

Clients & Friends –

In this commentary, we will provide a high-level performance update for both Q4 2021 and the full year, as well as briefly review current research projects.

As a reminder, the strategy underlying the Newfound Risk Managed U.S. Growth Fund (NFDIX) is designed with the thesis that equity market extremes are becoming *more frequent and more severe*. For lack of a better word, things will remain “weird.” To align with this thesis, NFDIX employs a barbell approach, marrying a ladder of increasingly convex positions seeking to out-perform in equity left tails with a ladder of increasingly convex positions that seeks to out-perform in the right.

At its core is a strategic equity position comprised of momentum and defensive style tilts (approximately 30% in both sleeves; 60% total). We complement the core equity position with a systematic trend-following strategy (approximately 30%) which has the flexibility to tilt from fully invested to fully divested into short-term U.S. Treasuries. We implement a ladder of out-of-the-money put and call options (approximately 2.5% each) in an effort to maximize defense in extreme down markets and participation in extreme up markets. Finally, we use the remaining capital (approximately 5%) as collateral for an active U.S. Treasury futures strategy, which seeks to provide a second, diversifying source of returns to the portfolio (varying between 0-to-100% notional exposure).

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Business Update

Too Long, Didn't Read (“TL;DR”): We grew.

In 2021, Fund assets grew from \$41.38mm to \$88.96mm with \$35.75mm of net inflows (with the remainder due to market appreciation). We are equally happy to report that the number of shareholders on record nearly doubled, growing from 892 to 1,716, representing an increasingly diverse investor base.

Implementation use cases for the Fund among new adopters varied. The two most prevalent were:

- A hedged equity allocation. Allocators expressed nervousness about equity market stability but were equally fearful about sacrificing upside participation. The Fund’s barbell-driven design helped address these concerns.
- A capital efficient¹ solution. The Treasury future overlay provides an active way to own fixed income exposure and can be used to free up capital elsewhere in the portfolio.
- A compliment to other tactical systems. Our research has led us to the conclusion that making tactical timing decisions will face increased challenges as the speed of markets continues to increase. Allocators that have historically relied on tactical signals have hedged that exposure with the Fund, which derives its value from structural diversification rather than timing accuracy.

Interest in learning more about capital efficiency grew dramatically after we published [Return Stacking: Strategies for Overcoming a Low Return Environment](#). In isolation, the Fund can be used to provide capital efficient exposure to core U.S. equity and U.S. Treasury beta, freeing up capital in an allocator’s portfolio. In conjunction with other capital efficient

¹ Capital Efficiency, in this context, refers to the ratio between dollars spent to exposure gained. Through the use of prudent leverage, an investor can gain access to greater than one dollar of exposure, for one dollar purchased.

funds, portfolios can be built that target traditional stock and bond asset allocation profiles while simultaneously providing meaningful exposure to absolute return diversifiers.

One such example is the [Return Stacked 60/40: Absolute Return Index](#), which seeks to target a traditional 60% equity / 40% bond profile while simultaneously providing 30% exposure to both systematic trend and systematic alternative risk premia strategies. Due to demand, we have partnered with ReSolve Asset Management to make this index (which features NFDIX as a core holding) available in SMA format in Q1 2022.

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Q4 Performance Analysis

TL;DR: U.S. equity was additive and U.S. Treasury beta was a detractor. Tactical signals to overweight equities and tactical signals to underweight Treasury futures were both additive. Structural defensive and equity tilts were slightly additive and structural momentum tilts were a detractor. Returns from call option positions outweighed the drag from put options.

NFDIX returned 11.07% in Q4 2021. The S&P 500 Total Return Index (“S&P 500”) returned 11.03% and a 50/50 portfolio of S&P 500 and 10-Year U.S. Treasury futures portfolio levered up 1.5x (“75/75”) returned 8.08%. In 2021, NFDIX returned 23.31%, the S&P 500 returned 28.71%, and the 75/75 portfolio returned 18.26%.

Figure 1. Q4 2021 Contribution to Portfolio Return

	Total Return (%)	Average Weight (%)	Contribution to Return (bps)
Defensive Equity	11.58	31.36	363
Momentum Equity	7.20	30.97	223
Trend Equity	11.17	31.34	350
Put Options	-128.42	0.95	-122
Call Options	120.00	3.10	372
Treasury Futures	-0.34	59.28	-20
Cash (and Equivalent)	0.00	2.33	0
		159.33	1166
<i>Residual</i>			<i>-59</i>
NFDIX			1107

Source: Bloomberg.

As a quick technical aside, it should be noted that contribution analysis is fraught with imprecision, and hence there is a *residual contribution*² left over in the analysis. One example of a residual contribution is fund fees³. Another is cash flow in and out of the fund, which can make the fund appear to hold excess cash for the day (inflow) or levered (outflow). As such, contribution analysis should be considered directionally accurate rather than precisely correct.

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2021 Performance Analysis

TL;DR: U.S. equity was additive and U.S. Treasury beta was a detractor on an absolute basis throughout the year. Tactical signals to overweight equities and tactical signals to underweight Treasury futures were both additive on a relative basis. Structural defensive equity tilts were a moderate detractor throughout the year on a relative basis; momentum equity tilts were a significant detractor on a relative basis. Returns from call option positions outweighed the drag from put options.

It is said that a picture is worth 1000 words. Given the number of moving pieces within NFDIX, we believe Figure 2 can help illuminate the primary drivers of both absolute and relative returns within the Fund in 2021.

We can begin with the black curve, which represents the realized volatility and annual return in 2021 for the frontier of static U.S. equity and bond asset allocation portfolios. We highlight three points: the all-equity portfolio (S&P 500), the 50% stock / 50% bond portfolio (“50/50”), and the all-bond portfolio (“US Bonds”).

The “75/75” portfolio is comprised of 75% S&P 500 and 75% 10-year U.S. Treasury futures exposure. We draw a grey, dashed line between the 50/50 and 75/75 portfolios to approximate the performance we would expect from simply leveraging the 50/50 mix up or down. Note that this line falls *below* the black curve, indicating that, on a risk-adjusted basis, we would have been better off simply increasing our allocation to equities.

The “94/50” portfolio represents, approximately, our average exposure to equities (94%) and Treasury futures (50%) throughout the year (ignoring any contribution from options positions). We can see that this dot lies *above* the dashed line we drew, indicating that our tactical decisions to be overweight equities and underweight bond exposure was additive on a risk-adjusted basis relative to simply leveraging up the 50/50 portfolio further.

NFDIX, however, falls to the bottom right the 94/50 portfolio and underneath the line, indicating that it was *less* risk-efficient in its return. There were two primary drivers of this result.

The first is the simplest: fees. We estimate total fee drag as -136bp. Continued asset growth in the fund will help drive this number down in the future.

The second driver was the factor tilts embedded within the portfolio. Both Defensive and Momentum equities represent approximately 31.33% of the portfolio, respectively. We can see that both underperformed the S&P 500 on a total return

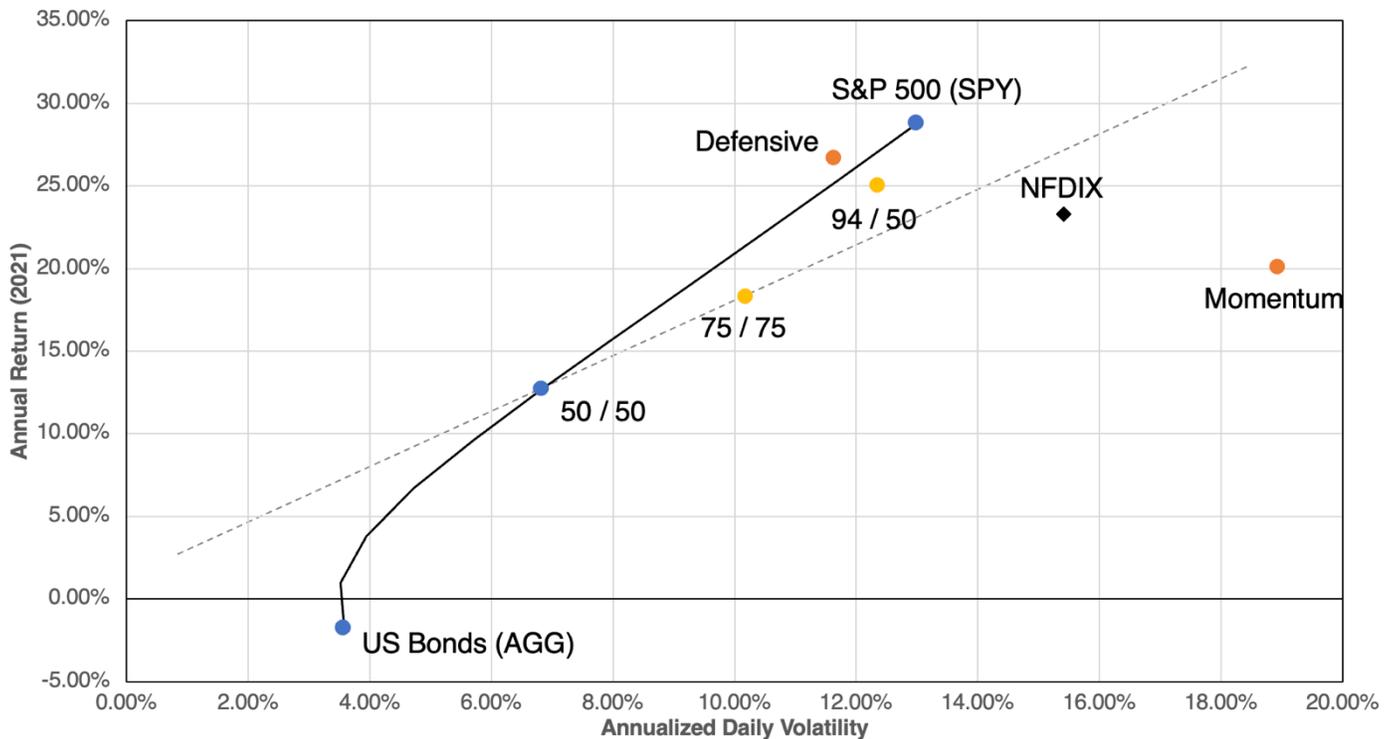
² Residual contribution refers to the difference in total return between the generated contribution analysis and the actual fund return.

³ *The Fund’s investment advisor has contractually agreed to reduce its fees and/or absorb expenses until at least July 31, 2023. Without these waivers, the Class I Shares total annual operating expenses would be 1.58% as of the August 2021 prospectus update. The fee waivers ensure that the net annual, operating expenses of the Class I Shares will not exceed 1.25% subject to possible recoupment from the fund in future years. Please review the Fund’s prospectus for more information regarding the Fund’s fees and expenses.*

basis, and Momentum did so with dramatically increased relative volatility. We estimate that Defensive and Momentum tilts contributed -66bp and -210bp respectively (this result represents a significant outlier for Momentum over the last decade).

Combined, these drivers contributed -412bp of underperformance to NFDIX relative to the 94/50 portfolio. Realized, however, NFDIX only underperformed the 94/50 portfolio by -163bp. The primary driver that closed this wedge was our long call spread positions.

Figure 2. Annualized Volatility vs 2021 Return



Source: Tiingo. Calculations by Newfound Research. Returns assume the reinvestment of all distributions. "50 / 50" is a 50% SSgA SPDR S&P 500 ETF ("SPY") and 50% iShares Core US Aggregate Bond ETF ("AGG") portfolio rebalanced monthly. "75 / 75" is a 75% SSgA SPDR S&P 500 ETF ("SPY"), 25% SPDR Bloomberg 1-3 Month T-Bill ETF ("BIL"), and 75% 10-Year U.S. Treasury futures portfolio rebalanced monthly. "94 / 50" is a 94% SSgA SPDR S&P 500 ETF ("SPY"), 6% SPDR Bloomberg 1-3 Month T-Bill ETF ("BIL"), and 75% 10-Year U.S. Treasury futures portfolio rebalanced monthly. "Defensive" is an equally weighted portfolio, rebalanced monthly, comprised of the following ETFs: JQUA, LGLV, USMV, QUAL, FQAL, and FDLO. "Momentum" is an equally weighted portfolio, rebalanced monthly, comprised of the following ETFs: MTUM, FDMO, JMOM, and VFMO. Returns of the aforementioned portfolios are backtested and hypothetical and are net of all fees (including, but not limited to, advisor fees, manager fees, transaction costs, or taxes) except for underlying ETF expense ratios. Past performance is not an indicator of future results.

Taken all together:

- Equities were a positive contributor to absolute returns. Our overweight of equities relative to our expected long-term allocation (75%) was a positive contributor to relative returns.

- Bonds were a negative absolute contributor. Our underweight of bonds relative to our expected long-term allocation (75%) was a positive contributor to relative returns.
- Fees were a negative contributor to absolute returns.
- Factor tilts were a negative contributor to relative returns.
- Convexity positions (long call spreads, in particular) were a positive contributor to absolute returns.

Figure 3. 2021 Contribution to Portfolio Return

	Total Return (%)	Average Weight (%)	Contribution to Return (bps)
Defensive Equity	22.51	31.18	702
Momentum Equity	21.22	31.24	663
Trend Equity	28.80	31.39	904
Put Options	-387.87	0.90	-349
Call Options	261.74	2.98	780
Treasury Futures	-2.79	52.67	-147
Cash (and Equivalents)	0.00	2.33	0
		159.33	2553
<i>Residual</i>			<i>-222</i>
NFDIX			2331

Source: Bloomberg.

The Researcher's Information Ratio

TL;DR: Researchers can seek to improve portfolio results in a variety of ways, some examples include increasing alpha, reducing costs, or eliminating uncompensated sources of risk. In Q4 we spent significant time pursuing the latter approach.

One of the primary benefits of hosting a podcast is that it expands our “outer brain.” If your “inner brain” is what you know, your “outer brain” is what your network knows (and will share with you). I do not expect our research team to have an answer to every question, but by constantly growing and fortifying our network of industry peers, we can more easily and readily tap into our outer brain of domain experts.

Outer brain knowledge also incorporates potential organizational alpha. How a research organization should be structured and how research projects should be prioritized are critical topics for the continued success of a quantitative investment firm. In Season 2 of our podcast, I interviewed Chris Meredith, co-Chief Investment Officer and Director of Research at O’Shaughnessy Asset Management on these very topics, and he presented a framework that has stuck with me ever since our conversation.

Chris proposed that new research endeavors should be proposed relative to how they will affect a strategy's information ratio:

$$\text{information ratio} = \frac{\text{alpha} - \text{costs}}{\text{tracking error}}$$

Public discourse often centers on how managers are pursuing alpha but is quiet on how they are pulling the other levels of the equation. When we meet with allocators and they ask about new veins of research we are mining, they are almost exclusively referring to alpha ideas. Yet the equation makes all too clear that finding ways to reduce costs (e.g. trading impact or transaction costs) is just as important to realized net alpha as increasing gross alpha is. Reducing tracking error, on the other hand, has a non-linear impact on the consistency with which net alpha is realized.

At Newfound, we have spent the last several months on research projects related to both *cost* and *tracking error*, specifically as they relate to our options positions.

Trivially, the price at which you buy something has a meaningful impact on the return you realize. This is particularly true for convex instruments (e.g. options), where small changes in cost basis can lead to significant differences in returns. For example, if sloppy execution leads us to pay \$0.02 for a deep, deep out-of-the-money put rather than its fair value of \$0.01, we've paid 100% more. For the same premium spend we buy only *half* the number of contracts we could have otherwise, cutting our hedge convexity in half.

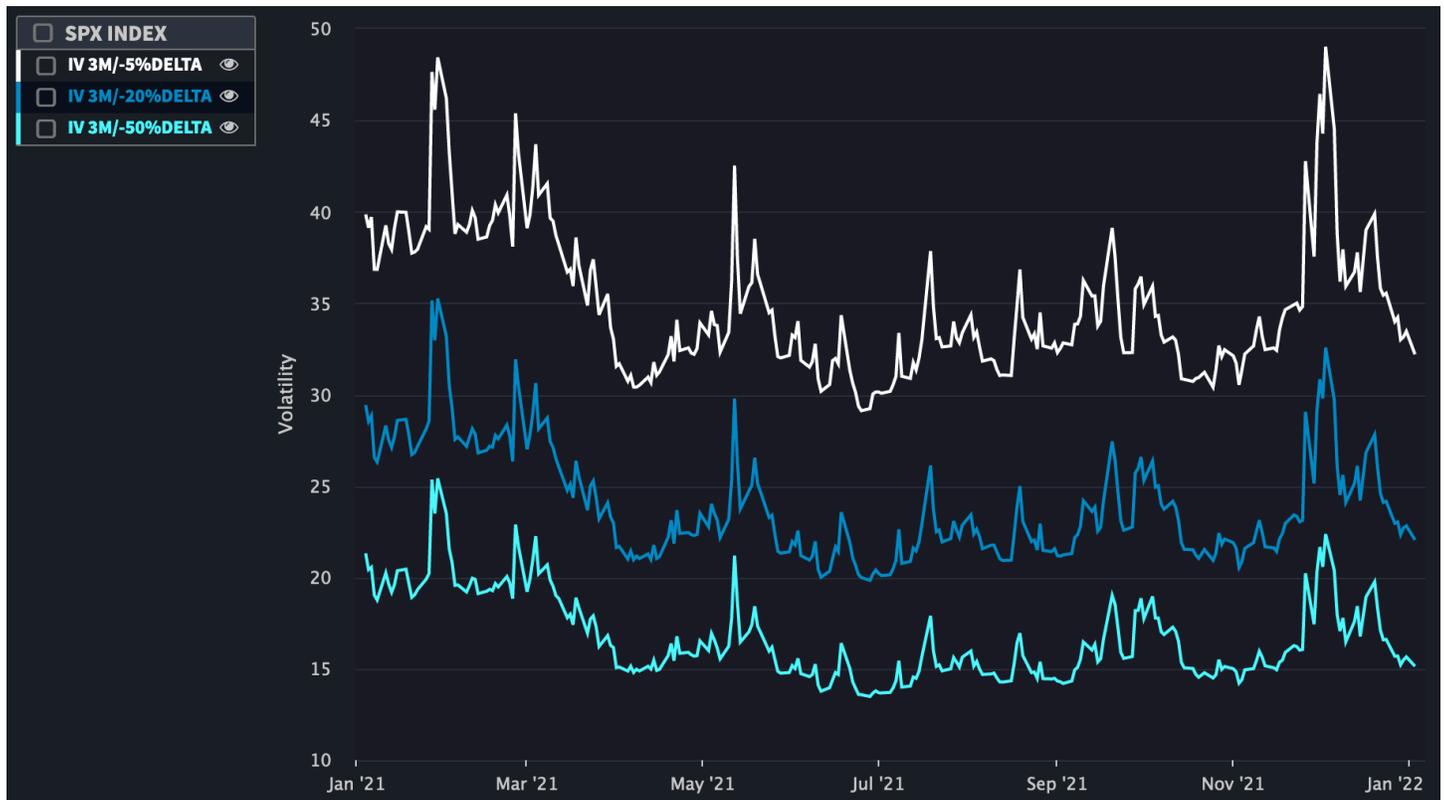
One way to avoid this is to simply traffic in highly liquid strikes of highly liquid instruments. More liquid markets tend to be more competitive and, in theory, more efficiently priced. This is especially important if you plan to execute trades during periods of market stress when liquidity tends to be particularly low. Unfortunately, more liquid strikes also tend to be closer to at-the-money, which loses significant convexity in a hedge.

Knowing our own limits is important when it comes to portfolio construction, and at Newfound we currently have no edge in trading illiquid option contracts. Therefore, we try to concentrate our positions in more liquid markets (e.g. SPX Index options) and try to toe the line of strikes where liquidity begins to thin out.

To aid our efforts, we have spent considerable time this quarter refining a real-time, implied volatility surface model. To be clear: we do not believe there is *any* alpha to be found (at least in our case) in a fancier surface model, particularly in highly liquid markets like SPX Index options. We do hope, however, that it aids us in identifying how aggressively we might be able to push towards the bid or ask when executing trades, reducing implicit *costs* over the long run.

Even with efficient execution, however, *when* trades are executed can be the devil in the details.

Consider Figure 4, which plots the implied volatilities for different 3-month put options on the S&P 500 over time. The difference between the highs and lows of the year is approximately twenty points and we can see frequent swings of 5-to-10 points within any given thirty-day period.

Figure 4. Implied Volatilities for 3-Month SPX Index Put Options (Constant Delta)


Source: Société Générale.

If we were just systematically rolling put positions, the happenstance of executing at one of these highs or these lows can lead to a massive dispersion in realized returns (i.e. *tracking error* in the equation above).

Longtime readers will know that without a timing view, our answer to this problem is to diversify our execution over time. This means, for example, instead of rolling three-month option positions every three months, we could instead roll 1/3rd of the position each month, creating a ladder. Given the spread of implied volatilities we see within a given month, however, we might be able to further diversify our timing risk by rolling 1/6th of our position bi-weekly, or even 1/12th of our position every week!

We see few sound arguments against doing this, other than feasibility and operational burden. The limiting factor in the former case is assets under management. With too few assets, we lose relative position sizing granularity between rungs of the ladder. Fortunately, as Fund assets have grown, introducing the number of rungs in our ladder has become more feasible.

The next step is overcoming operational burdens. While the solution is trivial on paper, in practice it requires additional effort to: (1) identify the positions to trade, (2) wire capital between custodians and brokers, (3) trade the positions, (4) reconcile trades, and (5) track positions on an on-going basis. Increasing rungs also complicates trading operations with respect to managing capital inflows into, and outflows from, the Fund.

We have spent considerable time this quarter evaluating the benefits of introducing further option ladder rungs into our portfolio, both from a theoretical as well as an operational basis. Our intention was to introduce new rungs in Q4 but determined that the added operational complexity (and the potential for introducing human error) warranted a delay until we felt more comfortable with the process.

Our aim is to introduce these changes in Q1, and in doing so help decrease *timing luck* as an unintended bet within the realized returns of our options positions.

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We appreciate the trust you place in having Newfound Research oversee your capital; helping to manage these assets is a responsibility we do not take lightly. We firmly believe that the process we have in place provides our Fund the best opportunity to meet its objective going forward, seeking to capture a significant portion of market growth while reducing the impact of severe and prolonged market declines. If you have any questions, please do not hesitate to reach out.

Sincerely,



Corey M. Hoffstein
Chief Investment Officer
Newfound Research

Fund Performance (Performance at NAV ^{1, 2, 3} , performance as of December 31, 2021)						
	3 Months	6 Months	1 Year	3 Year	5 Year	Inception
NFDIX NAV	11.07%	11.16%	23.21%	12.53%	9.29%	6.55%
S&P 500	11.03%	11.67%	28.71%	26.07%	18.47%	15.38%
50/50 S&P 500 / 1-3 Year U.S. Treasuries	5.16%	5.55%	13.34%	13.92%	10.09%	8.47%

Current performance may be lower or higher than the performance data quoted above. Past performance is no guarantee of future results. The investment return and principal value of an investment in the Fund will fluctuate so that investors' shares, when redeemed, may be worth more or less than their original cost. For performance data current to the most recent month-end, please call toll-free 1-855-394-9777 or visit our website, www.thinknewfoundfunds.com.

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The Fund's investment advisor has contractually agreed to reduce its fees and/or absorb expenses until at least July 31, 2021. Without these waivers, the Class I Shares total annual operating expenses would be 1.42% as of the August 2020 prospectus update. The fee waivers ensure that the net annual, operating expenses of the Class I Shares will not exceed 1.25% subject to possible recoupment from the fund in future years. Please review the Fund's prospectus for more information regarding the Fund's fees and expenses.

Investors should carefully consider the investment objectives, risks, charges and expenses of the Newfound Risk Managed U.S. Growth Fund. This and other important information about the Fund is contained in the prospectus, which can be obtained by calling 1-855-394-9777. The prospectus should be read carefully before investing.

The Newfound Risk Managed U.S. Growth Fund is distributed by Northern Lights Distributors, LLC, Member FINRA/SIPC. Newfound Research LLC is not affiliated with Northern Lights Distributors, LLC.

- 1) *Performance at net asset value ("NAV") does not include the effect of sales charges.*
- 2) *The S&P 500 Index is widely regarded as the best single gauge of large cap U.S. equities. The index includes 500 leading companies listed in the United States and captures approximately 80% of available market capitalization. The 50/50 S&P 500 / Barclays US 1-3 Year Treasury Bond benchmark consists of a hypothetical portfolio that is 50% allocated to the S&P 500 Total Return Index and 50% allocated to the Barclays US 1-3 Year Treasury Bond index, rebalanced monthly.*
- 3) *Performance results include the effect of expense reduction arrangements for some or all of the periods shown. If those arrangements had not been in place, the performance results for those periods would have been lower.*

Risk Factors

There is no assurance that any Fund will achieve its investment objectives.

Mutual Funds involve risk including the possible loss of principal. ETFs are subject to specific risks, depending on the nature of the underlying strategy of the fund. These risks could include liquidity risk, sector risk, as well as risks associated with fixed income securities, real estate investments, and commodities, to name a few. Typically, a rise in interest rates causes

a decline in the value of fixed income securities. A higher Fund turnover will result in higher transactional and brokerage costs.

Like all quantitative analysis, the adviser's investment model carries a risk that the mathematical model used might be based on one or more incorrect assumptions. No assurance can be given that the fund will be successful under all or any market conditions. Overall equity and fixed income securities market risks affect the value of the Fund. Factors such as domestic economic growth and market conditions, interest rate levels, and political events affect the securities markets. The earnings prospects of small and medium sized companies are more volatile than larger companies and may experience higher failure rates than larger companies.

Options Risk: There are risks associated with the sale and purchase of call and put options. As the seller (writer) of a put option, the Fund will tend to lose money if the value of the reference index or security falls below the strike price. As the seller (writer) of a call option, the Fund will tend to lose money if the value of the reference index or security rises above the strike price. The Fund may lose the entire put option premium paid if the reference index or underlying security does not decrease in value. The Fund may lose the entire call option premium paid if the reference index or underlying security does not increase in value.

Click [HERE](#) for the current NFDIX prospectus.

Definitions

Beta: Beta is a measure of a security's or portfolio's volatility relative to the market as a whole. A security or portfolio whose beta is greater than one has historically experienced a greater change in price than overall market prices; while, a security or portfolio with a beta of less than one has historically experienced a price change which is less than the price changes realized by the market as a whole.

Basis Points (BPS, bps): Basis points are used to refer to an increment of 0.01%, or 1/100th of 1%. For example, an investment that has increased in value by 0.50% would be said to have "increased by 50 basis points."

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