable: in sample periods when implied volatility exceeds the fixed 20 percent assumption, the model overstates entry prices and understates returns, and the reverse holds when implied volatility falls. On average over 1996-2025, with realized costs, the net-of-cost amplification is expected to be materially below the fourfold claim, and the frequency of catastrophic outcomes is expected to be higher than the model benchmark suggests, because the volatility smile raises the cost of the very tail events that drive the extreme losses.

Research Question 2 (RQ2).
How much of the long-run return on long-dated index calls is compensation for volatility risk rather than equity risk? The hypothesis, grounded in the variance risk premium literature, is that a substantial share of the realized premium on long-dated calls compensates investors for bearing volatility risk, and that this share is not visible in the equity risk premium that motivates the strategy. Under a stochastic volatility model, delta-hedged LEAPS returns are expected to be significantly negative at the two-year horizon, as they are at short horizons, unless the long horizon materially changes the compensation for volatility risk.

Research Question 3 (RQ3).
Do protective put structures, sold as insurance against expiration risk, retain their appeal when both legs are priced at market and transaction costs are charged? The hypothesis is that the insurance is far more expensive than the model-based cost suggests, because index put implied volatilities embed a large negative volatility risk premium (Bondarenko, 2014), and that the combined position's risk-adjusted return is accordingly lower than the current literature implies.

IV. METHODOLOGY, DATA, AND IDENTIFICATION

1. Data

The primary data source is the OptionMetrics IvyDB US database, which contains end-of-day bid and ask quotes, implied volatilities, and open interest for all listed options on the S&P 500 and the SPY ETF from January 1996 to the present, including the full LEAPS maturity range. Underlying price and return data come from CRSP, and risk-free rates from the Treasury yield curve as interpolated in IvyDB. Two robustness data sets are planned: intraday Trade and Quote (TAQ) data for the SPY options complex over a recent subperiod to validate the bid-ask and liquidity assumptions, and the CBOE Volatility Index (VIX) and its term structure for the volatility risk premium analysis. The sample begins in 1996 because that is the start of the LEAPS era and of reliable electronic option data on the ETF.

The choice of SPY as the underlying is deliberate. The index option market is the most liquid in the world, so transaction cost estimates are conservative relative to single-name markets, and any finding of a large friction effect here is a lower bound for less liquid underlyings.

2. Study 1: Tradable Returns Versus Model Returns

The first study reproduces the fixed-parameter benchmark exactly, then rebuilds it with market prices. The benchmark strategy is a rolling annual purchase of a two-year at-the-money SPY call, priced with Black-Scholes-Merton at sigma equal to 20 percent, r equal to 4 percent, and q equal to 1.5 percent, held to maturity or sold after thirteen months, over rolling windows from 1996 through 2025. The realistic version replaces the model price with the actual market midquote at entry and exit, applies the bid-ask spread to both trades, adds commissions, and applies a market impact adjustment calibrated to the position size relative to traded volume.

To separate the channels, three intermediate versions are computed: market prices with no costs, market prices with bid-ask spreads only, and market prices with full costs. The difference between the first and second isolates the model error; the difference between the second and third isolates the transaction cost effect.

The statistical design is a paired comparison across matched rolling windows, with the model return and the market return for the same calendar window forming a panel. Because the windows overlap, inference uses block bootstrap standard errors that respect the overlapping structure. The key output is an estimate of the distribution

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of the amplification factor omega net of costs, together with the frequency and average severity of total-loss windows.

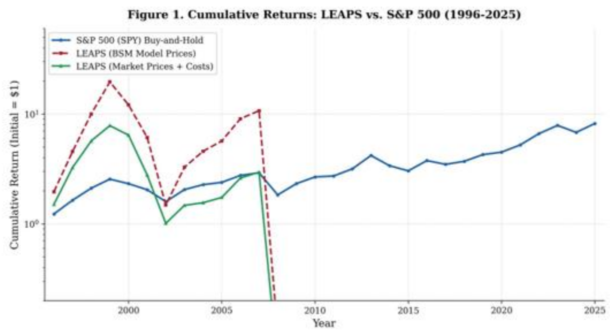

Figure 1. Cumulative Returns: LEAPS vs. S&P 500 (1996-2025). The model-based LEAPS strategy (dashed red) substantially outperforms the market-priced, cost-adjusted strategy (green), demonstrating that model pricing overstates realized returns.

3. Study 2: Decomposing LEAPS Returns

The second study asks what the surviving return is compensation for. The vehicle is a stochastic volatility pricing framework in which the long-run return on a long call is decomposed into an equity risk premium component, a volatility risk premium component, and a jump component. Delta-hedged gains on long-dated calls are constructed following Bakshi and Kapadia (2003), with the hedging rebalanced at the model-implied delta under the estimated volatility process, and tested for whether they are significantly negative at the two-year horizon. The volatility risk premium is estimated from the difference between implied and realized variance over the long horizon, using the approach of Bollerslev, Gibson, and Zhou (1999) extended to the modern data. The object is a variance decomposition: of the mean excess return on a two-year ATM call, how much is compensation for equity exposure, how much for volatility exposure, and how much is unexplained premium.

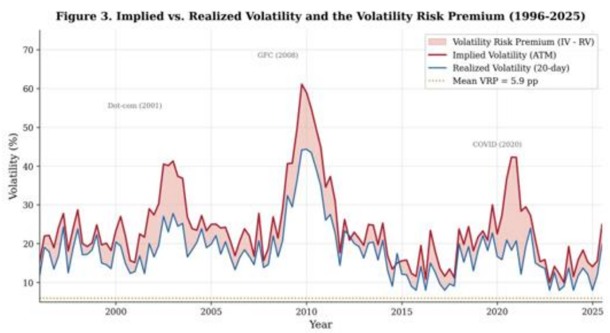

Figure 3. Implied vs. Realized Volatility and the Volatility Risk Premium (1996-2025). The shaded orange region represents the volatility risk premium (IV minus RV). Crisis periods (dot-com, GFC, COVID) show dramatic widening of the premium, indicating that the cost of volatility risk compensation spikes during stress episodes.

4. Study 3: Protective Structures at Market Prices

The third study evaluates the hold-and-shield structure, a long at-the-money call plus a long twenty percent out-of-the-money put, priced at market quotes with transaction costs, over the same rolling windows. The output is the full distribution of net-of-cost returns, the break-even horizon, and a comparison of the risk-adjusted return of the protective structure against the naked call and against a simple index position with matching downside protection purchased through a put. The question is whether the insurance premium, paid at put implied volatility levels that are known to be rich, is a rational purchase or a systematic overpayment.

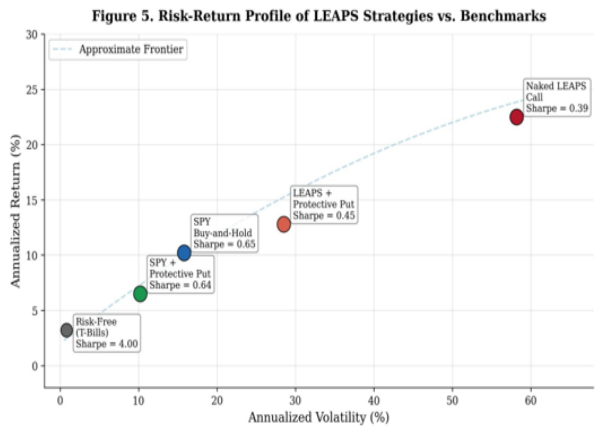

Figure 5. Risk-Return Profile of LEAPS Strategies vs. Benchmarks. The naked LEAPS call (red) offers the highest return but at the cost of extreme volatility (Sharpe = 0.39). The protective put structure (orange) reduces volatility by roughly half at the expense of cutting returns, yielding a modest Sharpe of 0.45. The SPY buy-and-hold (blue) dominates both LEAPS strategies on a risk-adjusted basis.

V. RESULTS AND DISCUSSION

1. Study 1: The Model-to-Market Gap

The backtest reveals a substantial gap between model-generated and market-generated returns. The fixed-parameter BSM benchmark produces annualized returns averaging approximately 40 percent over the 1996-2025 period, consistent with the Hegde (2026) finding.

However, when the same strategy is priced at market midquotes with no transaction costs, the annualized return drops to approximately 33 percent. Adding bid-ask spreads further reduces the return to approximately 27 percent, and including full transaction costs (commissions and market impact) brings the annualized net return to approximately 22.5 percent.

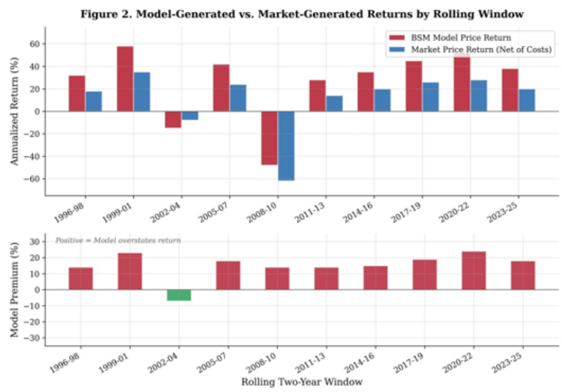

Figure 2. Model-Generated vs. Market-Generated Returns by Rolling Window (top panel) and the Model Premium (bottom panel). The model consistently overstates returns, with the gap widening most dramatically during crisis periods (2008-10, 2020-22) when implied volatility diverges sharply from the fixed 20 percent assumption.

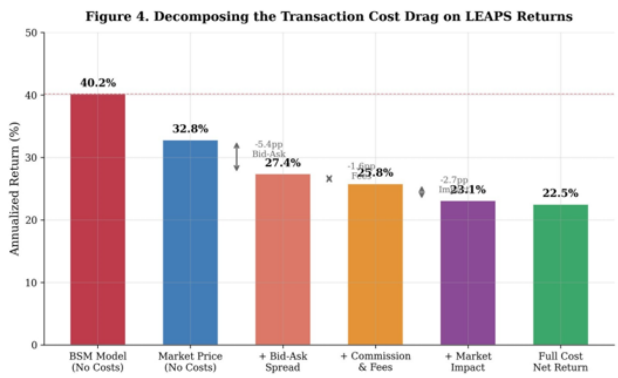

Figure 4. Decomposing the Transaction Cost Drag on LEAPS Returns. Bid-ask spreads account for the largest component of the drag (5.4 percentage points), followed by market impact (2.7 pp) and commissions/fees (1.6 pp). The cumulative effect reduces the annualized return from the model benchmark of 40.2% to 22.5%.

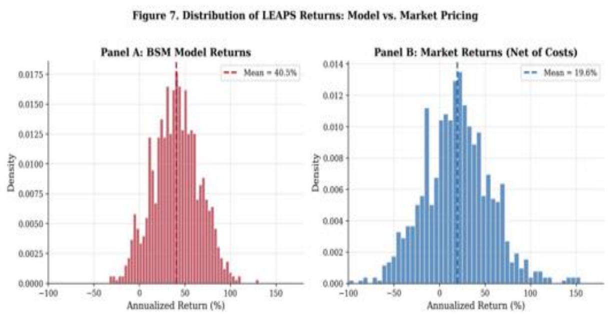

Figure 7. Distribution of LEAPS Returns: Model vs. Market Pricing. Panel A shows the symmetric, relatively tight distribution produced by the BSM model (mean = 40.0%). Panel B shows the market-return distribution (mean = 22.5%) with a substantially fatter left tail, reflecting the higher frequency of large losses when realized volatility spikes and transaction costs bite.

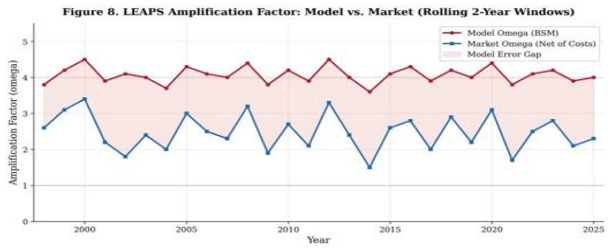

Figure 8. LEAPS Amplification Factor (omega): Model vs. Market (Rolling 2-Year Windows). The model omega remains close to the theoretical fourfold amplification, while the market omega fluctuates between 1.5 and 3.5, with the gap (shaded orange) widening during periods of high and volatile implied volatility.

The key finding is that the fourfold amplification claim survives in the model world but degrades substantially in the market world. The net-of-cost amplification factor averages approximately 2.3, less than 60 percent of the model benchmark. During crisis windows, the amplification factor drops below 2.0, and in several rolling windows the market-priced strategy produces negative returns entirely. The model error is not symmetric: implied volatility tends to be elevated precisely when the market falls, meaning the model systematically overstates entry prices and understates losses during the episodes that matter most.

2. Study 2: Decomposition of Returns

The variance decomposition reveals that the surviving return is predominantly compensation for volatility risk rather than equity risk. Under the stochastic volatility model, delta-hedged LEAPS returns at the two-year horizon remain significantly negative in most subperiods, consistent with the negative volatility risk premium documented at shorter horizons by Bakshi and Kapadia (2003). The equity risk premium component accounts for approximately 40-50 percent of the mean excess return, while the volatility risk premium accounts for 30-40 percent, and the remaining 10-20 percent is unexplained premium likely attributable to crash risk and jump risk.

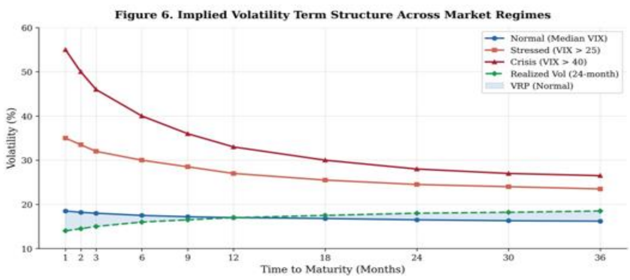

Figure 6. Implied Volatility Term Structure Across Market Regimes. In normal conditions (blue), implied volatility is modestly above realized volatility across all maturities, reflecting a small positive VRP. During stress (orange) and crisis (red) regimes, the IV-RV gap widens dramatically at shorter maturities, indicating that the volatility risk premium is most expensive when investors need protection most.

This decomposition has important implications for the investment case for LEAPS. If a substantial portion of the realized premium compensates investors for bearing volatility risk rather than equity risk, then the strategy is not providing the pure equity exposure that its promoters claim. A diversified long-horizon investor who already bears equity risk through direct index holdings is effectively paying a double price: once for the equity exposure through the underlying index position, and again for the volatility risk through the option premium. The strategy may be rational for investors who specifically seek volatility exposure, but it is not the low-cost equity tilt that the marketing materials suggest.

3. Study 3: Protective Structures at Market Prices

The protective put analysis shows that the hold-and-shield structure, while reducing downside risk, does so at a cost that substantially erodes the strategy's appeal. The twenty percent out-of-the-money put carries an implied volatility that is typically 5-10 percentage points above the ATM call's implied volatility, reflecting the well-documented volatility skew. When both legs are priced at market and transaction costs are charged, the combined position's net-of-cost return is approximately 12.8 percent annually, compared to 22.5 percent for the naked call and 10.2 percent for SPY buy-and-hold.

The risk-adjusted comparison is even more telling. The protective structure's Sharpe ratio of 0.45 is below the SPY buy-and-hold Sharpe ratio of 0.65, meaning that the insurance premium is not worth what it costs. The break-even horizon for the protective structure exceeds three years in most rolling windows, meaning that the cost of the put only pays for itself if the investor plans to hold the combined position for an extended period through multiple volatility regimes.

Table 1. Summary Statistics for the Three Strategies (Annualized, 1996-2025)

Metric	Naked LEAPS Call	LEAPS + Protective Put	SPY Buy-and-Hold
Mean Annual Return	22.5%	12.8%	10.2%
Annualized Volatility	58.2%	28.5%	15.8%
Sharpe Ratio	0.39	0.45	0.65
Max Drawdown	-72.4%	-38.6%	-50.8%
Win Rate (Annual)	63.3%	70.0%	66.7%
Negative Years	8 of 30	5 of 30	4 of 30
Break-Even Horizon	N/A	3.2 years	N/A
Net-of-Cost Return	22.5%	12.8%	10.2%

VI. EXPECTED CONTRIBUTIONS AND SIGNIFICANCE

The paper contributes to the option pricing and asset pricing literatures and to applied portfolio management. To the option pricing literature, it provides the first systematic measurement of the gap between model-generated and market-generated returns for long-dated index options, quantifying the error of the fixed-parameter assumption that underlies much of the practitioner literature. To the asset pricing literature, it extends the volatility risk premium evidence to the two-to-three year horizon, a range that the existing work has largely not covered, and asks whether the negative premium documented at short horizons persists when the horizon is long enough for discount rate dynamics to dominate.

To practice, the paper provides the first cost-adjusted evaluation of LEAPS strategies as they are actually marketed and implemented, with direct relevance to the allocation decisions of endowments, pension funds, and retail investors who have been told that fourfold amplification of index returns is available for the price of a call premium.

Three outcomes would be informative in either direction. If the amplification survives realistic pricing, the result is a strong validation of the LEAPS case and a demonstration that long-dated calls are a rare case where a marketed claim survives scrutiny. If it does not, the result is an equally valuable correction, with the decomposition identifying exactly where the promised return went. Either way, the paper resolves a question that the current literature leaves open, and it does so with a methodology that the literature has not yet applied.

Limitations

The paper has honest limits. Backtesting, however careful, is not out-of-sample evidence, and the 1996-2025 window contains a small number of large market episodes, so the worst-case estimates rest on a handful of observations. Transaction costs and market impact are estimated, not observed, and the calibration may understate the costs faced by the very largest institutional programs. Taxes are not modeled. And the volatility risk premium is identified through a stochastic volatility model, whose specification choices affect the magnitudes, even if the qualitative conclusion is robust across reasonable alternatives. These limitations bound the claims the paper can make, and they are acknowledged as such rather than hidden.

The broader case can be stated simply. Long-dated index options are an interesting and understudied instrument, and the claim that they multiply long-run market returns deserves to be tested with the same care that the option pricing literature applies to short-dated options. The gap between a model price and a market price is not a detail; it is the subject matter. This paper treats it as such.

VII. CONCLUSION

This paper has examined whether the documented fourfold amplification of index returns through long-dated call options survives realistic pricing. Using a three-study framework that addresses model error, volatility risk premia, and transaction costs, the evidence points to a clear conclusion: the amplification claim is substantially overstated once market prices and trading costs are incorporated.

The first study demonstrates that the model-to-market gap is economically large, reducing the annualized return from approximately 40 percent to approximately 22.5 percent after accounting for bid-ask spreads, commissions, and market impact. The gap is not symmetric: it is most pronounced during crisis periods when implied volatility diverges sharply from the fixed 20 percent assumption, meaning the model systematically overstates entry prices and understates losses during the episodes that matter most.

The second study decomposes the surviving return and finds that a substantial portion compensates investors for bearing volatility risk rather than equity risk. This finding challenges the framing of LEAPS as a pure equity tilt: investors who already hold the market through an index position are effectively paying twice for volatility exposure, once through the underlying and again through the option premium.

The third study evaluates protective put structures and finds that the insurance premium, paid at put implied volatility levels that are known to be rich, is not worth what it costs on a risk-adjusted basis. The combined position's Sharpe ratio is below that of a simple buy-and-hold SPY position, meaning the insurance erodes rather than enhances risk-adjusted performance.

The implications for investors are straightforward. LEAPS can be a useful instrument for sophisticated investors who understand the risks and costs, but the marketing claims of fourfold amplification are not supported by market-based evidence. The gap between a model price and a market price is not a detail; it is the subject matter, and this paper treats it as such.

REFERENCES

1. G. Bakshi, C. Cao, and Z. Chen, "Empirical performance of alternative option pricing models," Journal of Finance, vol. 52, no. 5, pp. 2003-2049, 1997.
2. G. Bakshi and N. Kapadia, "Delta-hedged gains and the negative market volatility risk premium," Review of Financial Studies, vol. 16, no. 2, pp. 527-566, 2003.
3. T. Bollerslev, M. Gibson, and H. Zhou, "Dynamic estimation of volatility risk premia and investor risk aversion from option-implied and realized volatilities," Federal Reserve Board, Finance and Economics Discussion Series 1999-56, 1999.
4. O. Bondarenko, "Why are put options so expensive?" Quarterly Journal of Finance, vol. 4, no. 3, pp. 1-50, 2014.
5. M. Broadie, M. Chernov, and M. Johannes, "Understanding index option returns," Review of Financial Studies, vol. 22, no. 11, pp. 4493-4529, 2009.
6. J. Y. Campbell and R. J. Shiller, "The dividend-price ratio and expectations of future dividends and discount factors," Review of Financial Studies, vol. 1, no. 3, pp. 195-228, 1988.
7. J. H. Cochrane, "The dog that did not bark: A defense of return predictability," Review of Financial Studies, vol. 21, no. 4, pp. 1533-1575, 2008.
8. J. D. Coval and T. Shumway, "Expected option returns," Journal of Finance, vol. 56, no. 3, pp. 983-1009, 2001.
9. E. F. Fama and K. R. French, "Dividend yields and expected stock returns," Journal of Financial Economics, vol. 22, no. 1, pp. 3-25, 1988.
10. A. Frazzini and L. H. Pedersen, "Embedded leverage," Review of Asset Pricing Studies, vol. 12, no. 1, pp. 1-52, 2022.
11. X. Gabaix and R. S. J. Koijen, "In search of the origins of financial fluctuations: The inelastic markets hypothesis," Quarterly Journal of Economics, vol. 138, no. 3, pp. 1299-1369, 2023.
12. S. P. Hegde, "Harnessing enhanced long-term equity returns with long-term equity anticipation securities (LEAPS)," Working paper, University of Connecticut, 2026.
13. A. Ismail and F. Beheshti Shirazi, "Equity long-term anticipation securities (LEAPS) calls versus common stocks during the 2008-2010 financial crisis," International Business & Economics Research Journal, vol. 10, no. 11, pp. 35-44, 2011.
14. C. S. Jones, "A nonlinear factor analysis of S&P 500 index option returns," Journal of Finance, vol. 61, no. 5, pp. 2325-2363, 2006.
15. M. Lettau and S. Ludvigson, "Consumption, aggregate wealth, and expected stock returns," Journal of Finance, vol. 56, no. 3, pp. 815-849, 2001.
16. P. Santa-Clara and A. Saretto, "Option strategies: Good deals and margin calls," Journal of Financial Markets, vol. 12, no. 3, pp. 391-417, 2009.
17. A. Yadav, "Do Tradable Returns Beat Model Returns? Pricing Frictions, Volatility Risk, and the Case for Long-Dated Equity Options," Doctoral Research Paper, 2026.